



DEPARTMENT OF HEALTH & HUMAN SERVICES

Food and Drug Administration
Rockville MD 20857

August 23, 2005

NMSBZ

Ms. Betsy Ullrich
Senior Health Physicist
Nuclear Materials Safety Branch 2
Division of Nuclear Material Safety
U.S. Nuclear Regulatory Commission Region I
475 Allendale Road
King of Prussia, PA 19406-1415

RE: Final Status Survey Report for 12709 Twinbrook Parkway, Rockville, MD
Food and Drug Administration
License No. 19-07538-01
Docket No. 030-04544

Dear Ms. Ullrich:

Enclosed is the Final Status Survey Report for the Food and Drug Administration's Center for Devices and Radiological Health (FDA/CDRH) laboratory facility located at 12709 Twinbrook Parkway in Rockville, Maryland and other supporting documents related to the final status survey process.

Upon satisfactory review of the information provided, FDA/CDRH requests an amendment to its license under the provisions specified in Title 10, Code of Federal Regulations, Part 20.1402 to release 12709 Twinbrook Parkway for unrestricted use.

The FDA has occupied this building for almost 40 years. In the last 10 years the FDA has been attempting to secure funding to build a new laboratory facility for the occupants of this building. In addition, the owner/lessor has had plans to redevelop the property on which this building is located. In 2000 since funding for a new laboratory had not yet been secured, it was necessary for the government to secure a 5-year lease, which expires on December 31, 2005. The lessor was extremely unhappy with this situation and the final negotiations found the FDA forced to pay double rent with decreased services. Should the release of the building occur after the lease expiration date, it is highly likely that the lessor will file a claim against the government for inverse condemnation because the government is precluding them from developing the site for a much more lucrative purpose. This claim could be any amount, and could possibly range in the millions. It would be in the government's best interest to be out of this space prior to the lease expiration date to prevent any possible negative financial impacts. Accordingly, the FDA respectfully requests an expedited review from the NRC in an effort to release the building prior to December 31, 2005.

137555

REC'D IN LAT AUG 25 2005

NMSS/RONI MATERIALS-002

We look forward to hearing from you regarding the Final Status Survey Report. If you have any questions, please contact me at either (301) 827-1231 or pxs@cdrh.fda.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Petro Shandruk". The signature is fluid and cursive, with the first name "Petro" being more prominent and the last name "Shandruk" following in a similar style.

Petro Shandruk
Radiation Safety Officer
RPB/DMQRP/OCER (HFZ-240)
Center for Devices and Radiological Health
1350 Piccard Drive
Rockville, MD 20850

**FINAL RADIOLOGICAL STATUS
SURVEY REPORT**

**FOOD AND DRUG ADMINISTRATION
CENTER FOR DEVICES AND RADIOLOGICAL HEALTH
12709 Twinbrook Parkway Rockville, MD**

August 22, 2005

FINAL REPORT

Table of Contents

1.	Background.....	page 7
2.	Radiological Surveys.....	page 7
3.	Final Status Survey Plan.....	page 11
3.1	Determining the Number of Data Points for Statistical Tests.....	page 13
3.1.1	Contaminants Not Present in Background.....	page 14
3.1.1.1	Calculate Relative Shift.....	page 14
3.1.1.2	Determination of Sign P.....	page 14
3.1.1.3	Determination of Decision Error Percentiles.....	page 14
3.1.1.4	Determine the number of Data Points for the Sigh Test.....	page 14
3.1.2	Contaminants Present in Background.....	page 15
3.1.2.1	Scenario A.....	page 15
3.1.2.1.1	Calculate the Relative Shift.....	page 15
3.1.2.1.2	Determination of Pr.....	page 15
3.1.2.1.3	Determination of Decision Error Percentiles.....	page 15
3.1.2.1.4	Determine the Number of Data Points for the WRS Test.....	page 15
3.1.2.2	Scenario B.....	page 16
3.1.2.2.1	WRS Test.....	page 16
3.1.2.2.1.1	Calculate the Relative Shift.....	page 17
3.1.2.2.1.2	Determination of Pr.....	page 17
3.1.2.2.1.3	Determination of Decision Error Percentiles.....	page 17
3.1.2.2.1.4	Determine the Number of Data Points for the WRS Test.....	page 18
3.1.2.2.1.5	Determine the Random-Start Systematic Pattern.....	page 18
3.1.2.2.2	Quantile Test.....	page 18
4.	Final Status Survey.....	page 18
4.1	Field Measurements Methods and Instrumentation.....	page 19
4.2	Laboratory Analysis of Smear Samples.....	page 20
4.3	Survey Unit Evaluation.....	page 20
4.4	Activity Detected At or Above Investigative Levels.....	page 21
4.5	Summary of Statistical Tests.....	page 22

4.5.1	Contaminants Not Present in Background.....	page 22
4.5.2	Contaminants Present in Background.....	page 22
4.5.2.1	Scenario A.....	page 22
4.5.2.2	Scenario B.....	page 22
4.5.2.2.1	WRS Test.....	page 23
4.5.2.2.2	Quantile Test.....	page 24
5.	Quality Assurance.....	page 24
5.1	Daily operational Checks for Portable Survey Instruments.....	page 24
5.2	Internal Quality Assurance Checks.....	page 25
5.3	Independent Quality Assurance Review.....	page 26
6.	Disposition of Materials and Waste.....	page 26
7.	Findings.....	page 26
8.	Conclusion.....	page 26

ATTACHMENTS

Attachment 1	DandD Occupancy Scenario Reports
Attachment 2	Survey Unit Listing, Physical Location, Classification, Estimated Standard Deviation and Statistical Tests
Attachment 3	Contaminants Not Present in Background – Relative Shift and Number of Data Points
Attachment 4	Contaminants Present in Background – Relative Shift and Number of Data Points
Attachment 5	Reference Area Listing
Attachment 6	Reference Matrices and Associated Measurements
Attachment 7	Reference Maps of Survey Units and Data Measurements
Attachment 8	Wilcoxon Rank Sum Test
Attachment 9	Quantile Test
Attachment 10	Determination of α_Q
Attachment 11	Daily Operational Checks of Portable Survey Instruments
Attachment 12	Verification Measurements of Surface Activity
Attachment 13	Quality Assurance Review of Decommissioning Activities At CDRH
Attachment 14	NRC Form 314, Transfer and Disposal Manifests

Abbreviations

CDRH	Center for Devices and Radiological Health
CPM	Counts per minute
DCGL	Derived Concentration Guideline Level
DPM	Disintegrations per minute
FDA	Food and Drug Administration
FSS	Final Status Survey
GCPM	Gross counts per minute
GSA	General Services Administration
LBGR	Lower bound of the gray region
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MDC	Minimum detectable concentration
MDCR	Minimum Detectable Count Rate
NCPM	Net counts per minute
NRC	Nuclear Regulatory Commission
QA	Quality Assurance

References

1. NUREG-1507, "Minimum Detectable Concentrations With Typical Radiation Survey Instruments for Various Contaminants and Field Conditions", NRC-Washington, DC, June 1998
2. NUREG-1575, "Multi-Agency Radiological Survey and Site Investigation Manual, Revision 1", August 2000
3. NUREG-1757, Vol. 1, "Consolidated NMSS Decommissioning Guidance, Decommissioning Process for Materials Licenses", Final Report, NRC-Washington, DC, September 2002
4. NUREG-1757, Vol. 2, "Consolidated NMSS Decommissioning Guidance, Decommissioning Process for Materials Licenses", Final Report, NRC-Washington, DC, September 2003
5. NUREG-CR-5512, Vol. 2, SAND2001-0822P, "Residual Radioactive Contamination From Decommissioning, Users Manual DandD, Version 2.1", NRC-Washington, DC, April 2001
6. NUREG-1505, "A Nonparametric Statistical Methodology for the Design and Analysis of Final Status Decommissioning Surveys", FR Vol. 62, No. 139, July 21, 1997
7. Regulatory Guide 1.86, "Termination of Operating Licenses for Nuclear Reactors", June 1974
8. DandD, Version 2.1 software
9. Title 10, Code of Federal Regulations

1. Background

The Food and Drug Administration is part of the Executive Branch of the United States Government within the Department of Health and Human Services. The Food and Drug Administration (FDA) is a Nuclear Regulatory Commission (NRC) radioactive materials licensee. The FDA operated a research laboratory facility 12709 Twinbrook Parkway in Rockville, MD. The FDA occupant has been the Center for Devices and Radiological Health (CDRH). CDRH is one of six product-oriented centers that carry out the mission of the Food and Drug Administration. CDRH has and continues to conduct research employing various radiolabeled compounds and radioactive sealed sources. The possession, use and storage of these radioactive materials at this facility are authorized by the NRC via a broadscope Radioactive Materials license, number 19-07538-01 (with 31 attachments). This license provides a limited scope of use directly associated with research activities.

There were research protocols that involved the use of radioactive materials in various forms e.g. unsealed, sealed material. The use of unsealed forms was also incorporated into protocols involving investigative animal research. Unsealed form usage involved the bench top manipulation of radioactive materials in research. These materials were procured and used at 12709 Twinbrook Parkway under the FDA/CDRH broad scope radioactive materials license.

The FDA has relocated research operations to another facility in the Washington, DC metropolitan area. The building located at 12709 Twinbrook Parkway is presently owned and managed by JBG Commercial Property Management of 5615 Fishers Lane, Suite 150, Rockville, MD 20852. The building owner has designated the building for major renovation, which will require the demolition of the building.

The FDA/CDRH, as an NRC licensee, is required to demonstrate that the facility located at 12709 Twinbrook Parkway located in Rockville, MD is acceptable for release in accordance with the requirements and conditions specified by the NRC. The FDA/CDRH has retained the services of Clym Environmental Services, LLC (Clym) to assist in the decommissioning process. All decommissioning related activities (scoping surveys, characterization surveys, remediation and waste disposal) were conducted under the authority of the current FDA/CDRH NRC license.

2. Radiological Surveys

The Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) assigns a greater level of effort on surveys conducted in areas that have, or had, the highest potential for contamination. The process by which an area is classified is described according to radiological characteristics. Areas that have no

reasonable potential or extremely low probability of residual contamination are classified as non-impacted. Areas with some potential for residual contamination are classified as impacted.

Given the long history of material usage, beginning in 1965, it was necessary to assess the current radiological condition of all areas. Furthermore the FDA/CDRH had to conduct surveys of equipment, laboratories and areas within the facility in support of relocation activities. A Sampling Plan was developed and approved by the FDA/CDRH Decommissioning Committee for these activities. These surveys would provide data on the current radiological condition of all areas at the facility, regardless of the area's current designation (i.e., administrative, facility operation or laboratory). The Sampling Plan designated all items and remaining equipment be evaluated for total and removable residual contamination.

All areas of the facility and equipment were designated for evaluation. Any area found to have residual surface contamination was designated as impacted. Areas of residual contamination were remediated in accordance with license limits.

These surveys identified fixed alpha and beta contamination in hallways adjacent to laboratories where material had been used or stored. Non-fixed equipment remaining at the site, such as casework, biological safety cabinets, etc. was released from radiological controls under the FDA/CDRH radioactive material license using limits specified in Regulatory Guide 1.86.

All laboratory effluent systems (e.g., sanitary sewer drain lines, chemical fume hood exhaust ducts) were designated for evaluation. Any system found to have detectable residual activity above MDC was designated for additional evaluation. The evaluation process began at the point of generation i.e. sink trap, exhaust baffle. If removable or total surface contamination was identified at the point of generation, the line, exhaust duct and/or drain line, would be removed as to afford access to the first bend or turn. Five- (5) separate laboratory drain lines were found to be contaminated. These drain lines were associated with sinks located in laboratories numbered 4D, 17, 25, 27 and 29. Areas of each trench were marked as to identify the location of each pipe joint prior to removing or otherwise disturbing the line. Drain lines were removed section by section. Samples of pipe scale and/or debris from the interior surfaces of each section was collected for analysis. Analysis of these samples revealed the presence of the following five contaminants: ^3H , ^{14}C , ^{63}Ni , U-nat and Th-nat. Contaminated sections of drain line were removed and disposed of as radioactive waste.

The soil beneath each pipe joint in every run of contaminated laboratory drain line was designated for evaluation to determine if the integrity had been compromised over the operating life of the facility.

A composite sampling plan for soil was developed in an effort to 1) minimize analytical costs and 2) ensure the MDA for each analyte was adequate. The MDA

was established for each composite scenario to ensure the detectable activity contribution from any single point having a volume activity of one half the appropriate screening value (DCGL) would be achievable.

Example: The DCGL for $^{238}\text{U}+\text{C}$ (U-nat) in soil is 0.5pCi/g. The contribution from one 25gram sample point having a volume activity of 0.25pCi/g to a composite sample of four sample points would yield an anticipated volume activity of .083pCi/g. The MDA for U-nat was designated at 0.05pCi/g.

In an effort to establish background levels for the five contaminants in soil, a sample was collected from 16 separate locations. The results of this analysis for detectable activity above the minimum detectable have been provided in Table 1.

Table 1

Radionuclide	Reference Background and Measurement of Uncertainty ¹ (pCi/g)	MDA (pCi/g)
^{238}U	$0.50 \pm .05$.05
^{232}Th	$0.95 \pm .29$.04

¹ — at the 95% confidence level

There were a total of three areas that were potential candidates as reference areas. An attempt was made to establish “background” for soil at the site. These areas are in the following locations; Reference area R1; Room 35A is 12’ north of the north end of Survey Unit 17C2 and Reference area R2; Room 20 is 50’ northeast of the north end of Survey Unit 17C2 and Reference area R3; Hallway 15H is 11’6” south of the north end of Survey Unit 17C2. The collection of reference measurements was made using a scaler rate meter equipped with a 13cm x 1.6cm NaI crystal. The mean and standard deviation of each reference area was estimated; R1= $13,594 \pm 4636$, R2 = $11,774 \pm 2011$ and R3= $5,194 \pm 431$. The radiation levels in each reference area were measured using a low energy gamma scintillator. The results of this survey are provided in Table 2.

Table 2

Reference Area	Range from surface to 5ft depth ($\mu\text{R/h}$)	Average at 3ft depth ($\mu\text{R/h}$)
R1	10 to 18	14
R2	10 to 15	14
R3	8 to 10	10

Samples from the three- (3) reference areas were collected and analyzed. The results of this analysis are provided in Table 3.

Table 3

Reference Area	Activity and Measurement of Uncertainty ¹ (pCi/g)					
	233/234U	235/236U	238U	228Th	230Th	232Th
R1	.632±.230	ND ²	.563±.216	1.01±.323	.417±.190	.702±.257
R2	.500±.197	ND ²	.515±.200	1.01±.338	.405±.197	1.11±.356
R3	.441±.184	ND ²	.252±.131	.490±.194	.361±.161	.532±.202

¹ - at the 95% confidence level

² - Activity was less than the minimum detectable

The soil beneath drain line identified as 17C2 was sampled and found to have elevated levels of U-nat ranging from 1 to 3 pCi/g. The contaminated area begins 13 feet and four joints from the commencement of the drain line in laboratory 17. Contaminated soil was found to run the length of this section of drain line, from joint number 5 to joint number 7, a total of 18 feet.

Direct measurements made during the remediation process showed no discernable change from direct measurements initially made in the survey unit and those collected in the reference areas. The radiation levels in the survey unit ranged from 10 to 18 µR/h, with the average being 15 µR/h. A composite sample was collected from 17C2 at depth (5') in grid coordinates A2, B2 and C2. The results of the analysis are provided in Table 4.

Table 4

Location	Activity and Measurement of Uncertainty ¹ (pCi/g)					
	233/234U	235/236U	238U	228Th	230Th	232Th
17C2	.719±.239	.039±.045	.501±.216	1.40±.405	.510±.213	1.40±.395

¹ - at the 95% confidence level

The percent contribution from each nuclide relative to the summed total for each reference area was determined. These calculations have been provided in Table 5.

Table 5

Reference Area	Percent Contribution					
	233/234U	235/236U	238U	228Th	230Th	232Th
R1	19.0%	0.8%	16.1%	30.4%	12.5%	21.1%
R2	14.1%	0.2%	14.5%	28.5%	11.4%	31.3%
R3	21.2%	0.3%	12.1%	23.5%	17.3%	25.6%

The percent contribution from each nuclide relative to the summed total for the survey unit was next determined. This calculation has been provided in Table 6.

The percent contribution for each analyte from the survey unit compared favorably with the potential reference areas. It was concluded, based on all available data, that the residual activity in the survey unit was not distinguishable

from reference background. The contaminated soil remediated from the survey unit was disposed of a radioactive waste.

Table 6

Survey Unit	Percent Contribution					
	233/234U	235/236U	238U	228Th	230Th	232Th
17C2	17.6%	0.5%	14.6%	28.0%	13.2%	26.2%

The variability in background at the three areas and findings in the survey unit were discussed at length with Mr. J. Stewart Bland, CHP of Chesapeake Nuclear Services, Inc. during the course of conducting an independent quality assurance audit. It was speculated that the difference between the mean measurement made in reference area 3, those made in the survey unit and reference areas 1 and 2 was due to a missed contaminant i.e. improper characterization. In an effort to test this assumption, an independent gamma spectral analysis of the survey unit was conducted. Analysis of the collected data identified only naturally occurring radionuclides present in the survey unit soil. No unidentified peaks, which could indicate an unevaluated or unexpected contaminant, were detected. The scope and findings of this audit are discussed in section 5.0.

The radionuclides identified as a result of scoping, characterization and remedial support surveys were 3H, 14C, 63Ni, U-nat and Th-nat.

3. Final Status Survey Plan

The FDA/CDRH selected the Derived Concentration Guideline Levels and Final Status Survey method to demonstrate compliance with the provisions specified in Title 10; Code of Federal Regulations, Part 20, Subpart E, for releasing the facility for unrestricted use.

FDA/CDRH obtained screening values for surface contamination using the values provided in NUREG-1757, Volume 1, Table B.1 in Appendix B. DandD Version 2.1 was used to obtain screening values for radionuclides not provided in Table B.1. Copies of the DandD Building Occupancy Scenario reports are provided as Attachment 1. A listing of the adopted screening values for building/surface contamination has been provided in Table 7.

A listing of the adopted screening value for surface soil has been provided in Table 8.

All areas of residual contamination identified during previous surveys had been remediated from building/structure surfaces. The Final Status survey designated each survey unit for 100% surface scans for alpha and beta emitting radionuclides. The types of samples collected from survey points on building/structure surfaces included the following; 1) a smear to evaluate the levels of removable tritium and gross alpha/beta contamination are within

prescribed limits (10% of the DCGL), and 2) an integrated or static measurement. The investigation levels for Class 3 survey units were designated as follows;

Direct Measurement –any measurement found to be greater than MDC of the background measurement for the matrices being evaluated

Surface Scans –any area found to be greater than 1) the MDCR for beta emitting radionuclides or 2) greater than 2 cpm above the established background for the matrices being evaluated

Surface Soil Scans –any area found to be greater than the mean of the two reference areas plus 2 standard deviations (20,836gcpm)

Smear – any measurement found to be greater than MDC

Table 7

Radionuclide	Symbol	Acceptable Screening Levels (dpm/100cm ²)
Hydrogen-3	³ H	1.2E+08
Carbon-14	¹⁴ C	3.7E+06
Nickel-63	⁶³ Ni	1.8E+06
Uranium- Natural	U-nat	93
Thorium-Natural	Th-nat	58.4

Table 8

Radionuclide	Symbol	Acceptable Screening Level (pCi/g)
Uranium- Natural	U-nat	0.5

The size of each individual survey unit will be limited to 100 m² of floor surface area. A listing of individual survey units, physical location, classification, estimated standard deviation and statistical test has been provided as Attachment 2.

Survey instruments were selected based on the detection sensitivities to the radiations of concern. The detection sensitivity of large area gas proportional detectors was evaluated to ensure detection levels are within acceptable parameters (10-50% of the DCGL). These detectors were equipped with 0.4mm thick windows. This meant the detector could be operated in an alpha or alpha/beta mode. The DCGL's for U-nat and Th-nat are low compared to the other contaminants. In order to meet the acceptable detection parameter of 10 to 50% of the DCGL_w, alpha must be evaluated independently from beta. This meant the levels of residual gross beta contamination could be over estimated. The ratio

of contaminants detectable in the alpha/beta mode were determined using data collected during previous surveys and are provided in Table 9.

The gross beta activity DCGL was determined using the ratio of contaminants identified in Table 9 and applying it using formula 4-4 as found in NUREG-1575 (December 1997).

Table 9

Radionuclide	Ratio
Hydrogen-3	99.3%
Carbon-14	0.6%
Nickel-63	0.1%

The gross beta DCGL was determined to be 95,673,847 dpm/100cm². The gross beta DCGL was determined to be 153,126 cpm/100cm² by converting from a unit of radioactivity to counts per minute using a value of 0.0003 for E_{weighted, total}. The total efficiency (E) was weighted according to the relative ratios. The surface efficiency (E_s) of 0.25 is applied for 0.15 to 0.4 MeV beta emitting radionuclides.

$$E_{\text{weighted, total}} = (0 \times 99.3\%) + (0.15 \times 0.25 \times 0.6\%) + (0.2 \times .25 \times 0.1\%)$$

The ratio of contaminants detectable in the alpha mode was also determined using data collected during previous surveys and is provided in Table 10.

Table 10

Radionuclide	Ratio
Uranium- Natural	99.3%
Thorium-Natural	0.7%

The gross alpha activity DCGL was determined using the ratio of contaminants identified in Table 10 and applying it using formula 4-4 as found in NUREG-1575 (December 1997). The gross alpha DCGL was determined to be 93 dpm/100cm². The gross alpha DCGL was converted to 27 cpm/100cm² using a value of 0.05 for E_{weighted, total}. The total efficiency (E) was weighted according to the relative ratios. The surface efficiency (E_s) of 0.25 is applied for alpha emitting radionuclides.

$$E_{\text{weighted, total}} = (0.2 \times .25 \times 99.3\%) + (0.2 \times .25 \times 0.7\%)$$

3.1 Determining the Number of Data Points for Statistical Tests

This section details the determination process in the selection and implementation of statistical tests.

3.1.1 Contaminants Not Present in Background

The Sign Test was selected to compare beta emitting nuclides or those contaminants not present in background, ^3H , ^{14}C and ^{63}Ni . The objective of the Final Status Surveys is to demonstrate that the residual radioactivity levels meet the release criterion. Scenario A has been selected to demonstrate this objective for residual contamination on building/structure surfaces. In demonstrating that this objective has been met, the null hypothesis tested, H_0 ; is the median concentration of residual radioactivity in the survey unit is greater than the DCGL_w ; the alternative hypothesis H_a ; is the median concentration of residual radioactivity in the survey unit is less than the DCGL_w .

H_0 : The median concentration of residual radioactivity in the survey unit is greater than the DCGL_w .

The Type I error (α) was specified as 0.05 and a Type II decision error (β) was set at 0.1.

3.1.1.1 Calculate the Relative Shift

The Gross Beta DCGL_w , lower bound of the gray region and the standard deviation of the contaminants in the survey unit were used to calculate the relative shift. If the relative shift was determined to be >3 , the lower bound of the gray region was adjusted. The relative shift for each survey unit has been provided in Attachment 3.

3.1.1.2 Determination of Sign p

The value of the relative shift calculated in section 3.1.1.1 was used to obtain the corresponding value of Sign p using Table 5.4 as found in NUREG-1575 (December 1997).

3.1.1.3 Determination of Decision Error Percentiles

The determination of percentiles, $Z_{1-\alpha}$ and $Z_{1-\beta}$ was conducted by selecting the designated values using Table 5.2 as found in NUREG-1575 (December 1997).

3.1.1.4 Determine the Number of Data points for the Sign Test

The number of data points for each survey unit was determined by one of two methods; 1) selecting the designated values using Table 5.5 as found in NUREG-1575 (December 1997) or 2) using the formula 5.2 as provided in NUREG-1575 (December 1997). The number of data points for each survey unit has been provided in Attachment 3.

3.1.2 Contaminants Present in Background

3.1.2.1 Scenario A

The Wilcoxon Rank Sum (WRS) Test was selected to compare alpha emitting nuclides or those contaminants present in background, U-nat and Th-nat. In demonstrating the objective of the Final Status Survey has been met, the null hypothesis, H_0 , tested is the median concentration of residual radioactivity in the survey unit exceeds that in the reference area by more than the $DCGL_w$; the alternative hypothesis, H_a is the median concentration of residual radioactivity in the survey unit exceeds that in the reference area by less than the $DCGL_w$.

H_0 : The median concentration of residual radioactivity in the survey unit exceeds that in the reference area by more than the $DCGL_w$.

The Type I error (α) was specified as 0.05 and a Type II decision error (β) was set at 0.1.

3.1.2.1.1 Calculate the Relative Shift

The Gross Alpha $DCGL_w$, lower bound of the gray region and the standard deviation of the contaminants in the survey unit and reference area were used to calculate the relative shift. MARSSIM recommends using the larger value of standard deviation when the standard deviation in the survey unit and reference area is different. If the relative shift was determined to be >3 , the lower bound of the gray region was adjusted. The relative shift for each survey unit has been provided in Attachment 4.

3.1.2.1.2 Determination of P_r

The value of the relative shift calculated in section 3.1.2.1.1 was used to obtain the corresponding value of P_r using Table 5.1 as found in NUREG-1575 (December 1997).

3.1.2.1.3 Determination of Decision Error Percentiles

The determination of percentiles, $Z_{1-\alpha}$ and $Z_{1-\beta}$ was conducted by selecting the designated values using Table 5.2 as found in NUREG-1575 (December 1997).

3.1.2.1.4 Determine the Number of Data points for the WRS Test

The number of data points for each survey unit was determined by one of two methods; 1) selecting the

designated values using Table 5.3 as found in NUREG-1575 (December 1997) or 2) using the formula 5-1 as provided in NUREG-1575 (December 1997). The number of data points for each survey unit has been provided in Attachment 4.

3.1.2.2 Scenario B

Any difference between the reference area and the survey unit is assumed to be from residual radioactivity. Variations in mean background among potential reference areas can not be ignored as they become comparable in magnitude to the width of the gray region.

Areas R1 and R2 were selected as reference areas in an attempt to reduce variability. Twenty six measurements were made in each area. The average and standard deviation for each area was found to be; R1: $11,774 \pm 2,011$ and R2: $10,421 \pm 768$. The variation in the mean background from the two areas was then tested. The Kruskal-Wallis test was performed using equation 13-2, identified in NUREG-1505, Section 13. The value of "K" was found to be 25.99. This value of "K" is greater than the highest value in Table 13.1, "9.2", with $k-1=2$ and $\alpha=0.01$. Thus the null hypothesis is rejected thereby concluding that these reference areas have significantly different concentrations of naturally occurring radionuclides.

Scenario B was selected to demonstrate that concentrations of residual radioactivity in the survey unit are indistinguishable from background in surface soil. The comparison of measurements in the reference area and survey unit was made using the WRS and Quantile tests.

3.1.2.2.1 WRS Test

In demonstrating that the objective of the Final Status Survey is met, the hypothesis tested by the WRS test is; null hypothesis, H_0 , the median concentration of residual radioactivity in the survey unit and in the reference area is less than the LBGR.; the alternative hypothesis, H_a is the median concentration of residual radioactivity in the survey unit and reference area is greater than the DCGL_w.

H_0 : The median concentration of residual radioactivity in the survey unit and in the reference area is less than the LBGR.

A concentration level was established that would be indistinguishable from background. The following values were determined using the equations 13 -10 through -16 (NUREG-1505 Section 13);

$$S_b^2 = 113,661,166 \quad S_w^2 = 9,666,781$$

$$\hat{w}^2 = 3,999,784$$

To apply the WRS and Quantile tests a decision was made concerning multiples of \hat{w} as the LBGR, as well as the width of the gray region equal to the $DCGL_w$. The difference between the means of reference areas R1 and R3 is; $11,774 - 10,421 = 1,353$; it was determined that the value of $\hat{w} = 2,000$ would be distinguishable from background.

Using previously collected data the averaged levels of residual activity in the survey unit and reference area were estimated; survey unit = $10,600 \pm 1,589$ ncpm; reference area = $11,098 \pm 1,655$ ncpm. The Type I error ($\alpha/2$) was designated as 0.025 and a Type II decision error (β) was set at 0.25.

3.1.2.2.1.1 Calculate the Relative Shift

The lower bound of the gray region (\hat{w}), the $DCGL + \hat{w}$, the standard deviation of the contaminants in the survey unit and reference areas were used to calculate the relative shift. The relative shift for survey unit 17C2 has been provided in Attachment 4.

3.1.2.2.1.2 Determination of P_r

The value of the relative shift calculated in section 3.1.2.2.1.1 was used to obtain the corresponding value of P_r (0.664290) using Table 5.1 as found in NUREG-1575 (December 1997).

3.1.2.2.1.3 Determination of Decision Error Percentiles

The determination of percentiles, $Z_{1-\alpha}$ (1.960) and $Z_{1-\beta}$ (0.674) was conducted by selecting the designated values using Table 5.2 as found in NUREG-1575 (December 1997).

3.1.2.2.1.4 Determine the Number of Data Points for the WRS Test

The number of data points for the survey unit and reference areas was determined by using the formula 5.3 as provided in NUREG-1575 (December 1997). The number of data points for the survey unit has been provided in Attachment 4.

3.1.2.2.1.5 Determine the Random-Start Systematic Pattern

The number of calculated survey measurements, $n = 52$, as determined in the previous section, was used to determine the spacing L of a systematic pattern using formula 5-7 as provided in NUREG-1575 (December 1997). The area of the survey unit (10m^2) was used to generate a random start point; at grid A3 with grid spacing 0.5m north/south and 0.4m east/west.

3.1.2.2.2 Quantile Test

The specific hypothesis tested by the Quantile test; null hypothesis, $H_0: \varepsilon = 0$ or $\delta' \leq \text{LBGR}$; versus the alternative hypothesis, $H_a: \varepsilon > 0$ or $\delta' > \text{LBGR}$.

H_0 : There is no residual radioactivity above the LBGR in any part of the survey unit.

The appropriate columns in Table A.7b from NUREG-1505 were selected according to the value of $\alpha_Q = \alpha/2$ or 52; the nearest value of n , the number of measurements from the survey unit; and m , the number of measurements from the reference area. There are three numbers associated with each tabulated pair of n and m values, namely r , k and α_Q or 5, 5 and 0.028. The m measurements from the reference area and the n measurements from the survey unit are pooled and ranked in order of increasing size from 1 to N , where $N = m + n$. If k or more of the r largest measurements in the combined ranked data set are from the survey unit the null hypothesis is rejected.

4. Final Status Survey

A total of 30 survey units were designated for evaluation using Final Status Survey techniques. A one meter square grid system was constructed in each survey unit, to include the floor, walls (upper and lower) and ceiling area. The

ceiling area was defined as all surfaces located on the same horizontal plane as the suspended ceiling. In survey units where ceiling tiles were missing, the ceiling area was defined as all surfaces located directly above the area occupied by the missing ceiling tile.

The reference areas for establishing background for the different matrices were identified. Radiological evaluations for total and removable surface contamination had been conducted in each location designated as a reference area. Sample measurements were then made at various locations within each of the reference areas on each type of matrices (e.g. benchtop, floor, casework, etc.). Variations in "background" were encountered for each type of matrices throughout 12709 Twinbrook Parkway. A listing of reference areas used has been provided as Attachment 5.

Smear samples were collected at each sample location designated for gross alpha/beta measurements. These samples were collected to evaluate the level of removable residual tritium on building surfaces. Smear samples were also collected from sample locations designated for gross alpha measurements. The sample location and frequency was random and left to the discretion of the surveyor. These samples were collected to evaluate the level of removable surface activity from alpha and beta emitting radionuclides on building surfaces.

4.1 Field Measurements Methods and Instrumentation

Surface scans and measurements for beta emitting radionuclides were made using scaler/rate meters equipped with large area gas proportional detectors (Ludlum model 43-37). The Scan MDC for the 43-37 detectors was determined to be 537,253 dpm/100cm². The Scan MDC is well below the Gross Beta DCGL of 93,673,847 dpm/100cm². The following variables were used in determination of the Scan MDC; 1) a background count rate of 1,720cpm, 2) $E_{\text{weighted, total}}$ of 0.0003 and 3) the active area of the probe is 582cm². A minimum detectable count rate (MDCR) of 663 cpm was determined for the ideal surveyor during the first scanning stage using an index of sensitivity (d') of 2.92 and a 2 second observation interval (NUREG 1575, 6.7.2.1 (6-8, 6-9)).

Surface scans and integrated measurements for alpha emitting radionuclides were conducted using the 43-37 large area gas proportional detectors. The high voltage will be adjusted for each instrument, as specified by the calibration certification, to discriminate all beta pulses. The averaged ambient background for these detectors in the alpha mode was found to be 4 cpm. One half of a gross alpha DCGL (93 dpm/100cm²) is 46 dpm/100cm² or 14 cpm/100cm² using a total weighted efficiency of 0.05. The probability of detecting two or more counts when passing over 46 dpm/100cm² was determined to be 17% (NUREG-1575, 6.7.2.2 (6-14)) using a probe dimension of 15cm and a scan rate of 4cm/s. The time interval a surveyor should hold over a suspect area was determined to be 4 seconds (NUREG 1575, 6.7.2.2 (6-13)).

A listing of the reference matrices, associated measurement and MDCR_{Surveyor} for each portable survey instrument used has been provided as Attachment 6.

The detector was employed on the scanned surface at no greater than the prescribed speed as indicated below;

43-37, alpha/beta mode $\frac{1}{2}$ a probe width per second (3inches/sec)

43-37, alpha mode $\frac{1}{4}$ a probe width per second (1.5inches/sec)

13cm x 1.6cm NaI crystal, $\frac{1}{2}$ a probe width per second

The minimum observational interval or hold time over a suspect area is as specified for the first stage scan; Beta - 2 seconds, Alpha - 4 seconds. Surface soil was scanned while maintaining a distance of six inches from the scanned surface.

Surface scans were systematically conducted on accessible surfaces in each survey area as to ensure the 100% coverage in all areas. Special attention was made to joints, cracks, seams, etc. in any accessible survey area.

All accessible surfaces of each survey unit were designated for surface scans. The building air handling system, laboratory drain line clean-outs and traps were not designated for evaluation; however accessible surfaces directly beneath drain lines were designated for surface scans.

4.2 Laboratory Analysis of Smear Samples

The evaluation of removable surface activity was conducted using a dry paper wipe, wetted with alcohol and covering an area of 100 cm² while applying moderate pressure. Smear samples were analyzed by Clym Environmental Services, LLC (License number MD-21-035-01) for tritium and gross alpha/beta. Samples were analyzed using liquid scintillation counting techniques.

4.3 Survey Unit Evaluation

The scanning coverage designated for FSS was 100% in all survey units. This level of scanning effort was in keeping with the survey objectives and ALARA principles.

Random sample points were identified for each survey unit. The sample point corresponds to an actual grid coordinate in the survey unit. Random sample points were selected by first assigning each point in the survey unit a sequential numerical value. A random number generator was utilized to select the sample points for each survey unit.

A map of the survey unit and designated sample points was given to the surveyor. The surveyor used the following methodology to acquire the appropriate sample location in the grid system. Floor Area– Locate the lower right hand corner in the grid coordinate with your back to the

entrance way. Wall Area - Facing the wall surface, locate the lower right hand corner in the grid coordinate, Ceiling Area - The ceiling and floor grid coordinates area are the same. Locate the designated sample grid coordinate in the floor area with your back to the entrance way. Acquire the lower right hand corner in the floor grid coordinate. The sample area in the designated ceiling grid coordinate will be directly above the "sample area" acquired in the floor area.

The sample area will be the laboratory bench-top for a grid coordinate having, 1) a numerical designation of "6" and 2) a laboratory bench-top residing in the grid coordinate.

The critical level - L_C and detection limit - L_D (NUREG 1575, 6.7.1 (6-6)), including the minimum detectable concentration (MDC) expression (Brodsky & Gallagher 1991) for an integrated count, have been determined and are provided in Table 11. (MDC for gross alpha measurements was calculated for a two-minute static count.)

The levels of naturally occurring radioactivity observed on certain reference matrices reduced the effectiveness of gross alpha measurements to meet the required minimum detectable concentration. Integrated count times were increased from 2 to 5 minutes for surface matrices having a background greater than 8 cpm to ensure adherence to the MDC requirements.

Table 11

Detector	Probe Area (cm ²)	Bkg (cpm)	Inst. Eff. (cpm/dpm)	Surface Eff.	L_C	L_D	MDC (dpm/100cm ²)
43-37	582	4	0.2	.25	5	12	25

A map of each survey unit, including static measurement and smear sample results, as appropriate, has been provided as Attachment 7.

4.4 Activity Detected At or Above Investigative Levels

There were areas in two survey units where surface activity was detected during surface scans. In survey unit 17I, a section of wall surface that resided behind a laboratory benchtop was found to have gross alpha activity. An area of the wall was designated for static measurements to encompass an adjacent area of 1m² around the elevated area. The elevated area was found to reside in an area of 0.25m² in size. The detected activity ranged from 13 to 11 cpm above background or 43 ± 23 dpm/100cm² to 38 ± 22 dpm/100cm². The MDC for the measurements was determined to be 28 dpm/100cm². No removable surface contamination was detected on smear samples collected from the elevated area.

The second area resided in survey unit 18I. An area of the floor was designated for static measurements to encompass an adjacent area of 1m^2 around the elevated area. The elevated area of floor surface, $\sim 2\text{m}^2$, was located to the right of a chemical fume hood. The detected activity ranged from 10 to 6 cpm above background or $33 \pm 22 \text{ dpm}/100\text{cm}^2$ to $31 \pm 22 \text{ dpm}/100\text{cm}^2$, gross alpha. The MDC for the measurements was determined to be $30 \text{ dpm}/100\text{cm}^2$. No removable surface contamination was detected on smear samples collected from the elevated area.

It should be noted that although these areas of residual activity were less than the gross alpha DCGL_w ($46 \text{ dpm}/100\text{cm}^2$), each was remediated in keeping with the ALARA goal.

4.5 Summary of Statistical Tests

The measurements made at discrete locations as a result of FSS were evaluated.

4.5.1 Contaminants Not Present in Background

The Sign Test was selected to compare beta emitting nuclides or those contaminants not present in background, ^3H , ^{14}C and ^{63}Ni . The objective of the Final Status Surveys is to demonstrate that the residual radioactivity levels meet the release criterion.

H_0 : The median concentration of residual radioactivity in the survey unit is greater than the DCGL_w.

All measurements were found to be less than the DCGL_w. The average of the measurements made in each survey unit was determined. The measurement average in each survey unit was found to be less than the DCGL_w. The Sign test did not need to be performed as each survey unit met the release criterion.

4.5.2 Contaminants Present in Background

4.5.2.1 Scenario A

The Wilcoxon Rank Sum (WRS) Test was selected to compare alpha emitting nuclides or those contaminants present in background, U-nat and Th-nat. In demonstrating the objective of the Final Status Survey has been met, the null hypothesis, H_0 , tested is the median concentration of residual radioactivity in the survey unit exceeds that in the reference area by more than the DCGL_w; the alternative hypothesis, H_a is the median concentration of residual radioactivity in the survey unit exceeds that in the reference area by less than the DCGL_w.

H_0 : The median concentration of residual radioactivity in the survey unit exceeds that in the reference area by more than the $DCGL_w$.

The difference between the largest survey unit measurement and the smallest reference area measurement was determined. The difference was found to be less than the $DCGL_w$ for every survey unit. The difference between the measurement average for each survey unit and associated reference area was next determined. This difference was found to be less than the $DCGL_w$ in every survey unit. The WRS test did not need to be performed as each survey unit met the release criterion.

4.5.2.2 Scenario B

Scenario B was then selected to demonstrate that concentrations of residual radioactivity in the survey unit are indistinguishable from background in surface soil. The comparison of measurements in the reference area and survey unit will be made using the WRS and Quantile tests.

4.5.2.2.1 WRS Test

In demonstrating the objective of the Final Status Survey the hypothesis tested by the WRS test was;

H_0 : The median concentration of residual radioactivity in the survey unit and in the reference area is less than the LBGR.

The critical value was calculated using formula I.1 found in Appendix I, NUREG-1575. The critical value (W_r) was determined to be 2,983. The sum of the adjusted survey unit ranks (W_s) was found to be 1,545. The sum of the adjusted survey unit ranks is less than the critical value; therefore the null hypothesis is accepted.

The actual data generated as a function of conducting the test is provided as Attachment 8.

The measurement data collected from the survey unit and reference area was evaluated. A comparison of summary statistical data is provided in Table 12. The difference in the means was determined to be 1,139. The difference in the medians was found to be 807.

Table 12

Survey Unit 17C2		Reference Area	
Mean	9,959	Mean	11,098
Median	9,933	Median	10,740
Standard Dev.	1,687	Standard Dev.	1,655
Maximum	13,544	Maximum	16,440
Minimum	6,748	Minimum	9,855
Range	6,796	Range	6,585
Count	52	Count	52

4.5.2.2.2 Quantile Test

The specific hypothesis tested by the Quantile test is the null hypothesis, $H_0: \varepsilon = 0$ or $\delta' \leq \text{LBGR}$.

H_0 : There is no residual radioactivity above the LBGR in any part of the survey unit.

The appropriate columns in Table A.7b from NUREG-1505 were selected according to the value of $\alpha_Q = \alpha/2$ or 52. There are three numbers associated with each tabulated pair of n and m values, namely r , k and α_Q or 5, 5 and 0.028. None of the 5 largest measurements were from the survey unit. The actual data generated from conducting the test is provided as Attachment 9. The closest entry to $\alpha_Q = .025$ and $n=m=52$ is $n=55$, $m=50$. The values found were $r=9$, $k=8$, $\alpha_Q=.022$. Observing that 1 of the 9 largest measurements were from the survey unit, the survey unit passes. The determination of α_Q has been provided as Attachment 10.

5. Quality Assurance

The performance of decommissioning activities has been managed within a framework of policies and procedures, which assure the validity and quality of data. Procedures were established for activities requiring the application of standard and approved methods to ensure regulatory requirements were met. These procedures document the technical competence of the survey approach thus ensuring the use of effective processes. Procedures utilized by Clym are documented using program-specific applications.

5.1 Daily Operational Checks for Portable Survey Instruments

The purpose of these procedures was to ensure portable scaler/rate meters equipped with gas proportional detectors were in proper working condition prior to placement into service.

When an instrument failed an operational check, both the instrument and detector were removed from service until the discrepancy could be resolved.

Both source and background measurements must fall within the acceptable range established for the site and were performed as follows:

Prior to beginning the performance of data measurements and/or scanning for the day,

After the lunch or noon break,

Any time the detector is suspected of being contaminated and

Any time instrument operation is in question.

Daily checks included 1) a determination of operational readiness, 2) ambient background determination and verification that each reading is within $\pm 20\%$ of the average in beta mode and 50% of the average in alpha mode and 3) check source reproducibility determination.

The check source reproducibility determination involved obtaining the data necessary to calculate the average source count and verify that each section of the detector face was reading within $\pm 10\%$ of the average. Additionally, the 2σ and 3σ values for the background and check source counts were calculated. The acceptable value for 3σ was established at $\pm 10\%$ of the mean.

A copy of these daily checks has been provided as Attachment 11.

5.2 Internal Quality Assurance Checks

Quality assurance evaluations were conducted in each survey unit. These evaluations involved verification measurements to confirm Final Status Survey measurements for total surface contamination. Measurements were made at two- (2) randomly selected Final Status Survey sample points. The procedures and techniques utilized to make these measurements were identical to those used in the FSS. Additionally, surface scans were conducted on what were deemed "high risk" surfaces in each survey unit. "High risk" surfaces included laboratory benchtops, chemical fume hoods, and fixtures, including door knobs and light switches.

The results of these evaluations are provided as Attachment 12. An evaluation was conducted assessing the measured values for each survey point, both verification and FSS, to determine if overlap occurred at the 95% confidence level.

5.3 Independent Quality Assurance Review

An external quality assurance review was conducted by an independent firm, Chesapeake Nuclear Services, Inc. The purpose of this audit was to, 1) verify the appropriate application of site characterization to the specified surveys, 2) confirm the appropriate use of instruments, detectors, laboratory analysis and calibrations, correlations to characterized radionuclides, detection capabilities and use in the field, 3) observe survey methods and documentation, 4) review records for completeness, and 5) conduct an independent gamma spectral measurement of survey unit 17C2. Only naturally occurring radionuclides were identified from the in-field gamma spectral analysis of survey unit 17C2 soil.

A copy of the audit findings has been provided as Attachment 13.

6. Disposition of Materials and Waste

All radioactive materials were transferred to the current licensed facility. All radioactive waste, including wastes generated as a result of decommissioning activities, was disposed of in accordance with FDA/CDRH radioactive materials license. A completed copy of NRC Form 314, "Certificate of Disposition of Materials" including copies of disposal and transfer manifests have been provided as Attachment 14. (Does anyone need to review and/or sign the NRC Form 314 before the report is finalized?)

7. Findings

The objective of the Final Status Survey to demonstrate that the survey met the release criteria was achieved. No area of elevated activity was found to be present in any sample location.

8. Conclusion

The Final Status Surveys conducted by the FDA/CDRH demonstrate compliance with the provisions specified in the Code of Federal Regulations, Title 10, Part 20, Subpart E for releasing the building located at 12709 Twinbrook Parkway in Rockville, MD for unrestricted use.

ATTACHMENT 1



DandD Building Occupancy Scenario

DandD Version: 2.1.0

Run Date/Time: 7/14/2005 9:38:01 AM

Site Name: 12709 Twinbrook Parkway

Description: DCGL determination

FileName: C:\Documents and Settings\Finley Watts\My Documents\CDRH\Center for Devices and Radiological Health.mcd

Options:

Implicit progeny doses NOT included with explicit parent doses

Nuclide concentrations are distributed among all progeny

Number of simulations: 12800

Seed for Random Generation: 8718721

Averages used for behavioral type parameters

External Pathway is ON

Inhalation Pathway is ON

Secondary Ingestion Pathway is ON

Initial Activities:

Nuclide	Area of Contamination (m ²)	Distribution
U_Nat	UNLIMITED	CONSTANT(dpm/100 cm**2)
Justification for concentration: DCGL determination		Value 9.30E+01

Chain Data:

Number of chains: 1

Chain No. 1: U_Nat

Nuclides in chain: 30

Nuclide	Chain Position	Half Life	First Parent	Fractional Yield	Second Parent	Fractional Yield	Ingestion CEDE Factor (Sv/Bq)	Inhalation CEDE Factor (Sv/Bq)	Surface Dose Rate Factor ((Sv/d)/(Bq/m ²))	15 cm Dose Rate Factor ((Sv/d)/(Bq/m ³))
238U	1	1.63E+12					6.88E-08	3.20E-05	4.76E-14	4.76E-17
234Th	2	2.41E+01	1	1	0	0	3.69E-09	9.47E-09	7.18E-13	1.12E-14
234mPa	Implicit		2	0.998			0.00E+00	0.00E+00	1.32E-12	3.62E-14
234Pa	Implicit		2	0.002	0	0.0013	5.84E-10	2.20E-10	1.59E-10	4.65E-12
234U	3	8.93E+07	2	1	0	0	7.66E-08	3.58E-05	6.46E-14	1.85E-16
230Th	4	2.81E+07	3	1	0	0	1.48E-07	8.80E-05	6.48E-14	5.52E-16
226Ra	5	5.84E+05	4	1	0	0	3.58E-07	2.32E-06	5.56E-13	1.42E-14
222Rn	6	3.82E+00	5	1	0	0	0.00E+00	0.00E+00	3.41E-14	9.81E-16
218Po	Implicit		6	1			0.00E+00	0.00E+00	7.67E-16	2.27E-17
214Pb	Implicit		6	0.9998			1.69E-10	2.11E-09	2.10E-11	5.78E-13

218At	Implicit	6	0.0002			0.00E+00	0.00E+00	0.00E+00	0.00E+00	
214Bi	Implicit	6	1			7.64E-11	1.78E-09	1.22E-10	3.77E-12	
214Po	Implicit	6	0.9998			0.00E+00	0.00E+00	7.02E-15	2.07E-16	
210Pb	7	8.15E+03	6	1	0	0	1.45E-06	3.67E-06	2.14E-13	1.13E-15
210Bi	8	5.01E+00	7	1	0	0	1.73E-09	5.29E-08	9.06E-14	1.61E-15
210Po	9	1.38E+02	8	1	0	0	5.14E-07	2.54E-06	7.16E-16	2.11E-17
235U	1	2.57E+11					7.19E-08	3.32E-05	1.28E-11	3.24E-13
231Th	2	1.06E+00	1	1	0	0	3.65E-10	2.37E-10	1.60E-12	1.68E-14
231Pa	3	1.20E+07	2	1	0	0	2.86E-06	3.47E-04	3.52E-12	8.30E-14
227Ac	4	7.95E+03	3	1	0	0	3.80E-06	1.81E-03	1.36E-14	2.26E-16
223Fr	Implicit		4	0.0138			2.33E-09	1.68E-09	4.88E-12	8.74E-14
227Th	5	1.87E+01	4	0.9862	0	0	1.03E-08	4.37E-06	8.94E-12	2.29E-13
223Ra	6	1.14E+01	5	1	4	0.0138	1.78E-07	2.12E-06	1.11E-11	2.67E-13
219Rn	Implicit		6	1			0.00E+00	0.00E+00	4.74E-12	1.33E-13
215Po	Implicit		6	1			0.00E+00	0.00E+00	1.51E-14	4.30E-16
211Pb	Implicit		6	1			1.42E-10	2.35E-09	4.38E-12	1.26E-13
211Bi	Implicit		6	1			0.00E+00	0.00E+00	3.96E-12	1.10E-13
211Po	Implicit		6	0.0028			0.00E+00	0.00E+00	6.57E-13	1.94E-14
207Tl	Implicit		6	0.9972			0.00E+00	0.00E+00	3.25E-13	8.19E-15
U_Nat	1	0.00E+00					0.00E+00	0.00E+00	3.25E-13	8.19E-15

Initial Concentrations:

Note: All reported values are the upper bound of the symmetric 95% confidence interval for the 0.9 quantile value

Nuclide	Surface Concentration (dpm/100 cm**2)
234U	4.55E+01
230Th	0.00E+00
226Ra	0.00E+00
222Rn	0.00E+00
218Po	0.00E+00
214Pb	0.00E+00
218At	0.00E+00
214Bi	0.00E+00
214Po	0.00E+00
210Pb	0.00E+00
210Bi	0.00E+00
210Po	0.00E+00
235U	2.09E+00
231Th	0.00E+00
231Pa	0.00E+00
227Ac	0.00E+00
223Fr	0.00E+00
227Th	0.00E+00
223Ra	0.00E+00
219Rn	0.00E+00

215Po	0.00E+00
211Pb	0.00E+00
211Bi	0.00E+00
211Po	0.00E+00
207Tl	0.00E+00
238U	4.55E+01
234Th	0.00E+00
234mPa	0.00E+00
234Pa	0.00E+00

Model Parameters:

General Parameters:

Parameter Name	Description	Distribution
To:Time In Building	The time in the building during the occupancy period	CONSTANT(hr/week)
<u>Default value used</u>		<u>Value</u> 4.50E+01
Tto:Occupancy Period	The duration of the occupancy exposure period	CONSTANT(days)
<u>Default value used</u>		<u>Value</u> 3.65E+02
Vo:Breathing Rate	The average volumetric breathing rate during building occupancy for an 8-hour work day	CONSTANT(m**3/hr)
<u>Default value used</u>		<u>Value</u> 1.40E+00
RFo*:Resuspension Factor	Effective resuspension factor during the occupancy period = RFo * FI	DERIVED(1/m)
<u>Default value used</u>		
GO*:Ingestion Rate	Effective secondary ingestion transfer rate of removable surface activity from building surfaces to the mouth during building occupancy = GO * FI	DERIVED(m**2/hr)
<u>Default value used</u>		
Tstart:Start Time	The start time of the scenario in days	CONSTANT(days)
<u>Default value used</u>		<u>Value</u> 0.00E+00
Tend:End Time	The ending time of the scenario in days	CONSTANT(days)
<u>Default value used</u>		<u>Value</u> 3.65E+02
dt:Time Step Size	The time step size	CONSTANT(days)
<u>Default value used</u>		<u>Value</u> 3.65E+02
Pstep:Print Step Size	The time steps for the history file. Doses will be written to the history file every n time steps	CONSTANT(none)
<u>Default value used</u>		<u>Value</u> 1.00E+00
AOExt:External Exposure Area	Minimum surface area to which occupant is exposed via external radiation during occupancy period	CONSTANT(m**2)
<u>Default value used</u>		<u>Value</u> 1.00E+01
AOInh:Inhalation Exposure Area	Minimum surface area to which occupant is exposed via inhalation during occupancy period	CONSTANT(m**2)

<u>Default value used</u>		<u>Value</u>	1.00E+01
AOIng:Secondary Ingestion Exposure Area	Minimum surface area to which occupant is exposed via secondary ingestion during occupancy period	CONSTANT(m**2)	
<u>Default value used</u>		<u>Value</u>	1.00E+01
AO:Exposure Area	Minimum surface area to which occupant is exposed during the occupancy period	DERIVED(m**2)	
<u>Default value used</u>			
Fl:Loose Fraction	Fraction of surface contamination available for resuspension and ingestion	CONSTANT(none)	
<u>Default value used</u>		<u>Value</u>	1.00E-01
Rfo:Loose Resuspension Factor	Resuspension factor for loose contamination	CONTINUOUS LOGARITHMIC(1/m)	
<u>Default value used</u>		<u>Value</u>	<u>Probability</u>
		9.12E-06	0.00E+00
		1.10E-04	7.67E-01
		1.46E-04	9.09E-01
		1.62E-04	9.50E-01
		1.85E-04	9.90E-01
		1.90E-04	1.00E+00
GO:Loose Ingestion Rate	The secondary ingestion transfer rate of loose removable surface activity from building surfaces to the mouth during building occupancy	CONSTANT(m**2/hr)	
<u>Default value used</u>		<u>Value</u>	1.10E-04

Correlation Coefficients:None**Summary Results:**

90.00% of the 12800 calculated TEDE values are < 2.47E+01 mrem/year .

The 95 % Confidence Interval for the 0.9 quantile value of TEDE is 2.45E+01 to 2.50E+01 mrem/year

Detailed Results:

Note: All reported values are the upper bound of the symmetric 95% confidence interval for the 0.9 quantile value

Concentration at Time of Peak Dose:

Nuclide	Surface Concentration (dpm/100 cm**2)
234U	4.55E+01
230Th	2.05E-04
226Ra	2.96E-08
222Rn	2.83E-08
218Po	2.83E-08
214Pb	2.83E-08
218At	5.66E-12
214Bi	2.83E-08
214Po	2.83E-08
210Pb	2.15E-10

210Bi	1.99E-10
210Po	5.41E-11
235U	2.09E+00
231Th	2.08E+00
231Pa	2.19E-05
227Ac	2.30E-07
223Fr	3.17E-09
227Th	1.83E-07
223Ra	1.62E-07
219Rn	1.62E-07
215Po	1.62E-07
211Pb	1.62E-07
211Bi	1.62E-07
211Po	4.53E-10
207Tl	1.61E-07
238U	4.55E+01
234Th	4.11E+01
234mPa	4.11E+01
234Pa	8.23E-02

Pathway Dose from All Nuclides (mrem)

All Pathways Dose	External	Inhalation	Secondary Ingestion
2.50E+01	2.15E-03	2.49E+01	2.97E-02

Radionuclide Dose through All Active Pathways (mrem)

Nuclide	All Pathways Dose
234U	1.29E+01
230Th	1.43E-04
226Ra	5.89E-10
222Rn	1.57E-14
218Po	3.53E-16
214Pb	1.01E-11
218At	0.00E+00
214Bi	5.65E-11
214Po	3.23E-15
210Pb	7.59E-12
210Bi	8.51E-14
210Po	1.21E-12
235U	5.51E-01
231Th	6.13E-05
231Pa	6.04E-05
227Ac	3.29E-06
223Fr	3.25E-13

227Th	6.36E-09
223Ra	2.87E-09
219Rn	1.25E-11
215Po	3.97E-14
211Pb	1.46E-11
211Bi	1.04E-11
211Po	4.84E-15
207Tl	8.52E-13
238U	1.15E+01
234Th	4.21E-03
234mPa	8.81E-04
234Pa	2.13E-04
All Nuclides	2.50E+01

Dose from Each Nuclide through Each Active Pathway (mrem)

Nuclide	External	Inhalation	Secondary Ingestion
234U	4.77E-05	1.29E+01	1.49E-02
230Th	2.16E-10	1.43E-04	1.30E-07
226Ra	2.67E-13	5.43E-10	4.55E-11
222Rn	1.57E-14	0.00E+00	0.00E+00
218Po	3.53E-16	0.00E+00	0.00E+00
214Pb	9.66E-12	4.72E-13	2.05E-14
218At	0.00E+00	0.00E+00	0.00E+00
214Bi	5.61E-11	3.99E-13	9.28E-15
214Po	3.23E-15	0.00E+00	0.00E+00
210Pb	7.49E-16	6.25E-12	1.34E-12
210Bi	2.93E-16	8.33E-14	1.48E-15
210Po	6.30E-19	1.09E-12	1.19E-13
235U	4.35E-04	5.50E-01	6.46E-04
231Th	5.42E-05	3.91E-06	3.26E-06
231Pa	1.25E-09	6.01E-05	2.69E-07
227Ac	5.07E-14	3.29E-06	3.74E-09
223Fr	2.51E-13	4.21E-14	3.17E-14
227Th	2.66E-11	6.33E-09	8.09E-12
223Ra	2.92E-11	2.71E-09	1.24E-10
219Rn	1.25E-11	0.00E+00	0.00E+00
215Po	3.97E-14	0.00E+00	0.00E+00
211Pb	1.15E-11	3.01E-12	9.86E-14
211Bi	1.04E-11	0.00E+00	0.00E+00
211Po	4.84E-15	0.00E+00	0.00E+00
207Tl	8.52E-13	0.00E+00	0.00E+00
238U	3.52E-05	1.15E+01	1.34E-02
234Th	4.80E-04	3.08E-03	6.51E-04
234mPa	8.81E-04	0.00E+00	0.00E+00

234Pa	2.13E-04	1.43E-07	2.06E-07
-------	----------	----------	----------



DandD Building Occupancy Scenario

DandD Version: 2.1.0

Run Date/Time: 7/14/2005 9:53:50 AM

Site Name: 12709 Twinbrook Parkway

Description: DCGL determination

FileName: C:\Documents and Settings\Finley Watts\My Documents\CDRH\Center for Devices and Radiological Health 2.mcd

Options:

Implicit progeny doses NOT included with explicit parent doses

Nuclide concentrations are distributed among all progeny

Number of simulations: 6400

Seed for Random Generation: 8718721

Averages used for behavioral type parameters

External Pathway is ON

Inhalation Pathway is ON

Secondary Ingestion Pathway is ON

Initial Activities:

Nuclide	Area of Contamination (m ²)	Distribution
Th_Nat	UNLIMITED	CONSTANT(dpm/100 cm**2)
<u>Justification for concentration:</u> DCGL determination		<u>Value</u> 5.84E+01

Chain Data:

Number of chains: 1

Chain No. 1: Th_Nat

Nuclides in chain: 12

Nuclide	Chain Position	Half Life	First Parent	Fractional Yield	Second Parent	Fractional Yield	Ingestion CEDE Factor (Sv/Bq)	Inhalation CEDE Factor (Sv/Bq)	Surface Dose Rate Factor ((Sv/d)/(Bq/m ²))	15 cm Dose Rate Factor ((Sv/d)/(Bq/m ³))
232Th	1	5.13E+12					7.38E-07	4.43E-04	4.76E-14	2.40E-16
228Ra	2	2.10E+03	1	1	0	0	3.88E-07	1.29E-06	0.00E+00	0.00E+00
228Ac	Implicit		2	1			5.85E-10	8.33E-08	8.01E-11	2.38E-12
228Th	3	6.99E+02	2	1	0	0	1.07E-07	9.23E-05	2.03E-13	3.60E-15
224Ra	4	3.66E+00	3	1	0	0	9.89E-08	8.53E-07	8.26E-13	2.26E-14
220Rn	Implicit		4	1			0.00E+00	0.00E+00	3.29E-14	9.52E-16
216Po	Implicit		4	1			0.00E+00	0.00E+00	1.43E-15	4.21E-17
212Pb	5	4.43E-01	4	1	0	0	1.23E-08	4.56E-08	1.23E-11	3.13E-13
212Bi	Implicit		5	1			2.87E-10	5.83E-09	1.54E-11	4.63E-13

212Po	Implicit	5	0.6407	0.00E+00	0.00E+00	0.00E+00	0.00E+00
208Tl	Implicit	5	0.3593	0.00E+00	0.00E+00	2.58E-10	8.36E-12
Th_Nat	1	0.00E+00		0.00E+00	0.00E+00	2.58E-10	8.36E-12

Initial Concentrations:

Note: All reported values are the upper bound of the symmetric 95% confidence interval for the 0.9 quantile value

Nuclide	Surface Concentration (dpm/100 cm**2)
232Th	5.84E+00
228Ra	5.84E+00
228Ac	5.84E+00
228Th	5.84E+00
224Ra	5.84E+00
220Rn	5.84E+00
216Po	5.84E+00
212Pb	5.84E+00
212Bi	5.84E+00
212Po	3.74E+00
208Tl	2.10E+00

Model Parameters:

General Parameters:

Parameter Name	Description	Distribution
To:Time In Building	The time in the building during the occupancy period	CONSTANT(hr/week)
<u>Default value used</u>		<u>Value</u> 4.50E+01
Tto:Occupancy Period	The duration of the occupancy exposure period	CONSTANT(days)
<u>Default value used</u>		<u>Value</u> 3.65E+02
Vo:Breathing Rate	The average volumetric breathing rate during building occupancy for an 8-hour work day	CONSTANT(m**3/hr)
<u>Default value used</u>		<u>Value</u> 1.40E+00
RFo*:Resuspension Factor	Effective resuspension factor during the occupancy period = RFo * FI	DERIVED(1/m)
<u>Default value used</u>		
GO*:Ingestion Rate	Effective secondary ingestion transfer rate of removable surface activity from building surfaces to the mouth during building occupancy = GO * FI	DERIVED(m**2/hr)
<u>Default value used</u>		
Tstart:Start Time	The start time of the scenario in days	CONSTANT(days)
<u>Default value used</u>		<u>Value</u> 0.00E+00
Tend:End Time	The ending time of the scenario in days	CONSTANT(days)
<u>Default value used</u>		<u>Value</u> 3.65E+02

dt:Time Step Size	The time step size	CONSTANT(days)	
<u>Default value used</u>		<u>Value</u>	3.65E+02
Pstep:Print Step Size	The time steps for the history file. Doses will be written to the history file every n time steps	CONSTANT(none)	
<u>Default value used</u>		<u>Value</u>	1.00E+00
AOExt:External Exposure Area	Minimum surface area to which occupant is exposed via external radiation during occupancy period	CONSTANT(m**2)	
<u>Default value used</u>		<u>Value</u>	1.00E+01
AOInh:Inhalation Exposure Area	Minimum surface area to which occupant is exposed via inhalation during occupancy period	CONSTANT(m**2)	
<u>Default value used</u>		<u>Value</u>	1.00E+01
AOIng:Secondary Ingestion Exposure Area	Minimum surface area to which occupant is exposed via secondary ingestion during occupancy period	CONSTANT(m**2)	
<u>Default value used</u>		<u>Value</u>	1.00E+01
AO:Exposure Area	Minimum surface area to which occupant is exposed during the occupancy period	DERIVED(m**2)	
<u>Default value used</u>			
Fl:Loose Fraction	Fraction of surface contamination available for resuspension and ingestion	CONSTANT(none)	
<u>Default value used</u>		<u>Value</u>	1.00E-01
Rfo:Loose Resuspension Factor	Resuspension factor for loose contamination	CONTINUOUS LOGARITHMIC(1/m)	
<u>Default value used</u>		<u>Value</u>	<u>Probability</u>
		9.12E-06	0.00E+00
		1.10E-04	7.67E-01
		1.46E-04	9.09E-01
		1.62E-04	9.50E-01
		1.85E-04	9.90E-01
		1.90E-04	1.00E+00
GO:Loose Ingestion Rate	The secondary ingestion transfer rate of loose removable surface activity from building surfaces to the mouth during building occupancy	CONSTANT(m**2/hr)	
<u>Default value used</u>		<u>Value</u>	1.10E-04

Correlation Coefficients:None**Summary Results:**

90.00% of the 6400 calculated TEDE values are < 2.46E+01 mrem/year .

The 95 % Confidence Interval for the 0.9 quantile value of TEDE is 2.43E+01 to 2.50E+01 mrem/year

Detailed Results:

Note: All reported values are the upper bound of the symmetric 95% confidence interval for the 0.9 quantile value

Concentration at Time of Peak Dose:

Nuclide	Surface Concentration
---------	-----------------------

(dpm/100 cm**2)

232Th	5.84E+00
228Ra	5.84E+00
228Ac	5.84E+00
228Th	5.84E+00
224Ra	5.84E+00
220Rn	5.84E+00
216Po	5.84E+00
212Pb	5.84E+00
212Bi	5.84E+00
212Po	3.74E+00
208Tl	2.10E+00

Pathway Dose from All Nuclides (mrem)

All Pathways Dose	External	Inhalation	Secondary Ingestion
2.50E+01	1.91E-02	2.49E+01	3.37E-02

Radionuclide Dose through All Active Pathways (mrem)

Nuclide	All Pathways Dose
232Th	2.06E+01
228Ra	6.96E-02
228Ac	1.15E-02
228Th	4.29E+00
224Ra	4.21E-02
220Rn	3.12E-06
216Po	1.36E-07
212Pb	3.59E-03
212Bi	1.74E-03
212Po	0.00E+00
208Tl	8.80E-03
All Nuclides	2.50E+01

Dose from Each Nuclide through Each Active Pathway (mrem)

Nuclide	External	Inhalation	Secondary Ingestion
232Th	4.52E-06	2.06E+01	1.85E-02
228Ra	0.00E+00	5.99E-02	9.72E-03
228Ac	7.60E-03	3.86E-03	1.47E-05
228Th	1.93E-05	4.28E+00	2.68E-03
224Ra	7.84E-05	3.96E-02	2.48E-03
220Rn	3.12E-06	0.00E+00	0.00E+00

216Po	1.36E-07	0.00E+00	0.00E+00
212Pb	1.17E-03	2.12E-03	3.08E-04
212Bi	1.46E-03	2.70E-04	7.19E-06
212Po	0.00E+00	0.00E+00	0.00E+00
208Tl	8.80E-03	0.00E+00	0.00E+00

ATTACHMENT 2

Survey Unit Listing

Survey Unit	Type / Location	Class	Est. Standard Deviation (cpm/100cm2)		Test
			Survey Unit	Reference Area	
4D	Structure / 4D	Class 3	8	N/A	Sign
			0.1	0.1	WRS
4E1	Structure / 4E	Class 3	5	N/A	Sign
			0.1	0.2	WRS
16I	Structure / 16	Class 3	5	N/A	Sign
			0.1	0.1	WRS
17I	Structure / 17	Class 3	7	N/A	Sign
			0.1	0.1	WRS
18I	Structure / 18	Class 3	6	N/A	Sign
			0.1	0.2	WRS
21I	Structure / 21	Class 3	6	N/A	Sign
			0.1	0.1	WRS
22	Structure / 22	Class 3	6	N/A	Sign
			0.1	0.1	WRS
23	Structure / 23	Class 3	2.8	N/A	Sign
			0.1	0.1	WRS
25I	Structure / 25A	Class 3	3.7	N/A	Sign
			0.1	0.1	WRS
25B	Structure / 25B	Class 3	5.7	N/A	Sign
			0.1	0.2	WRS
27I	Structure / 27	Class 3	13.5	N/A	Sign
			0.1	0.1	WRS
29I	Structure / 29	Class 3	7.7	N/A	Sign
			0.1	0.2	WRS
31I	Structure / 31	Class 3	7	N/A	Sign
			0.1	0.1	WRS
SW1	Structure / Southeast, hallway	Class 3	5.0	N/A	Sign
			0.1	0.1	WRS
SW2	Structure / Southeast, hallway	Class 3	4.3	N/A	Sign
			0.1	0.1	WRS
SW3	Structure / Southwest, foyer	Class 3	3.8	N/A	Sign
			0.1	0.1	WRS
SW4	Structure / Southwest, hallway	Class 3	4.8	N/A	Sign
			0.1	0.2	WRS
SW5	Structure / Northwest, hallway	Class 3	4	N/A	Sign
			0.2	0.1	WRS
SW6	Structure / Northwest, hallway	Class 3	3.7	N/A	Sign
			0.1	0.2	WRS

Survey Unit Listing

Survey Unit	Type / Location	Class	Est. Standard Deviation (cpm/100cm ²)		Test
			Survey Unit	Reference Area	
SW7	Structure / Northwest, hallway	Class 3	6	N/A	Sign
			0.1	0.1	WRS
N1	Structure / North, hallway	Class 3	4	N/A	Sign
			0.1	0.2	WRS
N2	Structure / North, hallway	Class 3	3.3	N/A	Sign
			0.1	0.1	WRS
NE1	Structure / N, northeast hallway	Class 3	11	N/A	Sign
			0.1	0.1	WRS
NE2	Structure / Northeast hallway	Class 3	5.5	N/A	Sign
			0.1	0.2	WRS
NE3	Structure / Northeast hallway	Class 3	8	N/A	Sign
			0.2	0.2	WRS
NE4	Structure / Northeast hallway	Class 3	8	N/A	Sign
			0.1	0.1	WRS
NE5	Structure / Northeast hallway	Class 3	4.9	N/A	Sign
			0.1	0.1	WRS
NE6	Structure / Northeast hallway	Class 3	4	N/A	Sign
			0.1	0.1	WRS
NE7	Structure / Northeast hallway	Class 3	4.7	N/A	Sign
			0.1	0.1	WRS
17C2	Surface soil / 15B/15C	Class 1	1,589cpm	1,655cpm	WRS/ Quantile

ATTACHMENT 3

Contaminants Not Present in Background

Survey Unit	Relative Shift (Δ/σ)	Nr. Data Points	Survey Unit	Relative Shift (Δ/σ)	Nr. Data Points
4D	2.6	11	SW3	2.9	11
4EI	3.0	11	SW4	2.3	12
16I	2.1	12	SW5	2.7	11
17I	3.0	11	SW6	2.9	11
18I	3.0	11	SW7	2.7	11
21I	2.7	11	N1	2.7	11
22	2.7	11	N2	2.2	12
23	2.8	11	NE1	1.9	12
25I	2.9	11	NE2	2.9	11
25B	2.8	11	NE3	2.6	12
27I	1.5	15	NE4	2.6	12
29I	2.7	11	NE5	2.2	12
31I	2.2	12	NE6	2.7	11
SW1	2.2	12	NE7	2.3	12
SW2	2.6	11			

ATTACHMENT 4

Contaminants Present in Background

Survey Unit	Relative Shift (Δ/σ)	Nr. Data Points	Survey Unit	Relative Shift (Δ/σ)	Nr. Data Points
4D	2.5	9	SW3	2.5	9
4EI	1.6	13	SW4	1.6	13
16I	2.5	9	SW5	1.6	13
17I	2.5	9	SW6	1.6	13
18I	1.6	13	SW7	2.5	9
21I	2.5	9	N1	1.6	13
22	2.5	9	N2	2.5	9
23	2.5	9	NE1	2.5	9
25I	2.5	9	NE2	1.6	13
25B	1.6	13	NE3	1.2	19
27I	2.5	9	NE4	2.5	9
29I	1.6	13	NE5	2.5	9
31I	2.5	9	NE6	2.5	9
SW1	2.5	9	NE7	2.5	9
SW2	2.5	9	17C2	0.6	52

ATTACHMENT 5

Listing of Reference Areas

4A

8

9A

10

11

19-A

20

25

33

36

Center hallway

South hallway

Northwest hallway

Men's Restroom

Entrance foyer

ATTACHMENT 6

Reference Area Matrices and Associated Measurements - Alpha/Beta Mode

Scaler/rate meter: L2221 Detector: 43-37B
 SN: 168577 SN: 190909

	Mastic black on concrete	Concrete floor	Concrete floor R-20	Concrete floor painted	Plastic covering concrete flr	Particle board	Plywood board	Vinyl tile #1	Vinyl tile #2	Vinyl tile #3	Vinyl tile #4	Vinyl tile #5
Counts/minute	1163 ± 35	1087 ± 33	1189 ± 110	1050 ± 23	1206 ± 34	878 ± 17	1025 ± 33	935 ± 21	888 ± 26	925 ± 32	908 ± 22	1132 ± 15
MDCR	1934	1832	1969	1783	1992	1548	1749	1627	1562	1613	1590	1893

	Vinyl tile #6	Vinyl tile #7	Vinyl tile #8	Vinyl tile #9	Vinyl tile #10	Vinyl tile #11	Vinyl tile #12	Vinyl tile #13	Vinyl tile #14	Vinyl tile #15	Vinyl tile #16	Vinyl tile #17
Counts/minute	906 ± 20	945 ± 27	1129 ± 38	965 ± 15	960 ± 22	972 ± 22	900 ± 18	906 ± 28	973 ± 30	943 ± 20	949 ± 25	929 ± 15
MDCR	1587	1640	1889	1668	1661	1677	1579	1587	1679	1638	1546	1618

	Vinyl tile #18	Vinyl tile #19	Vinyl tile #20	Soapstone benchtop	Soapstone shiny benchtop	Casework horizontal	Casework vertical	Stainless steel horizontal
Counts/minute	904 ± 31	925 ± 17	944 ± 23	1050 ± 11	951 ± 21	864 ± 25	617 ± 21	902 ± 25
MDCR	1584	1613	1639	1783	1649	1529	1179	1581

	Window glass	Shelf, wood painted	Shelf, metal vertical	Shelf, metal horizontal	Door, steel	Drywall painted	Concrete over cinderblock	Concrete block wall, painted	Concrete wall, painted
Counts/minute	759 ± 19	972 ± 33	674 ± 17	862 ± 27	622 ± 20	834 ± 22	901 ± 28	1126 ± 25	671 ± 22
MDCR	1382	1677	1261	1526	1186	1487	1580	1885	1257

	Plastic light cover	Ceiling tile	Ceiling tile drywall
Counts/minute	944 ± 26	1720 ± 38	1106 ± 12
MDCR	1639	2658	1858

Reference Area Matrices and Associated Measurements - Alpha/Beta Mode

Scaler/rate meter: L2221 Detector: 43-37B
 SN: 190169 SN: 190672

	Mastic black on concrete	Concrete floor	Concrete floor painted	Plastic covering concrete flr	Particle board	Plywood board	Vinyl tile #1	Vinyl tile #2	Vinyl tile #3	Vinyl tile #4	Vinyl tile #5	Vinyl tile #6
Counts/minute	1186 ± 19	1113 ± 20	1022 ± 22	1217 ± 16	895 ± 17	960 ± 24	919 ± 20	859 ± 18	892 ± 37	888 ± 19	1057 ± 22	884 ± 29
MDCR	1965	1868	1745	2006	1572	1661	1605	1522	1568	1562	1792	1557

	Vinyl tile #7	Vinyl tile #8	Vinyl tile #9	Vinyl tile #10	Vinyl tile #11	Vinyl tile #12	Vinyl tile #13	Vinyl tile #14	Vinyl tile #15	Vinyl tile #16	Vinyl tile #17	Vinyl tile #18
Counts/minute	925 ± 28	1123 ± 28	944 ± 19	999 ± 26	973 ± 30	840 ± 28	879 ± 27	951 ± 33	940 ± 24	910 ± 34	901 ± 21	878 ± 24
MDCR	1613	1881	1639	1714	1679	1496	1550	1649	1634	1592	1580	1548

	Vinyl tile #19	Vinyl tile #20	Soapstone benchtop	Soapstone black, shiny benchtop	Casework horizontal	Casework vertical	Stainless steel horizontal
Counts/minute	897 ± 20	927 ± 26	963 ± 28	895 ± 21	861 ± 27	578 ± 22	806 ± 20
MDCR	1575	1616	1665	1572	1525	1122	1448

	Window glass	Shelf, wood painted	Shelf, metal vertical	Shelf, metal horizontal	Door, steel	Drywall painted	Concrete over cinderblock	Concrete wall, painted	Concrete block wall painted
Counts/minute	735 ± 22	974 ± 21	659 ± 18	875 ± 18	602 ± 17	798 ± 70	884 ± 18	692 ± 27	1065 ± 20
MDCR	1348	1680	1240	1544	1157	1437	1501	1287	1803

	Plastic light cover	Ceiling tile	Ceiling tile drywall	Ceiling concrete
Counts/minute	968 ± 22	1605 ± 18	1098 ± 25	1112 ± 28
MDCR	1672	2511	1848	1866

Reference Area Matrices and Associated Measurements - Alpha/Beta Mode

Scaler/rate meter: L2221 Detector: 43-37B
SN: 169217 SN: 190946

	Mastic black on concrete	Concrete floor	Concrete floor painted	Plastic covering concrete flr	Particle board	Plywood board	Vinyl tile #1	Vinyl tile #2	Vinyl tile #3	Vinyl tile #4	Vinyl tile #5	Vinyl tile #6
Counts/minute	1070 ± 12	1102 ± 30	1008 ± 15	1172 ± 19	877 ± 15	1017 ± 30	923 ± 25	854 ± 16	889 ± 22	901 ± 26	1079 ± 18	852 ± 25
MDCR	1810	1853	1726	1946	1547	1738	1610	1515	1563	1580	1822	1512

	Vinyl tile #7	Vinyl tile #8	Vinyl tile #9	Vinyl tile #10	Vinyl tile #11	Vinyl tile #12	Vinyl tile #13	Vinyl tile #14	Vinyl tile #15	Vinyl tile #16	Vinyl tile #17	Vinyl tile #18
Counts/minute	988 ± 13	1064 ± 24	948 ± 22	904 ± 19	919 ± 19	845 ± 20	933 ± 20	940 ± 23	942 ± 18	941 ± 23	850 ± 24	857 ± 23
MDCR	1699	1802	1645	1584	1605	1503	1624	1634	1636	1635	1510	1519

	Vinyl tile #19	Vinyl tile #20	Soapstone benchtop	Soapstone benchtop shiny	Casework horizontal	Casework vertical	Stainless steel horizontal
Counts/minute	855 ± 32	965 ± 16	928 ± 18	945 ± 18	859 ± 26	580 ± 13	844 ± 18
MDCR	1516	1668	1617	1640	1522	1125	1501

	Window glass	Shelf, wood painted	Shelf, metal vertical	Shelf, metal horizontal	Door, steel	Drywall painted	Concrete over cinderblock	Concrete block wall painted	Concrete wall painted
Counts/minute	766 ± 20	958 ± 27	645 ± 19	838 ± 22	609 ± 19	905 ± 26	837 ± 24	1068 ± 17	667 ± 17
MDCR	1392	1658	1220	1493	1167	1586	1491	1807	1251

	Plastic light cover	Ceiling tile	Ceiling tile drywall
Counts/minute	950 ± 18	1716 ± 24	1079 ± 33
MDCR	1647	2653	1822

Reference Area Matrices and Associated Measurements - Alpha/Beta Mode

Scaler/rate meter: L2221 Detector: 43-37B
SN: 197770 SN: 92765

	Mastic black on concrete	Concrete floor	Concrete floor painted	Plastic covering concrete flr	Particle board	Plywood board	Vinyl tile #1	Vinyl tile #2	Vinyl tile #3	Vinyl tile #4	Vinyl tile #5	Vinyl tile #6
Counts/minute	1196 ± 26	1141 ± 31	1059 ± 22	1264 ± 26	879 ± 23	1017 ± 19	951 ± 34	864 ± 17	943 ± 24	942 ± 25	1141 ± 21	929 ± 28
MDCR	1978	1905	1795	2068	1550	1738	1649	1529	1638	1636	1905	1618

	Vinyl tile #7	Vinyl tile #8	Vinyl tile #9	Vinyl tile #10	Vinyl tile #11	Vinyl tile #12	Vinyl tile #13	Vinyl tile #14	Vinyl tile #15	Vinyl tile #16	Vinyl tile #17	Vinyl tile #18
Counts/minute	920 ± 34	1150 ± 29	962 ± 24	890 ± 24	949 ± 32	872 ± 22	884 ± 15	966 ± 35	962 ± 30	920 ± 21	906 ± 21	920 ± 24
MDCR	1606	1917	1664	1565	1646	1540	1557	1669	1664	1606	1587	1606

	Vinyl tile #19	Vinyl tile #20	Ceramic tile	Soapstone benchtop	Soapstone benchtop shiny	Casework horizontal	Casework vertical	Stainless steel horizontal	Stainless steel vertical
Counts/minute	912 ± 23	938 ± 18	2783 ± 32	1005 ± 28	883 ± 21	853 ± 22	590 ± 16	877 ± 25	664 ± 13
MDCR	1595	1631	3976	1722	1555	1514	1139	1547	1247

	Window glass	Wood painted	Shelf, metal vertical	Shelf, metal horizontal	Door, steel	Drywall painted	Concrete over cinderblock	Concrete wall painted	Concrete block wall, painted
Counts/minute	754 ± 25	962 ± 31	681 ± 25	896 ± 20	600 ± 20	797 ± 43	862 ± 30	740 ± 16	1097 ± 26
MDCR	1375	1664	1271	1573	1154	1436	1526	1355	1846

	Plastic light cover	Ceiling tile	Ceiling tile drywall
Counts/minute	952 ± 23	1650 ± 32	1065 ± 23
MDCR	1650	2569	1803

Reference Area Matrices and Associated Measurements - Alpha Mode

Scaler/rate meter: L2221 Detector: 43-37A
SN: 168577 SN: 190909

	Mastic black on concrete	Concrete floor	Concrete floor painted	Plastic covering concrete fir	Particle board	Plywood board	Vinyl tile #1	Vinyl tile #2	Vinyl tile #3	Vinyl tile #4	Vinyl tile #5	Vinyl tile #6
Counts/minute	12 ± 1	18 ± 1	10 ± 1	6 ± 1	4 ± 1	6 ± 1	5 ± 1	4 ± 1	5 ± 1	5 ± 1	5 ± 1	4 ± 1

	Vinyl tile #7	Vinyl tile #8	Vinyl tile #9	Vinyl tile #10	Vinyl tile #11	Vinyl tile #12	Vinyl tile #13	Vinyl tile #14	Vinyl tile #15	Vinyl tile #16	Vinyl tile #17	Vinyl tile #18
Counts/minute	5 ± 1	6 ± 1	4 ± 1	4 ± 1	4 ± 1	5 ± 1	5 ± 1	5 ± 1	6 ± 1	5 ± 1	5 ± 1	6 ± 1

	Vinyl tile #19	Vinyl tile #20	Soapstone benchtop	Soapstone black, shiny benchtop	Drawer metal, horizontal	Casework vertical	Stainless steel horizontal	Stainless steel vertical
Counts/minute	5 ± 1	6 ± 1	8 ± 1	9 ± 1	5 ± 1	6 ± 1	4 ± 1	4 ± 1

	Window glass	Shelf, wood painted	Shelf, metal vertical	Shelf, metal horizontal	Door, steel	Drywall painted	Concrete over cinderblock	Concrete wall, painted	Concrete block wall, painted
Counts/minute	6 ± 1	6 ± 1	6 ± 1	6 ± 1	4 ± 1	6 ± 1	7 ± 2	6 ± 1	7 ± 1

	Plastic light cover	Ceiling tile	Ceiling tile drywall
Counts/minute	5 ± 1	9 ± 1	5 ± 1

Reference Area Matrices and Associated Measurements - Alpha Mode

Scaler/rate meter: L2221 Detector: 43-37A
SN: 190169 SN: 190672

	Mastic black on concrete	Concrete floor	Concrete floor painted	Plastic covering concrete fir	Particle board	Plywood board	Vinyl tile #1	Vinyl tile #2	Vinyl tile #3	Vinyl tile #4	Vinyl tile #5	Vinyl tile #6
Counts/minute	11 ± 1	18 ± 1	9 ± 1	7 ± 1	4 ± 1	5 ± 1	5 ± 1	4 ± 1	5 ± 1	5 ± 1	5 ± 1	5 ± 1

	Vinyl tile #7	Vinyl tile #8	Vinyl tile #9	Vinyl tile #10	Vinyl tile #11	Vinyl tile #12	Vinyl tile #13	Vinyl tile #14	Vinyl tile #15	Vinyl tile #16	Vinyl tile #17	Vinyl tile #18
Counts/minute	5 ± 1	7 ± 1	5 ± 1	6 ± 1	5 ± 1	6 ± 1	6 ± 1	6 ± 1	6 ± 1	5 ± 1	5 ± 1	6 ± 1

	Vinyl tile #19	Vinyl tile #20	Soapstone benchtop	Soapstone black, shiny benchtop	Drawer metal, horizontal	Casework vertical	Stainless steel horizontal
Counts/minute	5 ± 1	6 ± 1	8 ± 1	9 ± 1	6 ± 1	6 ± 1	4 ± 1

	Window glass	Shelf, wood painted	Shelf, metal vertical	Shelf, metal horizontal	Door, steel	Drywall painted	Concrete over cinderblock	Concrete wall, painted	Concrete block wall painted
Counts/minute	6 ± 1	5 ± 1	6 ± 1	6 ± 1	6 ± 1	6 ± 1	5 ± 1	5 ± 1	7 ± 1

	Plastic light cover	Ceiling tile	Ceiling tile drywall
Counts/minute	5 ± 1	9 ± 1	5 ± 1

Reference Area Matrices and Associated Measurements - Alpha Mode

Scaler/rate meter: L2221 Detector: 43-37A
SN: 169217 SN: 190946

	Mastic black on concrete	Concrete floor	Concrete floor painted	Plastic covering concrete flr	Particle board	Plywood board	Vinyl tile #1	Vinyl tile #2	Vinyl tile #3	Vinyl tile #4	Vinyl tile #5	Vinyl tile #6
Counts/minute	10 ± 1	15 ± 1	13 ± 2	12 ± 1	4 ± 1	6 ± 1	5 ± 1	5 ± 1	5 ± 1	5 ± 1	4 ± 1	5 ± 1

	Vinyl tile #7	Vinyl tile #8	Vinyl tile #9	Vinyl tile #10	Vinyl tile #11	Vinyl tile #12	Vinyl tile #13	Vinyl tile #14	Vinyl tile #15	Vinyl tile #16	Vinyl tile #17	Vinyl tile #18
Counts/minute	4 ± 1	5 ± 1	4 ± 1	4 ± 1	5 ± 1	5 ± 1	5 ± 1	5 ± 1	4 ± 1	4 ± 1	4 ± 1	4 ± 1

	Vinyl tile #19	Vinyl tile #20	Soapstone benchtop	Soapstone benchtop shiny	Drawer metal, horizontal	Casework horizontal	Casework vertical	Stainless steel horizontal
Counts/minute	5 ± 1	4 ± 1	10 ± 1	8 ± 1	5 ± 1	5 ± 1	6 ± 1	5 ± 1

	Window glass	Shelf, wood painted	Shelf, metal vertical	Shelf, metal horizontal	Door, steel	Drywall painted	Concrete over cinderblock	Concrete wall painted	Concrete block wall painted
Counts/minute	5 ± 1	5 ± 1	6 ± 1	8 ± 1	6 ± 1	5 ± 1	6 ± 1	8 ± 1	10 ± 1

	Plastic light cover	Ceiling tile	Ceiling tile drywall	Ceiling concrete
Counts/minute	4 ± 1	8 ± 1	9 ± 1	11 ± 2

Reference Area Matrices and Associated Measurements - Alpha Mode

Scaler/rate meter: L2221 Detector: 43-37A
 SN: 197770 SN: 92765

	Mastic black on concrete	Concrete floor	Concrete floor painted	Plastic covering concrete fir	Particle board	Plywood board	Vinyl tile #1	Vinyl tile #2	Vinyl tile #3	Vinyl tile #4	Vinyl tile #5	Vinyl tile #6
Counts/minute	9 ± 1	14 ± 2	10 ± 1	8 ± 1	4 ± 1	6 ± 1	5 ± 1	5 ± 1	5 ± 1	6 ± 1	4 ± 1	5 ± 1

	Vinyl tile #7	Vinyl tile #8	Vinyl tile #9	Vinyl tile #10	Vinyl tile #11	Vinyl tile #12	Vinyl tile #13	Vinyl tile #14	Vinyl tile #15	Vinyl tile #16	Vinyl tile #17	Vinyl tile #18
Counts/minute	5 ± 1	6 ± 1	5 ± 1	5 ± 1	5 ± 1	5 ± 1	5 ± 1	5 ± 1	6 ± 1	4 ± 1	6 ± 1	5 ± 1

	Vinyl tile #19	Vinyl tile #20	Ceramic tile	Soapstone benchtop	Soapstone benchtop shiny	Drawer metal, horizontal	Casework horizontal	Casework vertical	Stainless steel horizontal
Counts/minute	6 ± 1	6 ± 1	14 ± 1	11 ± 1	7 ± 1	4 ± 1	6 ± 1	5 ± 1	6 ± 1

	Window glass	Wood painted	Shelf, metal vertical	Shelf, metal horizontal	Door, steel	Drywall painted	Concrete over cinderblock	Concrete wall painted	Cinderblock painted
Counts/minute	5 ± 1	6 ± 1	4 ± 1	6 ± 1	5 ± 1	6 ± 1	5 ± 1	5 ± 1	7 ± 1

	Plastic light cover	Ceiling tile	Ceiling tile drywall
Counts/minute	4 ± 1	8 ± 1	6 ± 1

ATTACHMENT 7

Facility Map

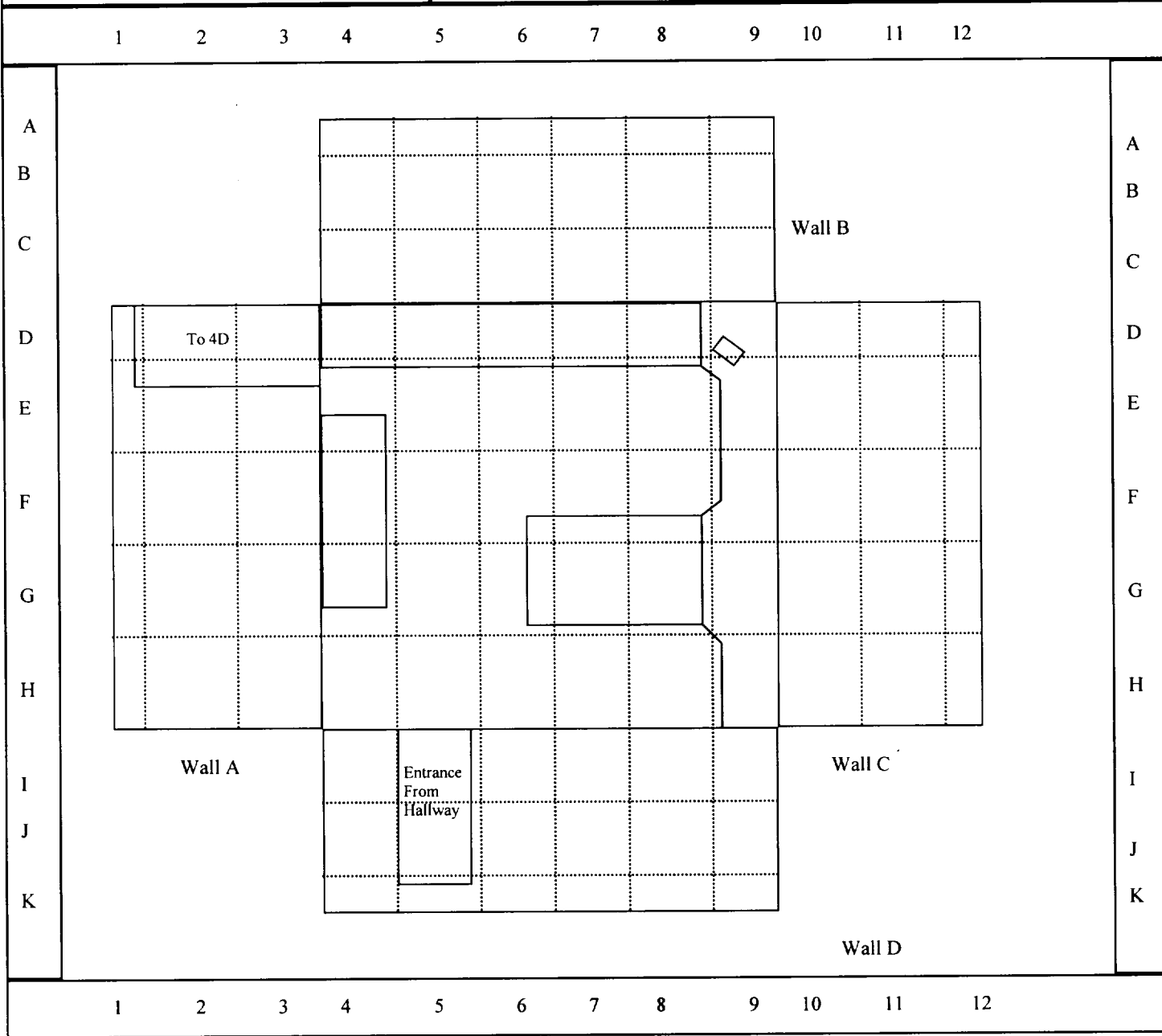
Survey Unit Maps

RADIATION SAFETY SURVEY REPORT	SURVEYOR NAME:	DATE:
	LAB: 4D	TIME:

	1	2	3	4	5	6	7	8	9	10	11	
A								Wall B				A
B												B
C								To 4B				C
D	Wall A							To 4E				D
E												E
F												F
G												G
H												H
I								Wall C				I
J								Entrance From Hallway				J
K								Wall D				K
	1	2	3	4	5	6	7	8	9	10	11	

Comments:

RADIATION SAFETY SURVEY REPORT	SURVEYOR NAME:	DATE:
	LAB: 4EI	TIME:



Comments:

RADIATION SAFETY SURVEY REPORT	SURVEYOR NAME:	DATE:
	LAB: 16I	TIME:

1	2	3	4	5	6	7	8	9	10	11	12	13	14
---	---	---	---	---	---	---	---	---	----	----	----	----	----

A															A
B															B
C															C
D															D
E															E
F															F
G															G
H															H
I															I
J															J
K															K
L															L
M															M
N															N

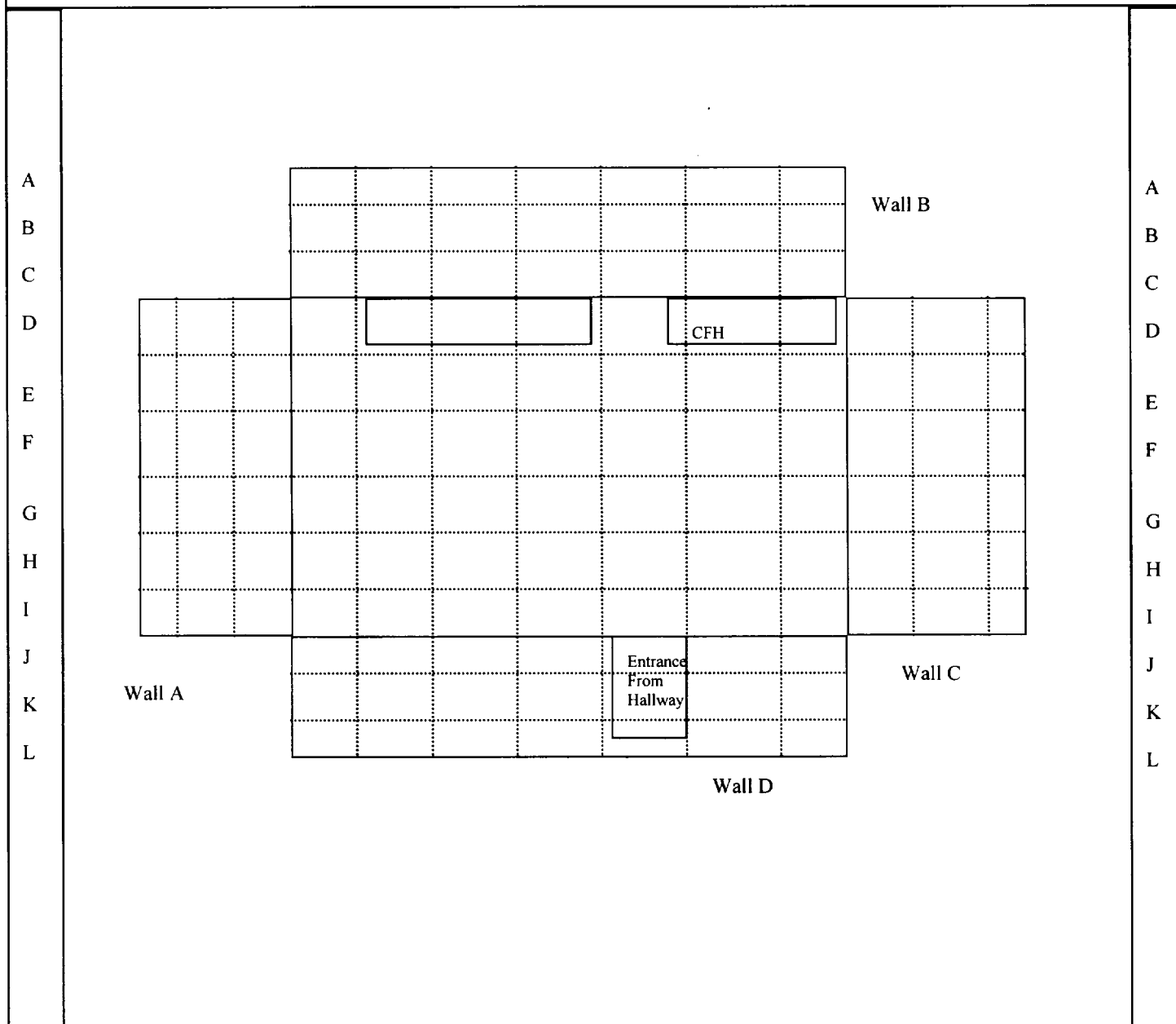
1	2	3	4	5	6	7	8	9	10	11	12	13	14
---	---	---	---	---	---	---	---	---	----	----	----	----	----

Comments:

RADIATION SAFETY SURVEY REPORT				SURVEYOR NAME:						DATE:									
				LAB: 17I						TIME:									
				1	2	3	4	5	6	7	8	9	10	11	12				
A					<div style="border: 1px solid black; width: 100px; height: 100px; margin: 0 auto; position: relative;"> <div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%);">To 35A</div> </div>				<div style="border: 1px solid black; width: 100px; height: 100px; margin: 0 auto; position: relative;"> <div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%);">Wall B</div> </div>				A						
B													B						
C													C						
D													D						
E	<div style="border: 1px solid black; width: 100%; height: 100%; position: relative;"> <div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%);">Wall A</div> </div>				<div style="border: 1px solid black; width: 100%; height: 100%; position: relative;"> <div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%);">Wall C</div> </div>				E										
F									F										
G									G										
H									H										
I									I										
J									J										
K									K										
L									L										
				1	2	3	4	5	6	7	8	9	10	11	12				
Comments:																			

RADIATION SAFETY SURVEY REPORT	SURVEYOR NAME:	DATE:
	LAB: 18I	TIME:

1	2	3	4	5	6	7	8	9	10	11	12	13
---	---	---	---	---	---	---	---	---	----	----	----	----



1	2	3	4	5	6	7	8	9	10	11	12	13
---	---	---	---	---	---	---	---	---	----	----	----	----

Comments:

RADIATION SAFETY SURVEY REPORT

SURVEYOR NAME:

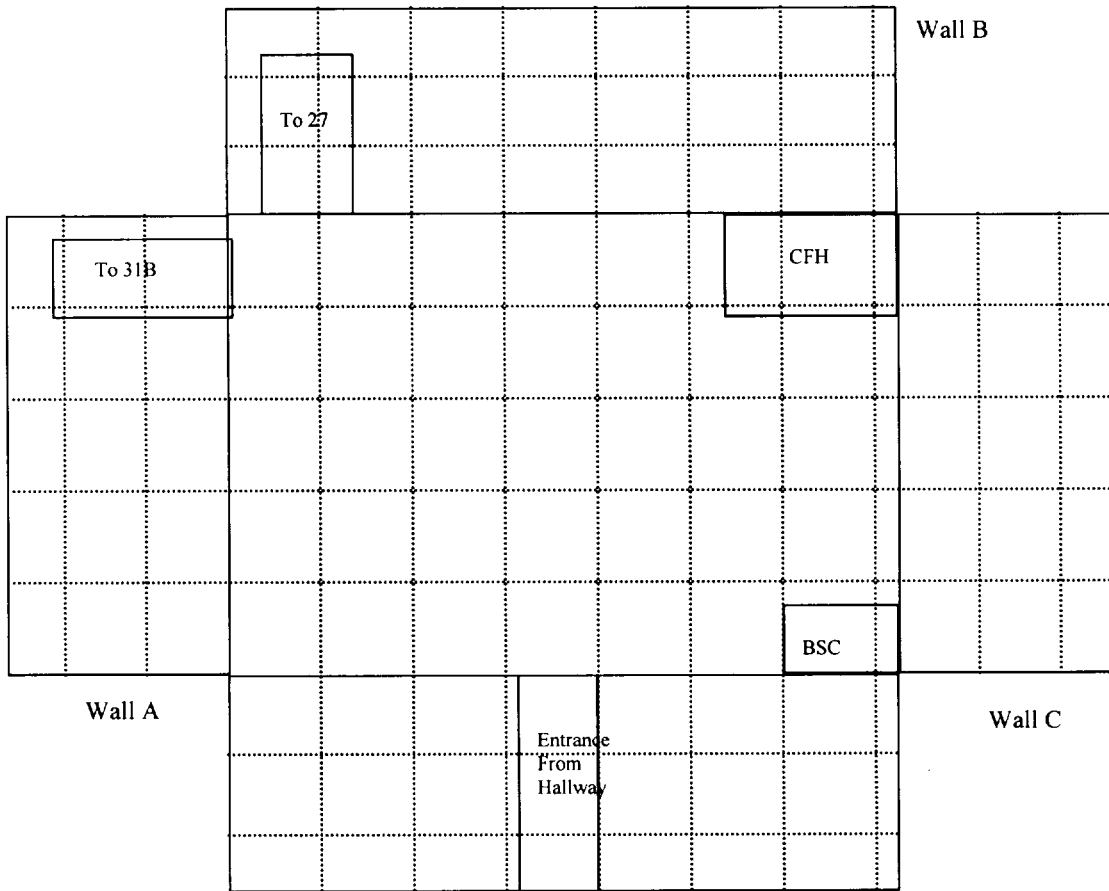
DATE:

LAB: 211

TIME:

1 2 3 4 5 6 7 8 9 10 11 12 13 14

A
B
C
D
E
F
G
H
I
J
K



A
B
C
D
E
F
G
H
I
J
K

1 2 3 4 5 6 7 8 9 10 11 12 13 14

Comments:

RADIATION SAFETY SURVEY REPORT	SURVEYOR NAME:	DATE:
	LAB: 22	TIME:

	1	2	3	4	5	6	7	8	9	10	
A											A
B											
C											
D											
E											
F											
G											
H											
I											
J											
K											
L											
M											
	1	2	3	4	5	6	7	8	9	10	

Comments:

RADIATION SAFETY SURVEY REPORT	SURVEYOR NAME:	DATE:
	LAB: 23	TIME:

	1	2	3	4	5	6	7	8	9	10	
A											A
B											
C											
D											
E											
F											
G											
H											
I											
J											
K											
L											

	1	2	3	4	5	6	7	8	9	10	
--	---	---	---	---	---	---	---	---	---	----	--

Comments:

RADIATION SAFETY SURVEY REPORT	SURVEYOR NAME:	DATE:
	LAB: 25I	TIME:

1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	----	----	----

A													A
B													B
C													C
D													D
E													E
F													F
G													G
H													H
I													I
J													J
K													K
L													L

1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	----	----	----

Comments:

RADIATION SAFETY SURVEY REPORT	SURVEYOR NAME:	DATE:
	LAB: 25B	TIME:

1	2	3	4	5	6	7	8	9
---	---	---	---	---	---	---	---	---

A										A	
B										B	
C										C	
D				Wall B						D	
E				CFH							E
F										F	
G	Wall A						Wall C			G	
H				Entrance from Hallway						H	
I							Wall D			I	

1	2	3	4	5	6	7	8	9	11
---	---	---	---	---	---	---	---	---	----

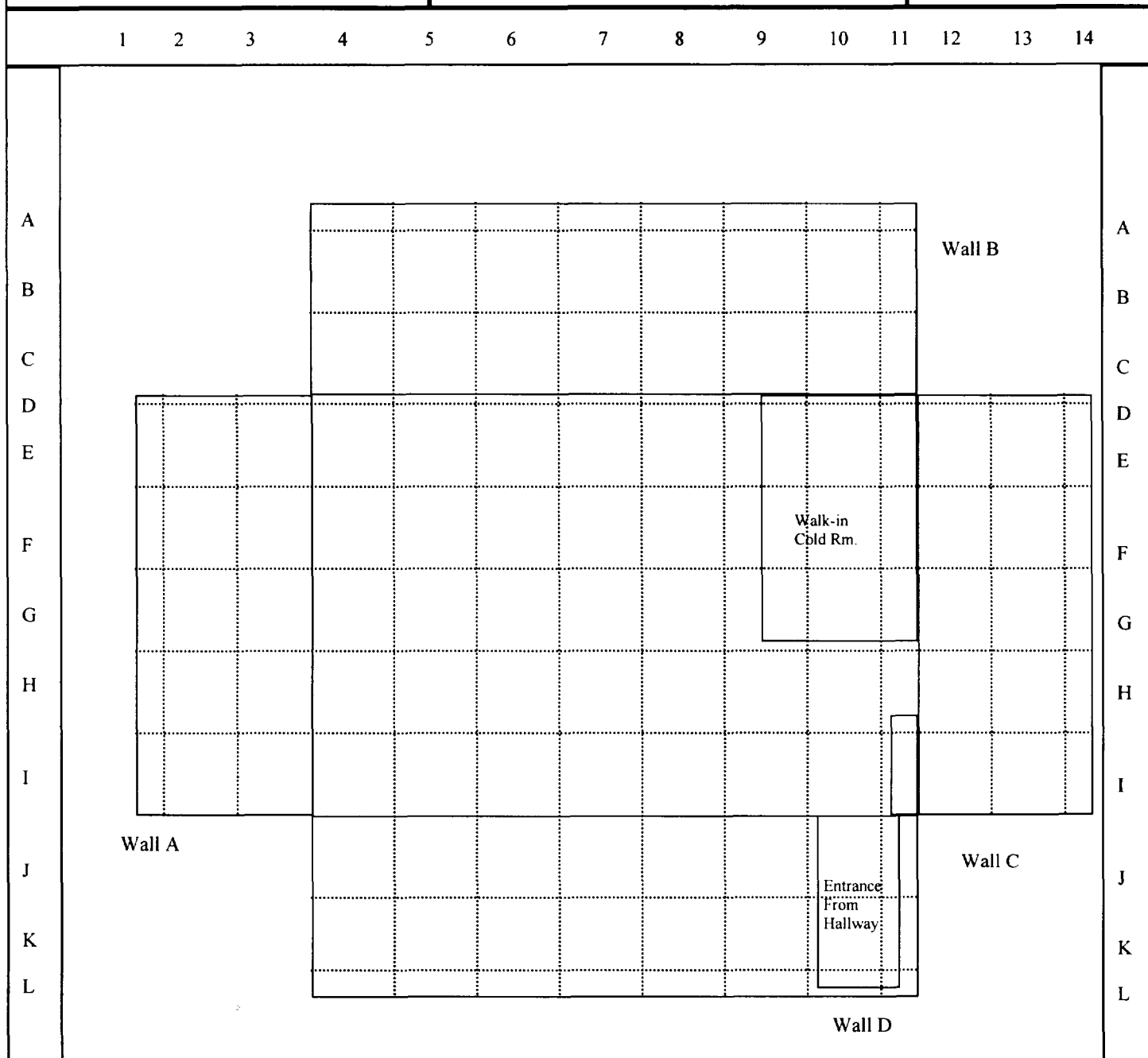
Comments:

RADIATION SAFETY SURVEY REPORT	SURVEYOR NAME:	DATE:
	LAB: 271	TIME:

	1	2	3	4	5	6	7	8	9	10	
A											A
B											
C											
D											
E											
F											
G											
H											
I											
J											
K											
L											
M											
N											
	1	2	3	4	5	6	7	8	9	10	

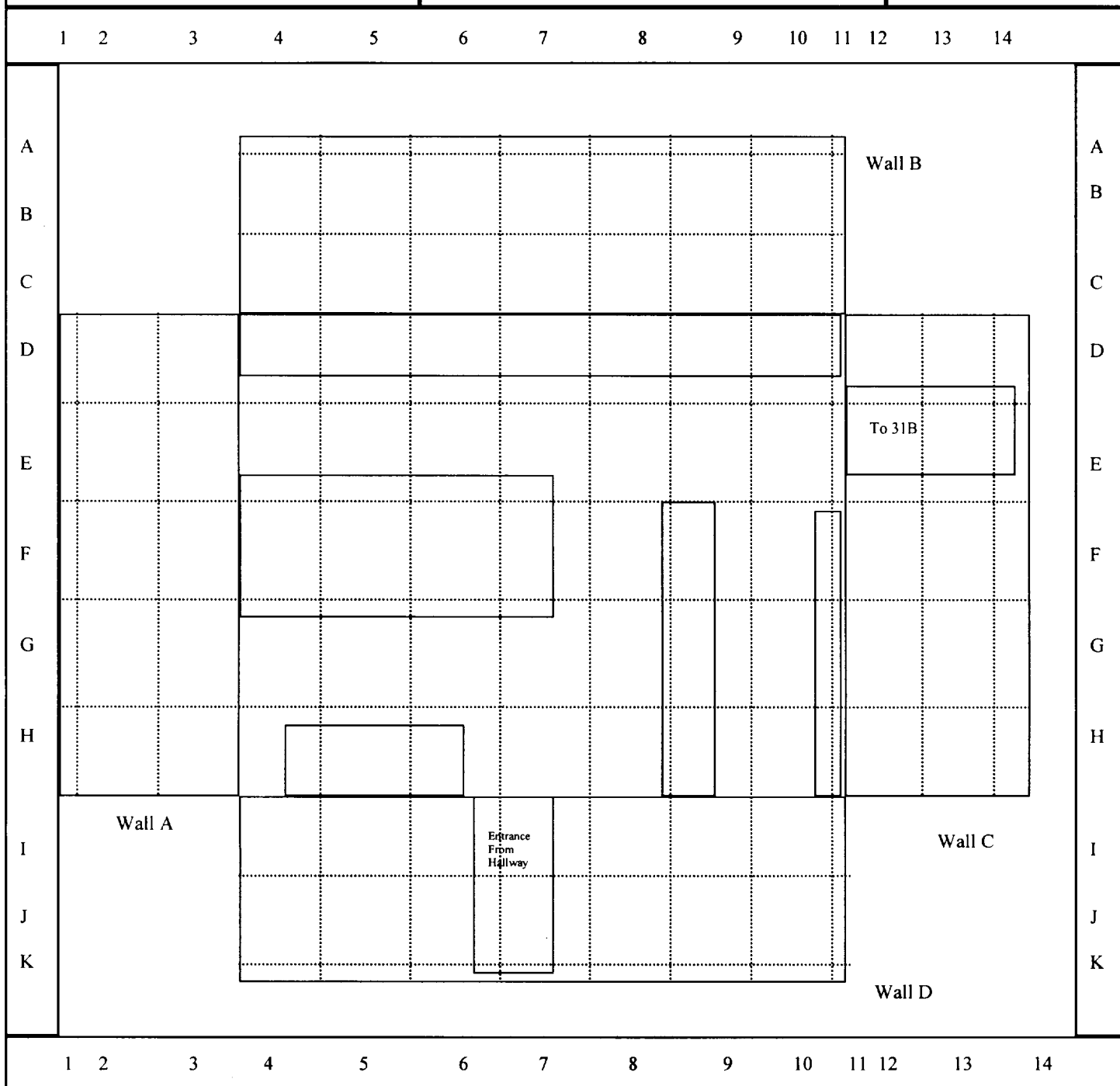
Comments:

RADIATION SAFETY SURVEY REPORT	SURVEYOR NAME:	DATE:
	LAB: 291	TIME:



Comments:

RADIATION SAFETY SURVEY REPORT	SURVEYOR NAME:	DATE:
	LAB: 311	TIME:



Comments:

RADIATION SAFETY SURVEY REPORT			SURVEYOR NAME:					DATE:	
			LAB: SW1					TIME:	

<div style="display: flex; justify-content: space-around; width: 100%;"> 12345678 </div>									
A									A
B									
C									
D									
E									
F									
G									
H									
I									
J									
K									
L									
M									
N									
O									
<div style="display: flex; justify-content: space-around; width: 100%;"> 12345678 </div>									
Comments:									

RADIATION SAFETY SURVEY REPORT	SURVEYOR NAME:	DATE:
	LAB: SW2	TIME:

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

A B C D E F G H	<p style="text-align: center;">SWICorridor</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; width: 150px; height: 150px; position: relative;"> <div style="position: absolute; top: 5px; left: 5px;">North South Corridor</div> </div> <div style="border: 1px solid black; width: 150px; height: 150px; position: relative;"> <div style="position: absolute; top: 5px; left: 5px;">Office 1C This area covered in poly</div> </div> </div> <p style="text-align: center;">Lobby</p>								A B C D E F G H
--------------------------------------	--	--	--	--	--	--	--	--	--------------------------------------

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

Comments:

RADIATION SAFETY SURVEY REPORT

SURVEYOR NAME:

DATE:

LAB: SW3

TIME:

1

2

3

4

5

6

7

8

9

10

11

A

B

C

D

E

F

G

H

A

B

C

D

E

F

G

H

Building
Entrance

Office 1

1

2

3

4

5

6

7

8

9

10

11

Comments:

RADIATION SAFETY SURVEY REPORT

SURVEYOR NAME:

DATE:

LAB: SW4

TIME:

1 2 3 4 5 6 7 8

A
B
C
D
E
F
G
H
I
J
K
L

A
B
C
D
E
F
G
H
I
J
K
L

SW3 Corridor

SW3 (Lobby)

Men's Restroom

Women's
Restroom

Office 40

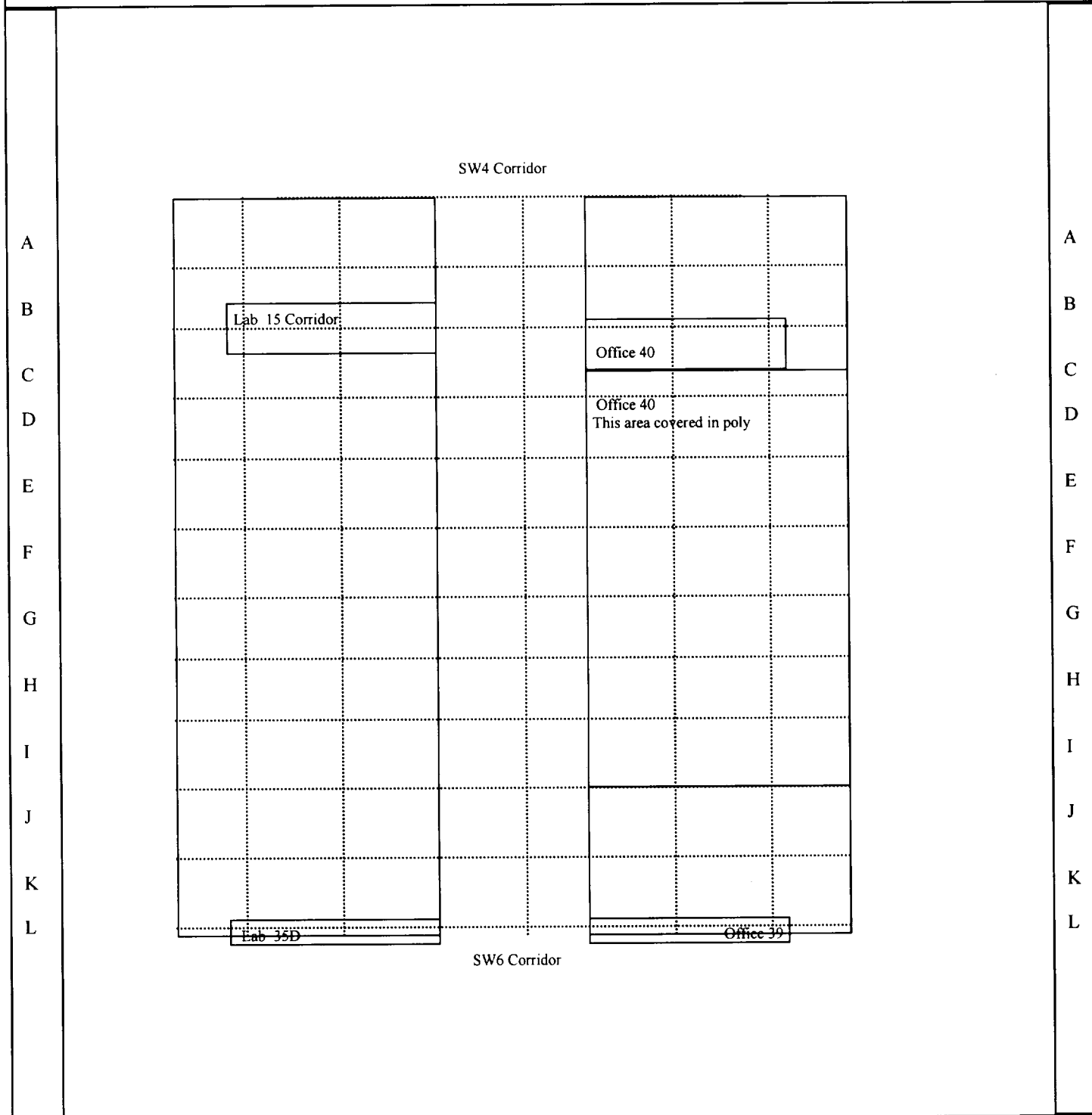
SW5 Corridor

1 2 3 4 5 6 7 8

Comments:

RADIATION SAFETY SURVEY REPORT	SURVEYOR NAME:	DATE:
	LAB: SW5	TIME:

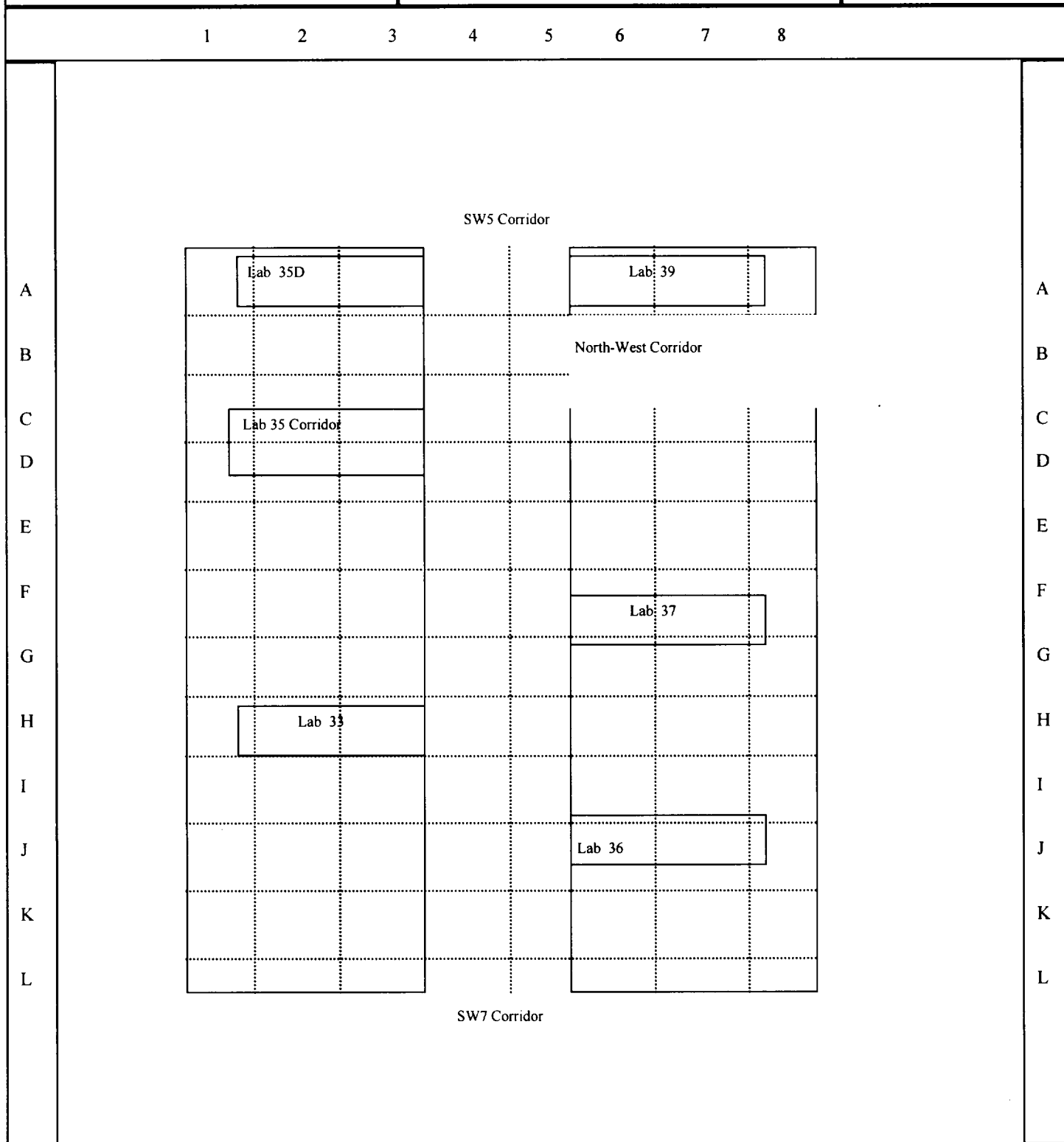
1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---



1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

Comments:

RADIATION SAFETY SURVEY REPORT	SURVEYOR NAME:	DATE:
	LAB: SW6	TIME:



1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

Comments:

RADIATION SAFETY SURVEY REPORT	SURVEYOR NAME:	DATE:
	LAB: SW7	TIME:

	1	2	3	4	5	6	7	8	
A	<div style="text-align: center;">SW6 Corridor</div> <p>Lab 31C</p> <p>Lab 34</p> <p>Lab 31</p> <p>Lab 32</p> <p>Lab 30</p> <p>Lab 29</p> <p>NE Corridor</p>								

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

Comments:

RADIATION SAFETY SURVEY REPORT	SURVEYOR NAME:	DATE:
	LAB: NI	TIME:

	1	2	3	4	5	6	7	8	
A	<div style="text-align: center;">NE1 Corridor</div>								
B									
C									
D									
E									
F									
G									
H									
I									
J									
K									
L									

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

Comments:

RADIATION SAFETY SURVEY REPORT	SURVEYOR NAME:	DATE:
	LAB: N2	TIME:

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

A B C D E F G H									A B C D E F G H
--------------------------------------	--	--	--	--	--	--	--	--	--------------------------------------

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

Comments:

RADIATION SAFETY SURVEY REPORT

SURVEYOR NAME:

DATE:

LAB: NE1

TIME:

5 6 7 8 9 10 11

A

B

C

D

E

H

I

J

A

B

C

D

E

H

I

J

Lab
24

NE2
Corridor

Lab
21

5 6 7 8 9 10 11

1 2 3 4 5

A

B

C

D

E

F

G

A

B

C

D

E

F

G

Lab 25

Corridor continues to the right

12 13 14

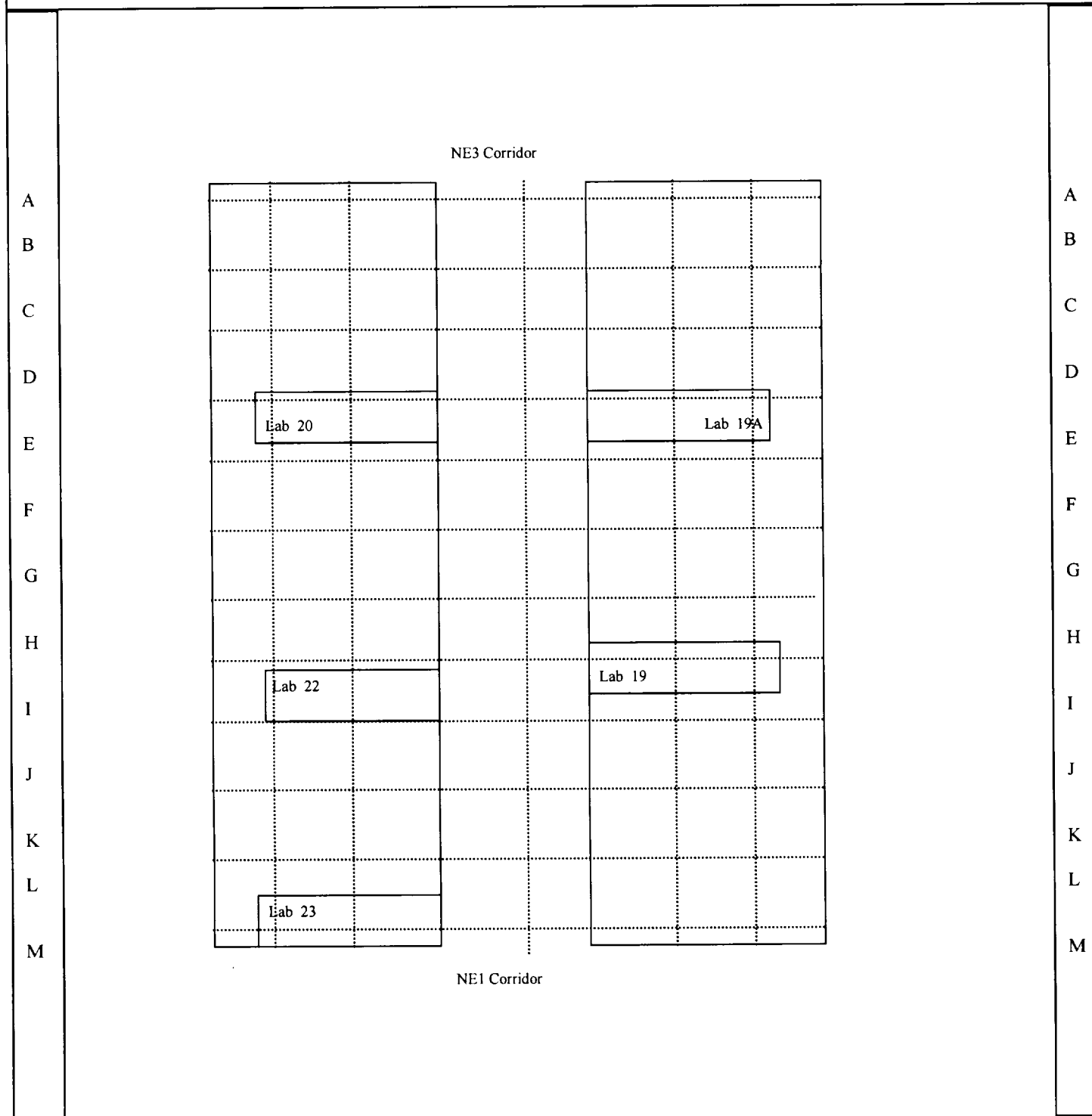
To N1 Corridor

1 2 3 4 5 12 13 14

Comments:

RADIATION SAFETY SURVEY REPORT	SURVEYOR NAME:	DATE:
	LAB: NE2	TIME:

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---



1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

Comments:

RADIATION SAFETY SURVEY REPORT	SURVEYOR NAME:	DATE:
	LAB: NE3	TIME:

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

A
B
C
D
E
F

NE4Corridor

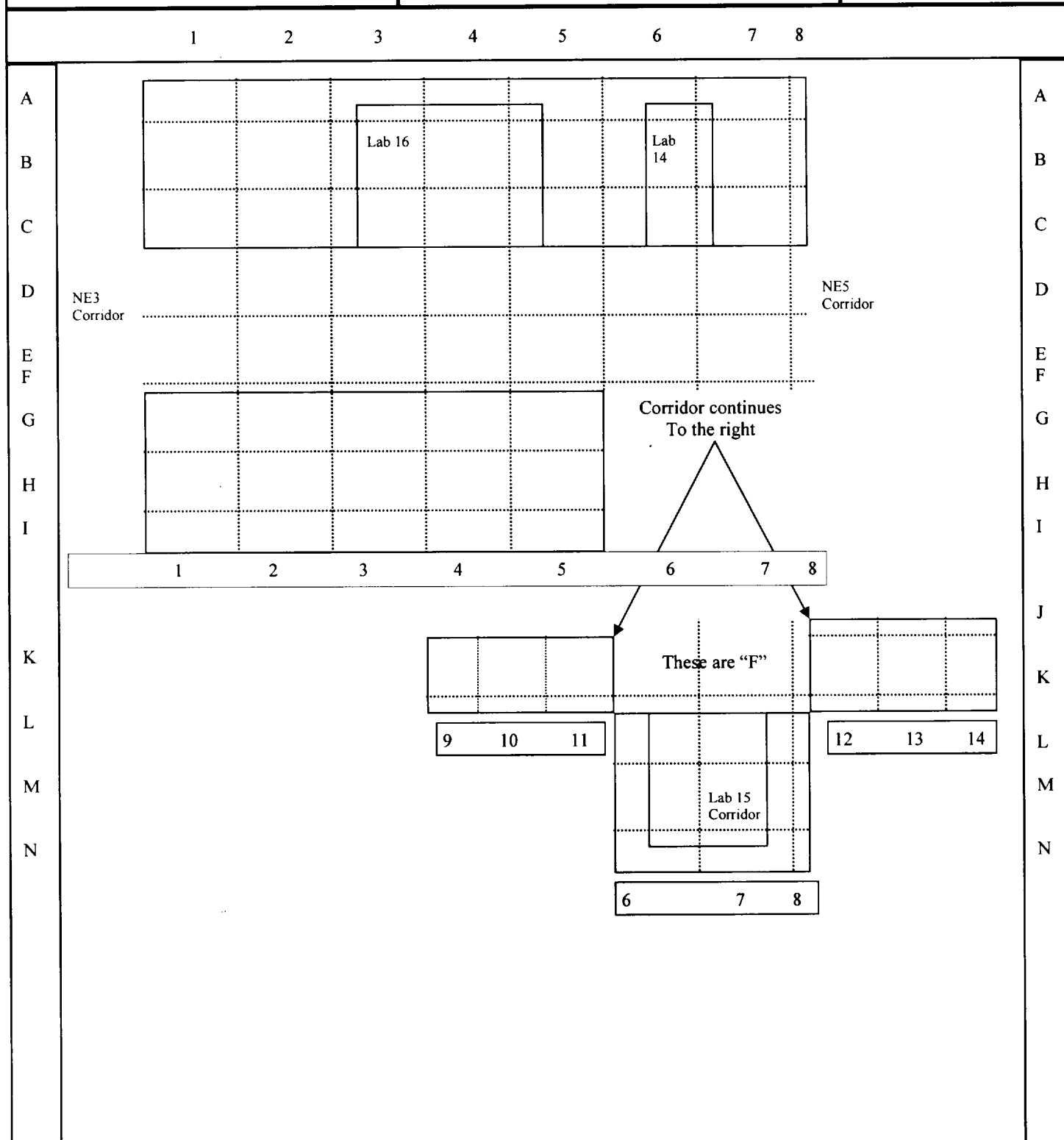
NE2 Corridor

A
B
C
D
E
F

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

Comments:

RADIATION SAFETY SURVEY REPORT	SURVEYOR NAME:	DATE:
	LAB: NE4	TIME:



Comments:

RADIATION SAFETY SURVEY REPORT	SURVEYOR NAME:	DATE:
	LAB: NE5	TIME:

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

A B C D E F G H I J K L	<p style="text-align: center;">NE6 Corridor</p>								A B C D E F G H I J K L
--	---	--	--	--	--	--	--	--	--

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

Comments:

RADIATION SAFETY SURVEY REPORT	SURVEYOR NAME:	DATE:
	LAB: NE6	TIME:

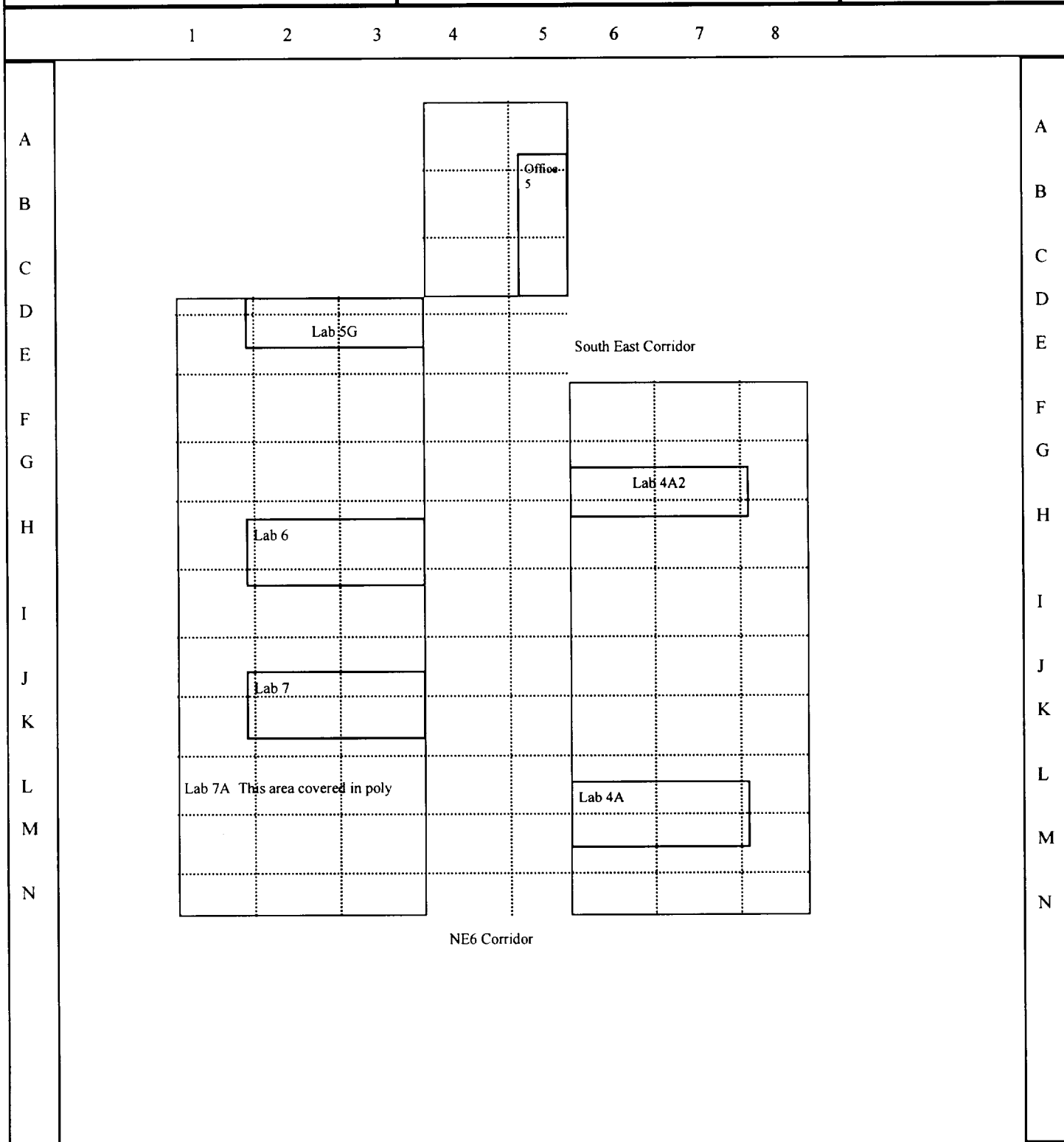
1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

A B C D E F G H I J K L	<p style="text-align: center;">NE7 Corridor</p> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%;"> <table border="1"> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table> <p style="text-align: center;">North-South Corridor</p> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%;"> <table border="1"> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table> <p style="text-align: center;">NE5 Corridor</p> </div> </div>																																																																																																																																																																																																								A B C D E F G H I J K L

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

Comments:

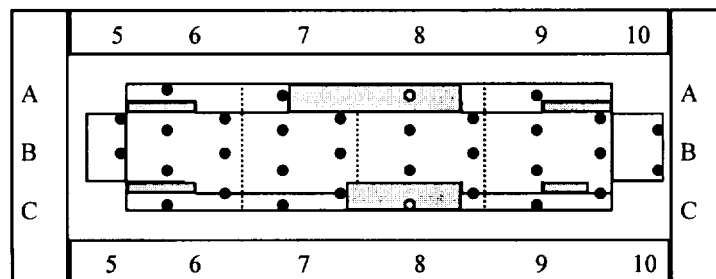
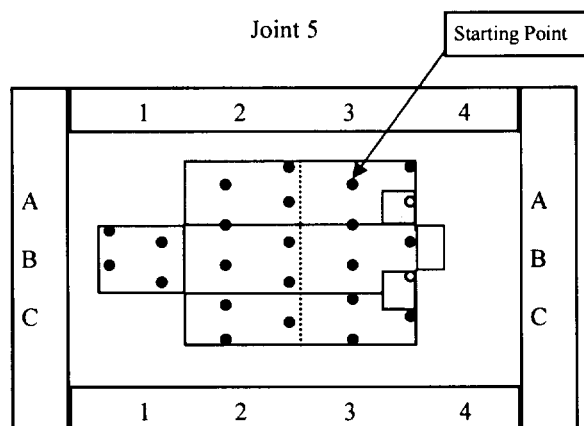
RADIATION SAFETY SURVEY REPORT	SURVEYOR NAME:	DATE:
	LAB: NE7	TIME:



1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

Comments:

RADIATION SAFETY SURVEY REPORT	SURVEYOR NAME:	DATE:
	LAB: 17C2	TIME:



Joint 7

Joint 6

1 2 3 4 5 6

Comments:

Shaded areas are below grade

● - Sample point

○ - Unusable sample point

Direct Measurements

Final Status Survey Results for
Unit - 4D

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm ²			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BB06085-4D - B7	6	13	2	2	15	24	ND ³
BB06085-4D - D3	6	14	2	3	15	24	ND ³
BB06085-4D - E6	14	68	5	-1	12	35	ND ³
BB06085-4D - F6	14	71	5	1	12	35	ND ³
BB06085-4D - G10	6	13	2	2	15	24	ND ³
BB06085-4D - K8	6	12	2	0	14	24	ND ³
BB06085-4D - CD7	8	14	2	-3	16	27	ND ³
BB06085-4D - CD8	8	13	2	-5	15	27	ND ³
BB06085-4D - CG4	8	14	2	-3	16	27	ND ³

¹ -E_{weighted, total} .05 and probe active area 582cm²

² - at the 95% confidence level

³ - None detected

CPM/100cm²

1.0 Largest S measurement
-3.0 Smallest R measurement
4.0 Difference
27 Gross Beta DCGL_w

-0.1 Average S measurements
-0.2 Average R measurements
0.1 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - 4D

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (In min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BB06085-4A	6	13	2	2	15	24	ND ³
BB06085-4A	6	11	2	-2	14	24	ND ³
BB06085- S hall	14	74	5	3	13	35	ND ³
BB06085-S hall	14	71	5	1	12	35	ND ³
BB06085-4A	6	14	2	3	15	24	ND ³
BB06085-4A	6	11	2	-2	14	24	ND ³
BB06085-4A	8	18	2	3	17	27	ND ³
BB06085-4A	8	17	2	2	17	27	ND ³
BB06085-4A	8	14	2	-3	16	27	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Survey Results for
Unit - 4D

Sample Point	Bkg (counts)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable
				Gross Beta	Uncertainty ²	MDA	Radionuclide
BB06085-4D - B7	797	792	1	-2864	44748	75189	ND ³
BB06085-4D - D3	797	781	1	-9164	44593	75189	ND ³
BB06085-4D - E6	1141	1119	1	-12600	53366	89963	ND ³
BB06085-4D - F6	1141	1124	1	-9737	53425	89963	ND ³
BB06085-4D - G10	797	801	1	2291	44875	75189	ND ³
BB06085-4D - K8	797	814	1	9737	45057	75189	ND ³
BB06085-4D - CD7	1065	1078	1	7446	51966	86915	ND ³
BB06085-4D - CD8	1065	1029	1	-20619	51369	86915	ND ³
BB06085-4D - CG4	1065	1064	1	-573	51796	86915	ND ³
BB06085-4D - C5	797	781	1	-9164	44593	75189	ND ³
BB06085-4D - D2	797	774	1	-13173	44494	75189	ND ³

¹ - E_{weighted, total}: 0.0003 , probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

-1.6 Average of the measurements
153,126 Gross Beta DCGL

Final Status Survey Results for
Unit - 4EI

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
JE06085-4EI - C5	6	11	2	-2	14	30	ND ³
JE06085-4EI - C6	6	12	2	0	14	30	ND ³
JE06085-4EI - C9	6	10	2	-3	13	30	ND ³
JE06085-4EI - D6	8	42	5	1	10	23	ND ³
JE06085-4EI - D7	9	48	5	2	10	24	ND ³
JE06085-4EI - H2	6	9	2	-5	13	30	ND ³
JE06085-4EI - H10	6	11	2	-2	14	30	ND ³
JE06085-4EI - J8	6	10	2	-3	13	30	ND ³
JE06085-4EI - CH5	5	11	2	2	13	28	ND ³
JE06085-4EI - B5	6	13	2	2	15	30	ND ³
JE06085-4EI - D10	6	14	2	3	15	30	ND ³
JE06085-4EI - H9	9	40	5	-3	9	24	ND ³
JE06085-4EI - H3	6	13	2	2	15	30	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

1.0 Largest S measurement
-1.6 Smallest R measurement
2.6 Difference
27 Gross Beta DCGL_w

0.0 Average S measurements
0.0 Average R measurements
0.0 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - 4EI

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
JE06085-4A	6	10	2	-3	13	30	ND ³
JE06085-4A	6	11	2	-2	14	30	ND ³
JE06085-10	6	9	2	-5	13	30	ND ³
JE06085-10	8	55	5	10	11	23	ND ³
JE06085-10	9	58	5	9	11	24	ND ³
JE06085-4A	6	12	2	0	14	30	ND ³
JE06085-4A	6	11	2	-2	14	30	ND ³
JE06085-4A	6	9	2	-5	13	30	ND ³
JE06085-4A	5	10	2	0	13	28	ND ³
JE06085-4A	6	12	2	0	14	30	ND ³
JE06085-4A	6	12	2	0	14	30	ND ³
JE06085-4A	9	37	5	-5	9	24	ND ³
JE06085-4A	6	13	2	2	15	30	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Survey Results for
Unit - 4EI

Sample Point	Bkg (counts)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Beta	Uncertainty ²	MDA	
JE06085-4EI - C5	798	793	1	-2864	44776	75236	ND ³
JE06085-4EI - C6	659	676	1	9737	41016	68370	ND ³
JE06085-4EI - C9	578	608	1	17182	38659	64031	ND ³
JE06085-4EI - D6	963	971	1	4582	49367	82649	ND ³
JE06085-4EI - D7	963	956	1	-4009	49176	82649	ND ³
JE06085-4EI - H2	798	858	1	34364	45682	75236	ND ³
JE06085-4EI - H10	798	805	1	4009	44945	75236	ND ³
JE06085-4EI - J8	798	785	1	-7446	44663	75236	ND ³
JE06085-4EI - CH5	968	972	1	2291	49444	82863	ND ³
JE06085-4EI - F3	798	744	1	-30928	44081	75236	ND ³
JE06085-4EI - H9	578	600	1	12600	38529	64031	ND ³

¹ - E_{weighted, total}: 0.0003 , probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

1.1 Average of the measurements
153,126 Gross Beta DCGL

Final Status Survey Results for
Unit - 16I

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
TW06085-16I - D10	5	11	2	2	13	21	ND ³
TW06085-16I - F8	15	72	5	-2	13	15	ND ³
TW06085-16I - F10	15	74	5	-1	13	15	ND ³
TW06085-16I - I7	15	70	5	-3	12	15	ND ³
TW06085-16I - L5	5	12	2	3	14	21	ND ³
TW06085-16I - CG6	8	36	5	-3	9	12	ND ³
TW06085-16I - CH8	8	44	5	3	10	12	ND ³
TW06085-16I - CH9	8	44	5	3	10	12	ND ³
TW06085-16I - CI6	8	45	5	3	10	12	ND ³

¹ -E_{weighted, total}; .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

1.0 Largest S measurement
-1.0 Smallest R measurement
2.0 Difference
27 Gross Beta DCGL_w

0.0 Average S measurements
0.0 Average R measurements
0.0 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - 16I

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
TW06085-S hall	5	11	2	2	13	21	ND ³
TW06085-S hall	15	72	5	-2	13	15	ND ³
TW06085-S hall	15	75	5	0	13	15	ND ³
TW06085-S hall	15	70	5	-3	12	15	ND ³
TW06085-S hall	5	11	2	2	13	21	ND ³
TW06085-S hall	8	42	5	1	10	12	ND ³
TW06085-S hall	8	38	5	-1	9	12	ND ³
TW06085-S hall	8	37	5	-2	9	12	ND ³
TW06085-S hall	8	39	5	-1	9	12	ND ³

¹ -E_{weighted, total} .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Survey Results for
Unit - 16I

Sample Point	Bkg (counts)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm ²			Removable
				Gross Beta	Uncertainty ²	MDA	Radionuclide
TW06085-16I - D10	609	691	1	46964	40475	65726	ND ³
TW06085-16I - F8	1102	1149	1	26919	53260	88412	ND ³
TW06085-16I - F10	1102	1172	1	40092	53531	88412	ND ³
TW06085-16I - I7	1102	1086	1	-9164	52509	88412	ND ³
TW06085-16I - L5	905	967	1	35510	48570	80121	ND ³
TW06085-16I - CG6	1716	1779	1	36082	66364	110326	ND ³
TW06085-16I - CH8	1716	1709	1	-4009	65696	110326	ND ³
TW06085-16I - CH9	1716	1801	1	48683	66573	110326	ND ³
TW06085-16I - CI6	1716	1784	1	38946	66412	110326	ND ³
TW06085-16I - E5	1102	1155	1	30355	53331	88412	ND ³
TW06085-16I - E10	905	925	1	11455	48022	80121	ND ³
TW06085-16I - F3	905	949	1	25200	48336	80121	ND ³

¹ - E_{weighted, total}: 0.0003, probe active area 582cm²

² - at the 95% confidence level

³ - None detected

CPM/100cm²

8.2 Average of the measurements

153,126 Gross Beta DCGL

Final Status Survey Results for
Unit - 17I

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BE06085-17I - B9	4	7	2	-2	11	20	ND ³
BE06085-17I - E1	6	11	2	-2	14	24	ND ³
BE06085-17I - E3	7	40	5	3	9	26	ND ³
BE06085-17I - F6	18	89	5	-1	14	39	ND ³
BE06085-17I - F8	5	8	2	-3	12	22	ND ³
BE06085-17I - G2	7	38	5	2	9	26	ND ³
BE06085-17I - I8	12	62	5	1	12	33	ND ³
BE06085-17I - I12	6	11	2	-2	14	24	ND ³
BE06085-17I - CD9	9	44	5	-1	10	29	ND ³

¹ -E_{weighted, total} .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

0.6 Largest S measurement
-2.0 Smallest R measurement
2.6 Difference
27 Gross Beta DCGL_w

0.0 Average S measurements
-0.1 Average R measurements
0.1 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - 17I

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BE06085-10	4	7	2	-2	11	20	ND ³
BE06085-10	6	11	2	-2	14	24	ND ³
BE06085- Center hall	7	38	5	2	9	26	ND ³
BE06085-South hall	18	88	5	-1	14	39	ND ³
BE06085-10	5	8	2	-3	12	22	ND ³
BE06085- Center hall	7	40	5	3	9	26	ND ³
BE06085-10	12	58	5	-1	11	33	ND ³
BE06085-10	6	8	2	-7	13	24	ND ³
BE06085-10	9	43	5	-1	10	29	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Survey Results for
Unit - 17I

Sample Point	Bkg (counts)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Beta	Uncertainty ²	MDA	
BE06085-17I - B9	622	684	1	35510	40568	66423	ND ³
BE06085-17I - E1	674	751	1	44101	42376	69144	ND ³
BE06085-17I - E3	901	977	1	43528	48647	79944	ND ³
BE06085-17I - F6	1189	1248	1	33792	55417	91836	ND ³
BE06085-17I - F8	908	937	1	16609	48218	80254	ND ³
BE06085-17I - G2	901	1012	1	63574	49099	79944	ND ³
BE06085-17I - I8	1163	1304	1	80756	55757	90826	ND ³
BE06085-17I - I12	674	748	1	42383	42331	69144	ND ³
BE06085-17I - CD9	1720	1704	1	-9164	65687	110455	ND ³
BE06085-17I - G8	908	928	1	11455	48100	80254	ND ³
BE06085-17I - H1	674	680	1	3436	41307	69144	ND ³

¹ - E_{weighted, total}: 0.0003, probe active area 582cm²

² - at the 95% confidence level

³ - None detected

CPM/100cm²

10.0 Average of the measurements
153,126 Gross Beta DCGL

Final Status Survey Results for
Unit - 18I

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
TW06095-18I - B5	5	11	2	2	13	28	ND ³
TW06095-18I - E8	5	9	2	-2	13	28	ND ³
TW06095-18I - F12	5	10	2	0	13	28	ND ³
TW06095-18I - H8	5	10	2	0	13	28	ND ³
TW06095-18I - H10	5	11	2	2	13	28	ND ³
TW06095-18I - I6	5	10	2	0	13	28	ND ³
TW06095-18I - L6	6	9	2	-5	13	30	ND ³
TW06095-18I - CE10	8	40	5	0	9	23	ND ³
TW06095-18I - CG7	8	41	5	1	9	23	ND ³
TW06095-18I - E2	5	11	2	2	13	28	ND ³
TW06095-18I - F2	5	9	2	-2	13	28	ND ³
TW06095-18I - J5	5	11	2	2	13	28	ND ³
TW06095-18I - K10	5	12	2	3	14	28	ND ³

¹ -E_{weighted, total} .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

1.0 Largest S measurement
-1.0 Smallest R measurement
2.0 Difference
27 Gross Beta DCGL_w

0.0 Average S measurements
0.0 Average R measurements
0.0 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - 18I

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
TW06095- 10	5	12	2	3	14	28	ND ³
TW06095- 10	5	12	2	3	14	28	ND ³
TW06095- 10	5	9	2	-2	13	28	ND ³
TW06095- 10	5	11	2	2	13	28	ND ³
TW06095- 10	5	11	2	2	13	28	ND ³
TW06095- 10	5	9	2	-2	13	28	ND ³
TW06095- 10	6	10	2	-3	13	30	ND ³
TW06095- 10	8	42	5	1	10	23	ND ³
TW06095- 10	8	39	5	-1	9	23	ND ³
TW06095- 10	5	9	2	-2	13	28	ND ³
TW06095- 10	5	10	2	0	13	28	ND ³
TW06095- 10	5	10	2	0	13	28	ND ³
TW06095- 10	5	9	2	-2	13	28	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Survey Results for
Unit - 18I

Sample Point	Bkg (counts)	Gross (counts)	Count time (In min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Beta	Uncertainty ²	MDA	
TW06095-18I - B5	766	752	1	-8018	43737	73712	ND ³
TW06095-18I - E8	901	935	1	19473	48100	79944	ND ³
TW06095-18I - F12	905	921	1	9164	47969	80121	ND ³
TW06095-18I - H8	901	922	1	12027	47930	79944	ND ³
TW06095-18I - H10	901	897	1	-2291	47600	79944	ND ³
TW06095-18I - I6	1064	1142	1	44674	52725	86875	ND ³
TW06095-18I - L6	645	659	1	8018	40537	67640	ND ³
TW06095-18I - CE10	1716	1796	1	45819	66526	110326	ND ³
TW06095-18I - D1	645	688	1	24628	40985	67640	ND ³
TW06095-18I - D12	905	1000	1	54410	48996	80121	ND ³
TW06095-18I - L8	905	1021	1	66438	49265	80121	ND ³

¹ - E_{weighted, total}: 0.0003 , probe active area 582cm²

² - at the 95% confidence level

³ - None detected

CPM/100cm2

7.5 Average of the measurements
153,126 Gross Beta DCGL

Final Status Survey Results for
Unit - 21I

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BB06095-21I - B6	6	10	2	-3	13	30	ND ³
BB06095-21I - B9	6	12	2	0	14	30	ND ³
BB06095-21I - D11	14	64	5	-4	12	29	ND ³
BB06095-21I - E11	14	60	5	-7	12	29	ND ³
BB06095-21I - E13	6	10	2	-3	13	30	ND ³
BB06095-21I - H10	6	12	2	0	14	30	ND ³
BB06095-21I - J5	6	10	2	-3	13	30	ND ³
BB06095-21I - J11	6	11	2	-2	14	30	ND ³
BB06095-21I - CH5	8	44	5	3	10	23	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

0.8 Largest S measurement
-1.0 Smallest R measurement
1.8 Difference
27 Gross Beta DCGL_w

-0.1 Average S measurements
0.0 Average R measurements
-0.1 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - 21I

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (In min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BB06095-20	6	11	2	-2	14	30	ND ³
BB06095-20	6	13	2	2	15	30	ND ³
BB06095-20	14	65	5	-3	12	29	ND ³
BB06095-20	14	65	5	-3	12	29	ND ³
BB06095-20	6	10	2	-3	13	30	ND ³
BB06095-20	6	13	2	2	15	30	ND ³
BB06095-20	6	11	2	-2	14	30	ND ³
BB06095-20	6	14	2	3	15	30	ND ³
BB06095-20	8	41	5	1	9	23	ND ³

¹ -E_{weighted, total} .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Results for
Unit - 21I

Sample Point	Bkg (counts)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Beta	Uncertainty ²	MDA	
BB06095-21I - B6	797	829	1	18328	45266	75189	ND ³
BB06095-21I - B9	797	763	1	-19473	44338	75189	ND ³
BB06095-21I - D11	1141	1104	1	-21191	53189	89963	ND ³
BB06095-21I - E11	1141	1118	1	-13173	53354	89963	ND ³
BB06095-21I - E13	797	859	1	35510	45682	75189	ND ³
BB06095-21I - H10	942	898	1	-25200	48153	81743	ND ³
BB06095-21I - J5	797	783	1	-8018	44621	75189	ND ³
BB06095-21I - J11	797	772	1	-14318	44466	75189	ND ³
BB06095-21I - CH5	1650	1630	1	-11455	64291	108184	ND ³
BB06095-21I - D12	797	742	1	-31501	44038	75189	ND ³
BB06095-21I - F9	1141	1170	1	16609	53965	89963	ND ³

¹ - $E_{\text{weighted, total}}$: 0.0003 , probe active area 582cm²

² - at the 95% confidence level

³ - None detected

CPM/100cm²

-2.0 Average of the measurements
153,126 Gross Beta DCGL

Final Status Survey Results for
Unit - 22

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
JE06095 - 22 - A5	6	12	2	0	14	30	ND ³
JE06095 - 22 - E7	11	49	5	-4	10	26	ND ³
JE06095 - 22 - J5	5	11	2	2	13	28	ND ³
JE06095 - 22 - J8	6	11	2	-2	14	30	ND ³
JE06095 - 22 - J9	6	12	2	0	14	30	ND ³
JE06095 - 22 - K4	5	12	2	3	14	28	ND ³
JE06095 - 22 - CD4	9	49	5	3	10	24	ND ³
JE06095 - 22 - CI5	9	46	5	1	10	24	ND ³
JE06095 - 22 - CJ6	9	47	5	1	10	24	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

1.0 Largest S measurement
-1.4 Smallest R measurement
2.4 Difference
27 Gross Beta DCGL_w

0.0 Average S measurements
0.1 Average R measurements
-0.1 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - 22

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
JE06095 - 20	6	13	2	2	15	30	ND ³
JE06095 - 20	11	48	5	-5	10	26	ND ³
JE06095 - 20	5	12	2	3	14	28	ND ³
JE06095 - 20	6	11	2	-2	14	30	ND ³
JE06095 - 20	6	12	2	0	14	30	ND ³
JE06095 - 20	5	11	2	2	13	28	ND ³
JE06095 - 20	9	51	5	4	10	24	ND ³
JE06095 - 20	9	49	5	3	10	24	ND ³
JE06095 - 20	9	50	5	3	10	24	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Survey Results for
Unit - 22

Sample Point	Bkg (counts)	Gross (counts)	Count time (In min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Beta	Uncertainty ²	MDA	
JE06095-22 - A5	735	721	1	-8018	42834	72205	ND ³
JE06095-22 - E7	1186	1200	1	8018	54834	91720	ND ³
JE06095-22 - J5	888	907	1	10882	47560	79365	ND ³
JE06095-22 - J8	798	743	1	-31501	44067	75236	ND ³
JE06095-22 - J9	798	754	1	-25200	44224	75236	ND ³
JE06095-22 - K4	888	894	1	3436	47388	79365	ND ³
JE06095-22 - CD4	1605	1670	1	37228	64242	106698	ND ³
JE06095-22 - CI5	1605	1608	1	1718	63631	106698	ND ³
JE06095-22 - CJ6	1605	1577	1	-16037	63323	106698	ND ³
JE06095-22 - A7	735	711	1	-13746	42687	72205	ND ³
JE06095-22 - F3	578	617	1	22337	38806	64031	ND ³

¹ - E_{weighted, total}: 0.0003 , probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

-0.3 Average of the measurements

153,126 Gross Beta DCGL

Final Status Survey Results for
Unit - 23

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm ²			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BE06095-23 - C6	6	12	2	0	14	30	ND ³
BE06095-23 - E9	6	11	2	-2	14	30	ND ³
BE06095-23 - G2	6	13	2	2	15	30	ND ³
BE06095-23 - H4	5	11	2	2	13	28	ND ³
BE06095-23 - I1	6	12	2	0	14	30	ND ³
BE06095-23 - L5	6	11	2	-2	14	30	ND ³
BE06095-23 - CD6	9	45	5	0	10	24	ND ³
BE06095-23 - CG5	9	51	5	4	10	24	ND ³
BE06095-23 - CI4	9	48	5	2	10	24	ND ³

¹ -E_{weighted, total}; .05 and probe active area 582cm²

² - at the 95% confidence level

³ - None detected

CPM/100cm²

1.2 Largest S measurement
-1.0 Smallest R measurement
2.2 Difference
27 Gross Beta DCGL_w

0.0 Average S measurements
0.0 Average R measurements
0.0 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - 23

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BE06095-20	6	13	2	2	15	30	ND ³
BE06095-20	6	12	2	0	14	30	ND ³
BE06095-8	6	10	2	-3	13	30	ND ³
BE06095-8	5	9	2	-2	13	28	ND ³
BE06095-10	6	10	2	-3	13	30	ND ³
BE06095-10	6	11	2	-2	14	30	ND ³
BE06095-20	9	46	5	1	10	24	ND ³
BE06095-8	9	50	5	3	10	24	ND ³
BE06095-10	9	50	5	3	10	24	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Survey Results for
Unit - 23

Sample Point	Bkg (counts)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable
				Gross Beta	Uncertainty ²	MDA	Radionuclide
BE06095-23 - C6	834	825	1	-5155	45723	76914	ND ³
BE06095-23 - E9	834	843	1	5155	45970	76914	ND ³
BE06095-23 - G2	834	846	1	6873	46012	76914	ND ³
BE06095-23 - H4	908	915	1	4009	47930	80254	ND ³
BE06095-23 - I1	834	839	1	2864	45916	76914	ND ³
BE06095-23 - L5	834	841	1	4009	45943	76914	ND ³
BE06095-23 - CD6	1720	1699	1	-12027	65639	110455	ND ³
BE06095-23 - CG5	1720	1690	1	-17182	65552	110455	ND ³
BE06095-23 - CI4	1720	1687	1	-18900	65524	110455	ND ³
BE06095-23 - F8	834	847	1	7446	46025	76914	ND ³
BE06095-23 - H7	908	901	1	-4009	47745	80254	ND ³

¹ - $E_{\text{weighted, total}}$: 0.0003 , probe active area 582cm²

² - at the 95% confidence level

³ - None detected

CPM/100cm²

-0.7 Average of the measurements
153,126 Gross Beta DCGL

Final Status Survey Results for
Unit - 25I

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BE06135-25I - A5	6	12	2	0	14	30	ND ³
BE06135-25I - B5	6	10	2	-3	13	30	ND ³
BE06135-25I - E8	10	54	5	3	11	25	ND ³
BE06135-25I - G11	6	12	2	0	14	30	ND ³
BE06135-25I - H2	6	13	2	2	15	30	ND ³
BE06135-25I - H6	10	47	5	-2	10	25	ND ³
BE06135-25I - H12	6	11	2	-2	14	30	ND ³
BE06135-25I - K7	6	12	2	0	14	30	ND ³
BE06135-25I - L7	6	13	2	2	15	30	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

0.8 Largest S measurement
-1.0 Smallest R measurement
1.8 Difference
27 Gross Beta DCGL_w

0.0 Average S measurements
0.0 Average R measurements
0.0 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - 25I

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BE06135-25	6	13	2	2	15	30	ND ³
BE06135-25	6	14	2	3	15	30	ND ³
BE06135-11	10	50	5	0	10	25	ND ³
BE06135-25	6	14	2	3	15	30	ND ³
BE06135-25	6	12	2	0	14	30	ND ³
BE06135-11	10	52	5	1	11	25	ND ³
BE06135-25	6	13	2	2	15	30	ND ³
BE06135-25	6	10	2	-3	13	30	ND ³
BE06135-25	6	12	2	0	14	30	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Survey results for
Unit - 25I

Sample Point	Bkg (counts)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Beta	Uncertainty ²	MDA	
BE06135-25I - A5	671	684	1	7446	41322	68990	ND ³
BE06135-25I - B5	671	687	1	9164	41368	68990	ND ³
BE06135-25I - E8	1050	1031	1	-10882	51209	86301	ND ³
BE06135-25I - G11	671	670	1	-573	41108	68990	ND ³
BE06135-25I - H2	671	667	1	-2291	41062	68990	ND ³
BE06135-25I - H6	1050	1039	1	-6300	51308	86301	ND ³
BE06135-25I - H12	671	681	1	5727	41276	68990	ND ³
BE06135-25I - K7	671	686	1	8591	41352	68990	ND ³
BE06135-25I - L7	671	677	1	3436	41215	68990	ND ³
BE06135-25I - G2	671	678	1	4009	41230	68990	ND ³
BE06135-25I - H5	1050	1041	1	-5155	51332	86301	ND ³

¹ - $E_{\text{weighted, total}} = 0.0003$, probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

0.4 Average of the measurements
153,126 Gross Beta DCGL

Final Status Survey Results for
Unit - 25B

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BB06105-25B - A4	6	12	2	0	14	30	ND ³
BB06105-25B - B4	4	9	2	2	12	25	ND ³
BB06105-25B - D8	6	11	2	-2	14	30	ND ³
BB06105-25B - F5	6	13	2	2	15	30	ND ³
BB06105-25B - G4	6	11	2	-2	14	30	ND ³
BB06105-25B - H6	5	10	2	0	13	28	ND ³
BB06105-25B - CD4	8	42	5	1	10	23	ND ³
BB06105-25B - CD5	8	39	5	-1	9	23	ND ³
BB06105-25B - CE4	8	40	5	0	9	23	ND ³
BB06105-25B - A6	6	9	2	-5	13	30	ND ³
BB06105-25B - D2	5	9	2	-2	13	28	ND ³
BB06105-25B - F2	6	11	2	-2	14	30	ND ³
BB06105-25B - F8	6	10	2	-3	13	30	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

0.5 Largest S measurement
-1.0 Smallest R measurement
1.5 Difference
27 Gross Beta DCGL_w

0.0 Average S measurements
0.0 Average R measurements
0.0 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - 25B

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (In min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BB06105-25	6	11	2	-2	14	30	ND ³
BB06105-10	4	8	2	0	12	25	ND ³
BB06105-25	6	10	2	-3	13	30	ND ³
BB06105-25	6	13	2	2	15	30	ND ³
BB06105-25	6	12	2	0	14	30	ND ³
BB06105-25	5	10	2	0	13	28	ND ³
BB06105-25	8	45	5	3	10	23	ND ³
BB06105-25	8	44	5	3	10	23	ND ³
BB06105-25	8	38	5	-1	9	23	ND ³
BB06105-25	6	12	2	0	14	30	ND ³
BB06105-25	5	12	2	3	14	28	ND ³
BB06105-25	6	12	2	0	14	30	ND ³
BB06105-25	6	12	2	0	14	30	ND ³

¹ -E_{weighted, total}, .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Survey Results for
Unit - 25B

Sample Point	Bkg (counts)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Beta	Uncertainty ²	MDA	
BB06105-25B - A4	797	832	1	20046	45308	75189	ND ³
BB06105-25B - B4	664	683	1	10882	41200	68629	ND ³
BB06105-25B - D8	797	758	1	-22337	44267	75189	ND ³
BB06105-25B - F5	942	919	1	-13173	48427	81743	ND ³
BB06105-25B - G4	797	804	1	4009	44917	75189	ND ³
BB06105-25B - H6	600	582	1	-10309	38594	65238	ND ³
BB06105-25B - CD4	1650	1680	1	17182	64779	108184	ND ³
BB06105-25B - CD5	1650	1659	1	5155	64574	108184	ND ³
BB06105-25B - CE4	1650	1637	1	-7446	64359	108184	ND ³
BB06105-25B - A6	797	844	1	26919	45474	75189	ND ³
BB06105-25B - D1	664	669	1	2864	40985	68629	ND ³

¹ - $E_{\text{weighted, total}}$: 0.0003 , probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

1 Average of the measurements
153,126 Gross Beta DCGL

Final Status Survey Results for
Unit - 27I

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
JE06105-27I - E5	18	90	5	0	14	33	ND ³
JE06105-27I - E9	6	13	2	2	15	30	ND ³
JE06105-27I - G6	18	87	5	-2	14	33	ND ³
JE06105-27I - I6	18	93	5	2	14	33	ND ³
JE06105-27I - J1	6	11	2	-2	14	30	ND ³
JE06105-27I - J9	6	12	2	0	14	30	ND ³
JE06105-27I - K3	6	12	2	0	14	30	ND ³
JE06105-27I - M5	6	11	2	-2	14	30	ND ³
JE06105-27I - N6	6	13	2	2	15	30	ND ³

¹ -E_{weighted, total} .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

0.6 Largest S measurement
-1.0 Smallest R measurement
1.6 Difference
27 Gross Beta DCGL_w

0.0 Average S measurements
-0.1 Average R measurements
0.1 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - 271

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
JE06105-20	18	89	5	-1	14	33	ND ³
JE06105-20	6	13	2	2	15	30	ND ³
JE06105-20	18	86	5	-3	14	33	ND ³
JE06105-20	18	85	5	-3	14	33	ND ³
JE06105-20	6	10	2	-3	13	30	ND ³
JE06105-20	6	10	2	-3	13	30	ND ³
JE06105-20	6	10	2	-3	13	30	ND ³
JE06105-25	6	12	2	0	14	30	ND ³
JE06105-20	6	10	2	-3	13	30	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Survey Results for
Unit - 27I

Sample Point	Bkg (counts)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Beta	Uncertainty ²	MDA	
JE06105-27I - E5	1113	1194	1	46392	53918	88852	ND ³
JE06105-27I - E9	659	596	1	-36082	39768	68370	ND ³
JE06105-27I - G6	1113	1236	1	70447	54407	88852	ND ³
JE06105-27I - I6	1113	1202	1	50974	54012	88852	ND ³
JE06105-27I - J1	659	665	1	3436	40847	68370	ND ³
JE06105-27I - J9	798	736	1	-35510	43967	75236	ND ³
JE06105-27I - K3	798	738	1	-34364	43995	75236	ND ³
JE06105-27I - M5	602	630	1	16037	39402	65347	ND ³
JE06105-27I - N6	798	710	1	-50401	43593	75236	ND ³
JE06105-27I - A5	798	724	1	-42383	43794	75236	ND ³
JE06105-27I - E3	798	738	1	-34364	43995	75236	ND ³
JE06105-27I - F1	798	717	1	-46392	43694	75236	ND ³
JE06105-27I - G10	798	776	1	-12600	44536	75236	ND ³
JE06105-27I - H5	1113	1223	1	63001	54256	88852	ND ³
JE06105-27I - J4	1113	1174	1	34937	53684	88852	ND ³

¹ - E_{weighted, total}: 0.0003 , probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

-0.1 Average of the measurements
153,126 Gross Beta DCGL

Final Status Survey Results for
Unit - 29I

Sample Point	Bkg (CPM)	Gross (counts)	Count time (In min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
TW06135-29I - D7	5	10	2	0	13	28	ND ³
TW06135-29I - D9	5	11	2	2	13	28	ND ³
TW06135-29I - F5	15	72	5	-2	13	30	ND ³
TW06135-29I - K6	5	9	2	-2	13	28	ND ³
TW06135-29I - L4	5	11	2	2	13	28	ND ³
TW06135-29I - L9	5	9	2	-2	13	28	ND ³
TW06135-29I - CD7	8	42	5	1	10	23	ND ³
TW06135-29I - CE9	8	39	5	-1	9	23	ND ³
TW06135-29I - CG9	8	44	5	3	10	23	ND ³
TW06135-29I - C4	5	10	2	0	13	28	ND ³
TW06135-29I - B8	5	11	2	2	13	28	ND ³
TW06135-29I - G2	5	10	2	0	13	28	ND ³
TW06135-29I - J5	6	9	2	-5	13	30	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

0.8 Largest S measurement
-0.5 Smallest R measurement
1.3 Difference
27 Gross Beta DCGL_w

0.0 Average S measurements
0.1 Average R measurements
-0.1 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - 29I

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
TW06135-10	5	11	2	2	13	28	ND ³
TW06135-10	5	9	2	-2	13	28	ND ³
TW06135- South hall	15	77	5	1	13	30	ND ³
TW06135- South hall	5	10	2	0	13	28	ND ³
TW06135- South hall	5	11	2	2	13	28	ND ³
TW06135- South hall	5	11	2	2	13	28	ND ³
TW06135- South hall	8	40	5	0	9	23	ND ³
TW06135- South hall	8	41	5	1	9	23	ND ³
TW06135- South hall	8	42	5	1	10	23	ND ³
TW06135- South hall	5	12	2	3	14	28	ND ³
TW06135- South hall	5	12	2	3	14	28	ND ³
TW06135- South hall	5	12	2	3	14	28	ND ³
TW06135- South hall	6	12	2	0	14	30	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Survey Results for
Unit - 29I

Sample Point	Bkg (counts)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Beta	Uncertainty ²	MDA	
TW06135-29I - D7	901	925	1	13746	47969	79944	ND ³
TW06135-29I - D9	901	948	1	26919	48270	79944	ND ³
TW06135-29I - F5	1102	1118	1	9164	52892	88412	ND ³
TW06135-29I - K6	905	938	1	18900	48192	80121	ND ³
TW06135-29I - L4	905	979	1	42383	48725	80121	ND ³
TW06135-29I - L9	905	906	1	573	47772	80121	ND ³
TW06135-29I - CD7	1716	1817	1	57847	66724	110326	ND ³
TW06135-29I - CE9	1716	1759	1	24628	66174	110326	ND ³
TW06135-29I - CG9	1716	1862	1	83620	67148	110326	ND ³
TW06135-29I - F11	838	940	1	58419	47334	77099	ND ³
TW06135-29I - I6	901	917	1	9164	47864	79944	ND ³

¹ - E_{weighted, total}: 0.0003 , probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

9 Average of the measurements
153,126 Gross Beta DCGL

Final Status Survey Results for
Unit - 31I

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
JE06155-31I - B6	5	12	2	3	14	28	ND ³
JE06155-31I - D7	5	12	2	3	14	28	ND ³
JE06155-31I - E4	10	53	5	2	11	25	ND ³
JE06155-31I - F12	5	12	2	3	14	28	ND ³
JE06155-31I - G5	5	11	2	2	13	28	ND ³
JE06155-31I - H2	5	12	2	3	14	28	ND ³
JE06155-31I - H11	5	10	2	0	13	28	ND ³
JE06155-31I - CE5	8	42	5	1	10	23	ND ³
JE06155-31I - CF8	8	46	5	4	10	23	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

1.2 Largest S measurement
0.5 Smallest R measurement
0.7 Difference
27 Gross Beta DCGL_w

0.1 Average S measurements
0.2 Average R measurements
-0.1 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - 311

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
JE06155-36	5	12	2	3	14	28	ND ³
JE06155-36	5	11	2	2	13	28	ND ³
JE06155-36	10	55	5	3	11	25	ND ³
JE06155-36	5	12	2	3	14	28	ND ³
JE06155-36	5	12	2	3	14	28	ND ³
JE06155-36	5	11	2	2	13	28	ND ³
JE06155-36	5	11	2	2	13	28	ND ³
JE06155-36	8	46	5	4	10	23	ND ³
JE06155-36	8	48	5	5	10	23	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Survey Results for
Unit - 31I

Sample Point	Bkg (counts)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Beta	Uncertainty ²	MDA	
JE06155-31I - B6	798	869	1	40664	45833	75236	ND ³
JE06155-31I - D7	888	877	1	-6300	47161	79365	ND ³
JE06155-31I - E4	963	964	1	573	49278	82649	ND ³
JE06155-31I - F12	798	870	1	41237	45847	75236	ND ³
JE06155-31I - G5	888	869	1	-10882	47054	79365	ND ³
JE06155-31I - H2	798	886	1	50401	46066	75236	ND ³
JE06155-31I - H11	578	589	1	6300	38348	64031	ND ³
JE06155-31I - CE5	1605	1608	1	1718	63631	106698	ND ³
JE06155-31I - CF8	1605	1622	1	9737	63769	106698	ND ³
JE06155-31I - C6	798	871	1	41810	45861	75236	ND ³
JE06155-31I - C11	578	591	1	7446	38381	64031	ND ³
JE06155-31I - E3	798	861	1	36082	45723	75236	ND ³

¹ - E_{weighted, total}: 0.0003 , probe active area 582cm²

² - at the 95% confidence level

³ - None detected

CPM/100cm²

5.5 Average of the measurements
153,126 Gross Beta DCGL

Final Status Survey Results for
Unit - SW1

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
TW06145-SW1 - E8	5	11	2	2	13	28	ND ³
TW06145-SW1 - L8	5	8	2	-3	12	28	ND ³
TW06145-SW1 - N6	5	11	2	2	13	28	ND ³
TW06145-SW1 - CJ4	8	42	5	1	10	23	ND ³
TW06145-SW1 - CL5	4	7	2	-2	11	25	ND ³
TW06145-SW1 - D4	4	7	2	-2	11	25	ND ³
TW06145-SW1 - E2	5	11	2	2	13	28	ND ³
TW06145-SW1 - G3	5	11	2	2	13	28	ND ³
TW06145-SW1 - N4	4	9	2	2	12	25	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

0.5 Largest S measurement
-0.5 Smallest R measurement
1.0 Difference
27 Gross Beta DCGL_w

0.0 Average S measurements
0.1 Average R measurements
-0.1 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - SW1

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
TW06145-South hall	5	11	2	2	13	28	ND ³
TW06145-South hall	5	9	2	-2	13	28	ND ³
TW06145-South hall	5	12	2	3	14	28	ND ³
TW06145-South hall	8	39	5	-1	9	23	ND ³
TW06145-South hall	4	8	2	0	12	25	ND ³
TW06145-South hall	4	9	2	2	12	25	ND ³
TW06145-South hall	5	12	2	3	14	28	ND ³
TW06145-South hall	5	11	2	2	13	28	ND ³
TW06145-South hall	4	10	2	3	13	25	ND ³

¹ -E_{weighted, total} = .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Survey Results for
Unit - SW1

Sample Point	Bkg (counts)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Beta	Uncertainty ²	MDA	
TW06145-SW1 - D6	905	938	1	18900	48192	80121	ND ³
TW06145-SW1 - E8	905	936	1	17755	48166	80121	ND ³
TW06145-SW1 - I4	988	971	1	-9737	49685	83715	ND ³
TW06145-SW1 - J3	609	643	1	19473	39720	65726	ND ³
TW06145-SW1 - K4	988	980	1	-4582	49799	83715	ND ³
TW06145-SW1 - K8	905	918	1	7446	47930	80121	ND ³
TW06145-SW1 - L4	988	975	1	-7446	49736	83715	ND ³
TW06145-SW1 - L8	905	949	1	25200	48336	80121	ND ³
TW06145-SW1 - M7	905	923	1	10309	47995	80121	ND ³
TW06145-SW1 - N5	1102	1110	1	4582	52796	88412	ND ³
TW06145-SW1 - N6	905	967	1	35510	48570	80121	ND ³
TW06145-SW1 - O2	905	909	1	2291	47811	80121	ND ³

¹ - E_{weighted, total}: 0.0003 , probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

3.0 Average of the measurements

153,126 Gross Beta DCGL

Final Status Survey Results for
Unit - SW2

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BE06145-SW2 - C2	6	13	2	2	15	30	ND ³
BE06145-SW2 - D5	18	92	5	1	14	33	ND ³
BE06145-SW2 - F3	6	11	2	-2	14	30	ND ³
BE06145-SW2 - F7	6	10	2	-3	13	30	ND ³
BE06145-SW2 - CB4	9	48	5	2	10	24	ND ³
BE06145-SW2 - CF5	9	44	5	-1	10	24	ND ³
BE06145-SW2 - CC4	9	47	5	1	10	24	ND ³
BE06145-SW2 - A3	6	12	2	0	14	30	ND ³
BE06145-SW2 - E3	6	11	2	-2	14	30	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

0.6 Largest S measurement
-0.5 Smallest R measurement
1.1 Difference
27 Gross Beta DCGL_w

0.0 Average S measurements
0.0 Average R measurements
0.0 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - SW2

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (In min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BE06145-Center hall	6	12	2	0	14	30	ND ³
BE06145-Center hall	18	88	5	-1	14	33	ND ³
BE06145-10	6	12	2	0	14	30	ND ³
BE06145-8	6	10	2	-3	13	30	ND ³
BE06145-10	9	46	5	1	10	24	ND ³
BE06145-Center hall	9	47	5	1	10	24	ND ³
BE06145-Center hall	9	46	5	1	10	24	ND ³
BE06145-Center hall	6	12	2	0	14	30	ND ³
BE06145-Center hall	6	11	2	-2	14	30	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Survey Results for
Unit - SW2

Sample Point	Bkg (counts)	Gross (counts)	Count time (In min)	Total Surface Activity ¹ in DPM/100cm2			Removable
				Gross Beta	Uncertainty ²	MDA	Radionuclide
BE06145-SW2 - C2	834	841	1	4009	45943	76914	ND ³
BE06145-SW2 - C5	1720	1712	1	-4582	65764	110455	ND ³
BE06145-SW2 - D5	1087	1069	1	-10309	52124	87809	ND ³
BE06145-SW2 - E1	834	846	1	6873	46012	76914	ND ³
BE06145-SW2 - E3	834	830	1	-2291	45792	76914	ND ³
BE06145-SW2 - F2	834	837	1	1718	45888	76914	ND ³
BE06145-SW2 - F3	834	840	1	3436	45929	76914	ND ³
BE06145-SW2 - F6	834	829	1	-2864	45778	76914	ND ³
BE06145-SW2 - F7	834	851	1	9737	46080	76914	ND ³
BE06145-SW2 - G8	834	826	1	-4582	45737	76914	ND ³
BE06145-SW2 - CA4	1720	1718	1	-1145	65821	110455	ND ³

¹ - E_{weighted, total}: 0.0003 , probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

0.0 Average of the measurements
153,126 Gross Beta DCGL

Final Status Survey Results for
Unit - SW3

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BB06145-SW3 - A5	5	11	2	2	13	28	ND ³
BB06145-SW3 - B5	5	12	2	3	14	28	ND ³
BB06145-SW3 - D6	6	13	2	2	15	30	ND ³
BB06145-SW3 - F11	6	10	2	-3	13	30	ND ³
BB06145-SW3 - CE4	8	42	5	1	10	23	ND ³
BB06145-SW3 - G4	4	10	2	3	13	25	ND ³
BB06145-SW3 - D2	6	12	2	0	14	30	ND ³
BB06145-SW3 - F10	6	11	2	-2	14	30	ND ³
BB06145-SW3 - H2	6	11	2	-2	14	30	ND ³

¹ -E_{weighted, total} = .05 and probe active area 582cm²

² - at the 95% confidence level

³ - None detected

CPM/100cm2

1.0 Largest S measurement
-1.0 Smallest R measurement
2.0 Difference
27 Gross Beta DCGL_w

0.0 Average S measurements
0.0 Average R measurements
0.0 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - SW3

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BB06145-10	5	12	2	3	14	28	ND ³
BB06145-10	5	10	2	0	13	28	ND ³
BB06145-36	6	12	2	0	14	30	ND ³
BB06145-South hall	6	11	2	-2	14	30	ND ³
BB06145-South hall	8	41	5	1	9	23	ND ³
BB06145- Ent. Foyer	4	10	2	3	13	25	ND ³
BB06145-South hall	6	10	2	-3	13	30	ND ³
BB06145-South hall	6	12	2	0	14	30	ND ³
BB06145-South hall	6	10	2	-3	13	30	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Survey Results for
Unit - SW3

Sample Point	Bkg (counts)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Beta	Uncertainty ²	MDA	
BB06145-SW3 - A5	754	727	1	-15464	43201	73133	ND ³
BB06145-SW3 - B5	754	750	1	-2291	43535	73133	ND ³
BB06145-SW3 - G4	920	930	1	5727	48283	80782	ND ³
BB06145-SW3 - D6	962	981	1	10882	49482	82606	ND ³
BB06145-SW3 - E7	962	989	1	15464	49584	82606	ND ³
BB06145-SW3 - F2	797	801	1	2291	44875	75189	ND ³
BB06145-SW3 - F8	962	990	1	16037	49597	82606	ND ³
BB06145-SW3 - F11	797	796	1	-573	44804	75189	ND ³
BB06145-SW3 - G3	600	596	1	-2291	38822	65238	ND ³
BB06145-SW3 - H1	797	790	1	-4009	44720	75189	ND ³
BB06145-SW3 - H9	797	837	1	22910	45377	75189	ND ³

¹ - $E_{\text{weighted, total}}$: 0.0003 , probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

1.3 Average of the measurements
153,126 Gross Beta DCGL

Final Status Survey Results for
Unit - SW4

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
TW06155-SW4 - B5	15	73	5	-1	13	30	ND ³
TW06155-SW4 - F8	5	11	2	2	13	28	ND ³
TW06155-SW4 - J3	6	13	2	2	15	30	ND ³
TW06155-SW4 - K2	6	14	2	3	15	30	ND ³
TW06155-SW4 - CB4	8	43	5	2	10	23	ND ³
TW06155-SW4 - CC4	8	39	5	-1	9	23	ND ³
TW06155-SW4 - CK4	8	41	5	1	9	23	ND ³
TW06155-SW4 - B4	14	72	5	1	12	29	ND ³
TW06155-SW4 - D3	5	10	2	0	13	28	ND ³
TW06155-SW4 - E4	6	13	2	2	15	30	ND ³
TW06155-SW4 - E6	6	10	2	-3	13	30	ND ³
TW06155-SW4 - G2	5	12	2	3	14	28	ND ³
TW06155-SW4 - CG4	8	39	5	-1	9	23	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

1.0 Largest S measurement
-3.4 Smallest R measurement
4.4 Difference
27 Gross Beta DCGL_w

0.0 Average S measurements
-0.1 Average R measurements
0.1 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - SW4

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
TW06155-Center hall	15	70	5	-3	12	30	ND ³
TW06155-Center hall	5	12	2	3	14	28	ND ³
TW06155-Center hall	6	14	2	3	15	30	ND ³
TW06155-Center hall	6	14	2	3	15	30	ND ³
TW06155-Center hall	8	40	5	0	9	23	ND ³
TW06155-Center hall	8	42	5	1	10	23	ND ³
TW06155-Center hall	8	38	5	-1	9	23	ND ³
TW06155-20	14	53	5	-12	11	29	ND ³
TW06155-Center hall	5	9	2	-2	13	28	ND ³
TW06155-South hall	6	10	2	-3	13	30	ND ³
TW06155-Center hall	6	7	2	-9	12	30	ND ³
TW06155-Center hall	5	7	2	-5	12	28	ND ³
TW06155-Center hall	8	34	5	-4	9	23	ND ³

¹ -E_{weighted, total}; .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Survey Results for
Unit - SW4

Sample Point	Bkg (counts)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Beta	Uncertainty ²	MDA	
TW06155-SW4 - A1	837	872	1	20046	46407	77052	ND ³
TW06155-SW4 - A5	1102	1151	1	28064	53283	88412	ND ³
TW06155-SW4 - B5	1102	1137	1	20046	53118	88412	ND ³
TW06155-SW4 - C4	941	955	1	8018	48880	81699	ND ³
TW06155-SW4 - F8	905	927	1	12600	48048	80121	ND ³
TW06155-SW4 - H5	988	1031	1	24628	50441	83715	ND ³
TW06155-SW4 - H6	905	992	1	49828	48893	80121	ND ³
TW06155-SW4 - I6	905	954	1	28064	48401	80121	ND ³
TW06155-SW4 - J3	837	908	1	40664	46893	77052	ND ³
TW06155-SW4 - K2	837	868	1	17755	46353	77052	ND ³
TW06155-SW4 - CB4	1716	1773	1	32646	66307	110326	ND ³
TW06155-SW4 - CC4	1716	1751	1	20046	66098	110326	ND ³

¹ - E_{weighted, total}: 0.0003 , probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

7.6 Average of the measurements

153,126 Gross Beta DCGL

Final Status Survey Results for
Unit - SW5

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BB06155-SW5 - A8	6	12	2	0	14	30	ND ³
BB06155-SW5 - G3	5	11	2	2	13	28	ND ³
BB06155-SW5 - H3	5	12	2	3	14	28	ND ³
BB06155-SW5 - K1	6	13	2	2	15	30	ND ³
BB06155-SW5 - CA5	8	37	5	-2	9	23	ND ³
BB06155-SW5 - CL5	8	41	5	1	9	23	ND ³
BB06155-SW5 - D5	9	55	5	7	11	24	ND ³
BB06155-SW5 - E5	9	51	5	4	10	24	ND ³
BB06155-SW5 - F3	5	13	2	5	14	28	ND ³
BB06155-SW5 - K6	6	8	2	-7	13	30	ND ³
BB06155-SW5 - B2	5	11	2	2	13	28	ND ³
BB06155-SW5 - CI5	8	44	5	3	10	23	ND ³
BB06155-SW5 - CJ4	4	10	2	3	13	25	ND ³

¹ -E_{weighted, total} = .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

2.0 Largest S measurement
-0.6 Smallest R measurement
2.6 Difference
27 Gross Beta DCGL_w

0.1 Average S measurements
0.1 Average R measurements
0.0 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - SW5

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BB06155-NW hall	6	13	2	2	15	30	ND ³
BB06155-South hall	5	10	2	0	13	28	ND ³
BB06155-South hall	5	11	2	2	13	28	ND ³
BB06155-NW hall	6	12	2	0	14	30	ND ³
BB06155-NW hall	8	39	5	-1	9	23	ND ³
BB06155-NW hall	8	43	5	2	10	23	ND ³
BB06155-8	9	42	5	-2	10	24	ND ³
BB06155-8	9	40	5	-3	9	24	ND ³
BB06155-Center hall	5	8	2	-3	12	28	ND ³
BB06155-Center hall	6	11	2	-2	14	30	ND ³
BB06155-Center hall	5	10	2	0	13	28	ND ³
BB06155-8	8	46	5	4	10	23	ND ³
BB06155-8	4	11	2	5	13	25	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Survey Results for
Unit - SW5

Sample Point	Bkg (counts)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Beta	Uncertainty ²	MDA	
BB06155-SW5 - A8	797	794	1	-1718	44776	75189	ND ³
BB06155-SW5 - C1	862	890	1	16037	46987	78195	ND ³
BB06155-SW5 - C6	600	620	1	11455	39210	65238	ND ³
BB06155-SW5 - D1	862	891	1	16609	47001	78195	ND ³
BB06155-SW5 - D5	920	951	1	17755	48557	80782	ND ³
BB06155-SW5 - E5	920	949	1	16609	48531	80782	ND ³
BB06155-SW5 - G3	862	887	1	14318	46947	78195	ND ³
BB06155-SW5 - H3	862	879	1	9737	46839	78195	ND ³
BB06155-SW5 - B8	797	796	1	-573	44804	75189	ND ³
BB06155-SW5 - L1	797	769	1	-16037	44423	75189	ND ³
BB06155-SW5 - K1	797	829	1	18328	45266	75189	ND ³

¹ - $E_{\text{weighted, total}}$: 0.0003 , probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

3 Average of the measurements
153,126 Gross Beta DCGL

Final Status Survey Results for
Unit - SW6

Sample Point	Bkg (CPM)	Gross (counts)	Count time (In min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BE06155-SW6 - D7	6	13	2	2	15	30	ND ³
BE06155-SW6 - E6	6	14	2	3	15	30	ND ³
BE06155-SW6 - G1	6	13	2	2	15	30	ND ³
BE06155-SW6 - H7	6	14	2	3	15	30	ND ³
BE06155-SW6 - J5	12	64	5	3	12	27	ND ³
BE06155-SW6 - K8	6	14	2	3	15	30	ND ³
BE06155-SW6 - F6	4	11	2	5	13	25	ND ³
BE06155-SW6 - G2	7	12	2	-3	15	33	ND ³
BE06155-SW6 - G7	6	11	2	-2	14	30	ND ³
BE06155-SW6 - E1	6	10	2	-3	13	30	ND ³
BE06155-SW6 - E3	6	12	2	0	14	30	ND ³
BE06155-SW6 - J1	6	11	2	-2	14	30	ND ³
BE06155-SW6 - J3	6	11	2	-2	14	30	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

1.5 Largest S measurement
-2.5 Smallest R measurement
4.0 Difference
27 Gross Beta DCGL_w

0.0 Average S measurements
-0.1 Average R measurements
0.1 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - SW6

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (In min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BE06155-10	6	12	2	0	14	30	ND ³
BE06155-10	6	11	2	-2	14	30	ND ³
BE06155-8	6	12	2	0	14	30	ND ³
BE06155-8	6	12	2	0	14	30	ND ³
BE06155-8	12	61	5	1	12	27	ND ³
BE06155-NW hall	6	13	2	2	15	30	ND ³
BE06155- 8	4	12	2	7	13	25	ND ³
BE06155-Center hall	7	9	2	-9	13	33	ND ³
BE06155-Center hall	6	8	2	-7	13	30	ND ³
BE06155-10	6	11	2	-2	14	30	ND ³
BE06155-10	6	11	2	-2	14	30	ND ³
BE06155-10	6	10	2	-3	13	30	ND ³
BE06155-10	6	10	2	-3	13	30	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Survey Results for
Unit - SW6

Sample Point	Bkg (counts)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Beta	Uncertainty ²	MDA	
BE06155-SW6 - A3	622	637	1	8591	39831	66423	ND ³
BE06155-SW6 - B3	834	841	1	4009	45943	76914	ND ³
BE06155-SW6 - D2	834	827	1	-4009	45751	76914	ND ³
BE06155-SW6 - D7	834	835	1	573	45861	76914	ND ³
BE06155-SW6 - D8	834	840	1	3436	45929	76914	ND ³
BE06155-SW6 - E6	834	851	1	9737	46080	76914	ND ³
BE06155-SW6 - K7	834	848	1	8018	46039	76914	ND ³
BE06155-SW6 - G1	834	847	1	7446	46025	76914	ND ³
BE06155-SW6 - H7	834	839	1	2864	45916	76914	ND ³
BE06155-SW6 - J5	1163	1181	1	10309	54349	90826	ND ³
BE06155-SW6 - K8	834	849	1	8591	46053	76914	ND ³

¹ - $E_{\text{weighted, total}} = 0.0003$, probe active area 582cm²

² - at the 95% confidence level

³ - None detected

CPM/100cm2

1.6 Average of the measurements
153,126 Gross Beta DCGL

Final Status Survey Results for
Unit - SW7

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
JE06165-SW7 - A8	6	13	2	2	15	30	ND ³
JE06165-SW7 - E5	5	12	2	3	14	28	ND ³
JE06165-SW7 - I3	6	12	2	0	14	30	ND ³
JE06165-SW7 - J8	6	13	2	2	15	30	ND ³
JE06165-SW7 - K7	6	12	2	0	14	30	ND ³
JE06165-SW7 - A3	6	11	2	-2	14	30	ND ³
JE06165-SW7 - C2	6	11	2	-2	14	30	ND ³
JE06165-SW7 - C8	6	11	2	-2	14	30	ND ³
JE06165-SW7 - CE4	9	44	5	-1	10	24	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

1.0 Largest S measurement
-1.0 Smallest R measurement
2.0 Difference
27 Gross Beta DCGL_w

0.0 Average S measurements
0 Average R measurements
0.0 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - SW7

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
JE06165-36	6	12	2	0	14	30	ND ³
JE06165-33	5	12	2	3	14	28	ND ³
JE06165-36	6	13	2	2	15	30	ND ³
JE06165-33	6	12	2	0	14	30	ND ³
JE06165-36	6	12	2	0	14	30	ND ³
JE06165-36	6	10	2	-3	13	30	ND ³
JE06165-36	6	10	2	-3	13	30	ND ³
JE06165-36	6	11	2	-2	14	30	ND ³
JE06165-10	9	41	5	-3	10	24	ND ³

¹ -E_{weighted, total} = .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Survey Results for
Unit - SW7

Sample Point	Bkg (counts)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Beta	Uncertainty ²	MDA	
JE06165-SW7 - A8	798	742	1	-32073	44053	75236	ND ³
JE06165-SW7 - E5	925	950	1	14318	48609	81002	ND ³
JE06165-SW7 - H1	798	739	1	-33792	44010	75236	ND ³
JE06165-SW7 - I3	798	740	1	-33219	44024	75236	ND ³
JE06165-SW7 - J7	602	621	1	10882	39258	65347	ND ³
JE06165-SW7 - J8	602	615	1	7446	39161	65347	ND ³
JE06165-SW7 - K5	925	956	1	17755	48686	81002	ND ³
JE06165-SW7 - K7	798	753	1	-25773	44210	75236	ND ³
JE06165-SW7 - L6	798	758	1	-22910	44281	75236	ND ³
JE06165-SW7 - L7	798	749	1	-28064	44153	75236	ND ³
JE06165-SW7 - CD4	1605	1612	1	4009	63670	106698	ND ³

¹ - $E_{\text{weighted, total}}$: 0.0003 , probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

-3 Average of the measurements
153,126 Gross Beta DCGL

Final Status Survey Results for
Unit - N1

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
TW06165-N1 - A2	5	11	2	2	13	28	ND ³
TW06165-N1 - E5	4	8	2	0	12	25	ND ³
TW06165-N1 - H2	5	9	2	-2	13	28	ND ³
TW06165-N1 - H7	6	13	2	2	15	30	ND ³
TW06165-N1 - J4	15	78	5	2	13	30	ND ³
TW06165-N1 - K7	5	9	2	-2	13	28	ND ³
TW06165-N1 - A3	5	8	2	-3	12	28	ND ³
TW06165-N1 - B3	5	10	2	0	13	28	ND ³
TW06165-N1 - B7	5	10	2	0	13	28	ND ³
TW06165-N1 - E7	6	13	2	2	15	30	ND ³
TW06165-N1 - F3	5	11	2	2	13	28	ND ³
TW06165-N1 - I7	5	9	2	-2	13	28	ND ³
TW06165-N1 - K2	5	10	2	0	13	28	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

0.5 Largest S measurement
-0.6 Smallest R measurement
0.6 Difference
27 Gross Beta DCGL_w

0.0 Average S measurements
0.0 Average R measurements
0.0 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - N1

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (In min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
TW06165- Center hall	5	10	2	0	13	28	ND ³
TW06165- Center hall	4	9	2	2	12	25	ND ³
TW06165- Center hall	5	10	2	0	13	28	ND ³
TW06165- Center hall	6	11	2	-2	14	30	ND ³
TW06165- Center hall	15	72	5	-2	13	30	ND ³
TW06165- Center hall	5	9	2	-2	13	28	ND ³
TW06165- Center hall	5	9	2	-2	13	28	ND ³
TW06165- Center hall	5	11	2	2	13	28	ND ³
TW06165- Center hall	5	10	2	0	13	28	ND ³
TW06165- Center hall	6	12	2	0	14	30	ND ³
TW06165- Center hall	5	11	2	2	13	28	ND ³
TW06165- Center hall	5	10	2	0	13	28	ND ³
TW06165- Center hall	5	10	2	0	13	28	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Survey Results for
Unit - N1

Sample Point	Bkg (counts)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Beta	Uncertainty ²	MDA	
TW06165-N1 - A2	905	915	1	5727	47890	80121	ND ³
TW06165-N1 - B4	988	1007	1	10882	50140	83715	ND ³
TW06165-N1 - C2	905	942	1	21191	48244	80121	ND ³
TW06165-N1 - D6	905	936	1	17755	48166	80121	ND ³
TW06165-N1 - E5	988	996	1	4582	50001	83715	ND ³
TW06165-N1 - H2	905	909	1	2291	47811	80121	ND ³
TW06165-N1 - H3	905	920	1	8591	47956	80121	ND ³
TW06165-N1 - H7	609	668	1	33792	40115	65726	ND ³
TW06165-N1 - J1	905	944	1	22337	48270	80121	ND ³
TW06165-N1 - J4	1102	1167	1	37228	53472	88412	ND ³
TW06165-N1 - K7	905	955	1	28637	48414	80121	ND ³

¹ - E_{weighted, total}: 0.0003 , probe active area 582cm²

² - at the 95% confidence level

³ - None detected

CPM/100cm²

5 Average of the measurements

153,126 Gross Beta DCGL

Final Status Survey Results for
Unit - N2

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BE06165-N2 - D2	6	14	2	3	15	30	ND ³
BE06165-N2 - F2	6	12	2	0	14	30	ND ³
BE06165-N2 - F4	5	11	2	2	13	28	ND ³
BE06165-N2 - F6	6	12	2	0	14	30	ND ³
BE06165-N2 - H2	6	10	2	-3	13	30	ND ³
BE06165-N2 - H3	6	11	2	-2	14	30	ND ³
BE06165-N2 - E4	5	7	2	-5	12	28	ND ³
BE06165-N2 - E6	6	11	2	-2	14	30	ND ³
BE06165-N2 - G2	6	12	2	0	14	30	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

1.0 Largest S measurement
-1.5 Smallest R measurement
1.0 Difference
27 Gross Beta DCGL_w

-0.1 Average S measurements
-0.1 Average R measurements
0.0 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - N2

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BE06165-8	6	13	2	2	15	30	ND ³
BE06165-8	6	12	2	0	14	30	ND ³
BE06165-North hall	5	10	2	0	13	28	ND ³
BE06165-10	6	11	2	-2	14	30	ND ³
BE06165-10	6	11	2	-2	14	30	ND ³
BE06165-10	6	12	2	0	14	30	ND ³
BE06165-Center hall	5	9	2	-2	13	28	ND ³
BE06165-19A	6	9	2	-5	13	30	ND ³
BE06165-19A	6	11	2	-2	14	30	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Survey Results for
Unit - N2

Sample Point	Bkg (counts)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Beta	Uncertainty ²	MDA	
BE06165-N2 - A4	759	747	1	-6873	43564	73375	ND ³
BE06165-N2 - D2	834	839	1	2864	45916	76914	ND ³
BE06165-N2 - D4	945	939	1	-3436	48725	81873	ND ³
BE06165-N2 - D5	945	947	1	1145	48828	81873	ND ³
BE06165-N2 - D7	834	824	1	-5727	45709	76914	ND ³
BE06165-N2 - E5	945	942	1	-1718	48764	81873	ND ³
BE06165-N2 - F2	834	833	1	-573	45833	76914	ND ³
BE06165-N2 - F4	945	936	1	-5155	48686	81873	ND ³
BE06165-N2 - F6	834	841	1	4009	45943	76914	ND ³
BE06165-N2 - G1	834	827	1	-4009	45751	76914	ND ³
BE06165-N2 - G3	834	831	1	-1718	45806	76914	ND ³
BE06165-N2 - H6	834	841	1	4009	45943	76914	ND ³

¹ - E_{weighted, total}: 0.0003 , probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

0 Average of the measurements
153,126 Gross Beta DCGL

Final Status Survey Results for
Unit - NE1

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BB06165-NE1 - B7	5	11	2	2	13	28	ND ³
BB06165-NE1 - C4	6	14	2	3	15	30	ND ³
BB06165-NE1 - D3	6	13	2	2	15	30	ND ³
BB06165-NE1 - E6	14	63	5	-5	12	29	ND ³
BB06165-NE1 - E7	14	67	5	-2	12	29	ND ³
BB06165-NE1 - E12	6	12	2	0	14	30	ND ³
BB06165-NE1 - G12	6	10	2	-3	13	30	ND ³
BB06165-NE1 - J10	6	11	2	-2	14	30	ND ³
BB06165-NE1 - F12	6	12	2	0	14	30	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

1.0 Largest S measurement
-0.5 Smallest R measurement
1.5 Difference
27 Gross Beta DCGL_w

0.0 Average S measurements
0.0 Average R measurements
0.0 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - NE1

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BB06165-25	5	10	2	0	13	28	ND ³
BB06165-25	6	12	2	0	14	30	ND ³
BB06165-25	6	12	2	0	14	30	ND ³
BB06165-MBR	14	69	5	-1	12	29	ND ³
BB06165-MBR	14	71	5	1	12	29	ND ³
BB06165-25	6	13	2	2	15	30	ND ³
BB06165-25	6	12	2	0	14	30	ND ³
BB06165-25	6	11	2	-2	14	30	ND ³
BB06165-25	6	11	2	-2	14	30	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Survey Results for
Unit - NE1

Sample Point	Bkg (counts)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable
				Gross Beta	Uncertainty ²	MDA	Radionuclide
BB06165-NE1 - B7	600	601	1	573	38903	65238	ND ³
BB06165-NE1 - C4	797	788	1	-5155	44692	75189	ND ³
BB06165-NE1 - D3	797	779	1	-10309	44565	75189	ND ³
BB06165-NE1 - D8	2783	2758	1	-14318	83561	140499	ND ³
BB06165-NE1 - E6	2783	2816	1	18900	83998	140499	ND ³
BB06165-NE1 - E7	2783	2784	1	573	83757	140499	ND ³
BB06165-NE1 - E9	920	918	1	-1145	48127	80782	ND ³
BB06165-NE1 - E11	920	891	1	-16609	47772	80782	ND ³
BB06165-NE1 - E12	797	826	1	16609	45224	75189	ND ³
BB06165-NE1 - F12	797	814	1	9737	45057	75189	ND ³
BB06165-NE1 - G5	1141	1160	1	10882	53848	89963	ND ³
BB06165-NE1 - G12	797	776	1	-12027	44522	75189	ND ³

¹ - E_{weighted, total}: 0.0003 , probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

0 Average of the measurements

153,126 Gross Beta DCGL

Final Status Survey Results for
Unit - NE2

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
JE06175-NE2 - D1	6	12	2	0	14	30	ND ³
JE06175-NE2 - E2	6	11	2	-2	14	30	ND ³
JE06175-NE2 - F8	6	9	2	-5	13	30	ND ³
JE06175-NE2 - G2	6	12	2	0	14	30	ND ³
JE06175-NE2 - G7	6	10	2	-3	13	30	ND ³
JE06175-NE2 - I7	6	9	2	-5	13	30	ND ³
JE06175-NE2 - I8	6	11	2	-2	14	30	ND ³
JE06175-NE2 - J3	6	12	2	0	14	30	ND ³
JE06175-NE2 - CE5	9	43	5	-1	10	24	ND ³
JE06175-NE2 - B4	5	9	2	-2	13	28	ND ³
JE06175-NE2 - G5	5	8	2	-3	12	28	ND ³
JE06175-NE2 - K4	5	10	2	0	13	28	ND ³
JE06175-NE2 - L3	5	11	2	2	13	28	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

0.5 Largest S measurement
-1.5 Smallest R measurement
2.0 Difference
27 Gross Beta DCGL_w

-0.1 Average S measurements
-0.1 Average R measurements
0.0 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - NE2

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
JE06175-19A	6	11	2	-2	14	30	ND ³
JE06175-19A	6	10	2	-3	13	30	ND ³
JE06175-19A	6	9	2	-5	13	30	ND ³
JE06175-19A	6	9	2	-5	13	30	ND ³
JE06175-19A	6	10	2	-3	13	30	ND ³
JE06175-19A	6	12	2	0	14	30	ND ³
JE06175-19A	6	11	2	-2	14	30	ND ³
JE06175-19A	6	10	2	-3	13	30	ND ³
JE06175-19A	9	42	5	-2	10	24	ND ³
JE06175-19A	5	10	2	0	13	28	ND ³
JE06175-19A	5	11	2	2	13	28	ND ³
JE06175-19A	5	10	2	0	13	28	ND ³
JE06175-19A	5	11	2	2	13	28	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Survey Results for
Unit - NE2

Sample Point	Bkg (counts)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Beta	Uncertainty ²	MDA	
JE06175-NE2 - F1	798	794	1	-2291	44790	75236	ND ³
JE06175-NE2 - D1	798	802	1	2291	44903	75236	ND ³
JE06175-NE2 - G4	925	932	1	4009	48375	81002	ND ³
JE06175-NE2 - E2	798	792	1	-3436	44762	75236	ND ³
JE06175-NE2 - F8	798	796	1	-1145	44818	75236	ND ³
JE06175-NE2 - G2	798	790	1	-4582	44734	75236	ND ³
JE06175-NE2 - G7	798	758	1	-22910	44281	75236	ND ³
JE06175-NE2 - H5	925	919	1	-3436	48205	81002	ND ³
JE06175-NE2 - I5	925	927	1	1145	48309	81002	ND ³
JE06175-NE2 - I7	798	799	1	573	44861	75236	ND ³
JE06175-NE2 - I8	798	815	1	9737	45085	75236	ND ³

¹ - E_{weighted, total}: 0.0003 , probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

-1 Average of the measurements

153,126 Gross Beta DCGL

Final Status Survey Results for
Unit - NE3

Sample Point	Bkg (CPM)	Gross (counts)	Count time (In min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BB06175-NE3 - A2	6	11	2	-2	14	30	ND ³
BB06175-NE3 - A3	6	10	2	-3	13	30	ND ³
BB06175-NE3 - A5	18	92	5	1	14	33	ND ³
BB06175-NE3 - A8	6	12	2	0	14	30	ND ³
BB06175-NE3 - B2	6	11	2	-2	14	30	ND ³
BB06175-NE3 - B5	18	91	5	1	14	33	ND ³
BB06175-NE3 - A6	6	13	2	2	15	30	ND ³
BB06175-NE3 - F3	6	12	2	0	14	30	ND ³
BB06175-NE3 - F8	6	12	2	0	14	30	ND ³
BB06175-NE3 - CB5	9	46	5	1	10	24	ND ³
BB06175-NE3 - CF5	9	48	5	2	10	24	ND ³
BB06175-NE3 - A6	6	8	2	-7	13	30	ND ³
BB06175-NE3 - A7	6	14	2	3	15	30	ND ³
BB06175-NE3 - B8	6	10	2	-3	13	30	ND ³
BB06175-NE3 - C2	4	6	2	-3	11	25	ND ³
BB06175-NE3 - C7	6	12	2	0	14	30	ND ³
BB06175-NE3 - C8	6	10	2	-3	13	30	ND ³
BB06175-NE3 - F1	6	11	2	-2	14	30	ND ³
BB06175-NE3 - F6	6	11	2	-2	14	30	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

1 Largest S measurement
-1 Smallest R measurement
2 Difference
27 Gross Beta DCGL_w

0.0 Average S measurements
0.0 Average R measurements
0.0 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - NE3

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BB06175-19A	6	12	2	0	14	30	ND ³
BB06175-19A	6	11	2	-2	14	30	ND ³
BB06175-20	18	94	5	3	14	33	ND ³
BB06175-19A	6	11	2	-2	14	30	ND ³
BB06175-19A	6	10	2	-3	13	30	ND ³
BB06175-20	18	89	5	-1	14	33	ND ³
BB06175-19A	6	12	2	0	14	30	ND ³
BB06175-19A	6	11	2	-2	14	30	ND ³
BB06175-19A	6	12	2	0	14	30	ND ³
BB06175-20	9	49	5	3	10	24	ND ³
BB06175-20	9	47	5	1	10	24	ND ³
BB06175-19A	6	12	2	0	14	30	ND ³
BB06175-19A	6	11	2	-2	14	30	ND ³
BB06175-20	6	10	2	-3	13	30	ND ³
BB06175-20	4	7	2	-2	11	25	ND ³
BB06175-20	6	11	2	-2	14	30	ND ³
BB06175-20	6	10	2	-3	13	30	ND ³
BB06175-20	6	11	2	-2	14	30	ND ³
BB06175-20	6	11	2	-2	14	30	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Survey Results for
Unit - NE3

Sample Point	Bkg (counts)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Beta	Uncertainty ²	MDA	
BE06175-NE3 - A2	834	848	1	8018	46039	76914	ND ³
BE06175-NE3 - A3	834	841	1	4009	45943	76914	ND ³
BE06175-NE3 - A5	1087	1099	1	6873	52485	87809	ND ³
BE06175-NE3 - A8	834	839	1	2864	45916	76914	ND ³
BE06175-NE3 - B2	834	830	1	-2291	45792	76914	ND ³
BE06175-NE3 - B5	1087	1086	1	-573	52329	87809	ND ³
BE06175-NE3 - A6	834	837	1	1718	45888	76914	ND ³
BE06175-NE3 - E5	1087	1112	1	14318	52641	87809	ND ³
BE06175-NE3 - F3	834	842	1	4582	45957	76914	ND ³
BE06175-NE3 - F8	834	827	1	-4009	45751	76914	ND ³
BE06175-NE3 - CA5	1720	1734	1	8018	65974	110455	ND ³
BE06175-NE3 - CB4	1720	1742	1	12600	66050	110455	ND ³

¹ - $E_{\text{weighted, total}}: 0.0003$, probe active area 582cm²

² - at the 95% confidence level

³ - None detected

CPM/100cm2

1 Average of the measurements
153,126 Gross Beta DCGL

Final Status Survey Results for
Unit - NE4

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
TW06175-NE4 - C3	5	11	2	2	13	28	ND ³
TW06175-NE4 - C4	5	10	2	0	13	28	ND ³
TW06175-NE4 - E6	4	9	2	2	12	25	ND ³
TW06175-NE4 - E8	4	10	2	3	13	25	ND ³
TW06175-NE4 - G1	6	12	2	0	14	30	ND ³
TW06175-NE4 - I4	6	11	2	-2	14	30	ND ³
TW06175-NE4 - K10	6	14	2	3	15	30	ND ³
TW06175-NE4 - L8	6	11	2	-2	14	30	ND ³
TW06175-NE4 - CD2	8	41	5	1	9	23	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm²

² - at the 95% confidence level

³ - None detected

CPM/100cm2

1 Largest S measurement
-1 Smallest R measurement
2 Difference
27 Gross Beta DCGL_w

0.0 Average S measurements
0.0 Average R measurements
0.0 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - NE4

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
TW06175-19	5	10	2	0	13	28	ND ³
TW06175-19	5	9	2	-2	13	28	ND ³
TW06175-Center hall	4	9	2	2	12	25	ND ³
TW06175-Center hall	4	9	2	2	12	25	ND ³
TW06175-Center hall	6	11	2	-2	14	30	ND ³
TW06175-Center hall	6	11	2	-2	14	30	ND ³
TW06175-Center hall	6	12	2	0	14	30	ND ³
TW06175-Center hall	6	10	2	-3	13	30	ND ³
TW06175-Center hall	8	40	5	0	9	23	ND ³

¹ -E_{weighted, total} .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Survey Results for
Unit - NE4

Sample Point	Bkg (counts)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Beta	Uncertainty ²	MDA	
TW06175-NE4 - A5	905	916	1	6300	47903	80121	ND ³
TW06175-NE4 - C3	958	972	1	8018	49316	82434	ND ³
TW06175-NE4 - C4	958	957	1	-573	49124	82434	ND ³
TW06175-NE4 - D6	988	998	1	5727	50027	83715	ND ³
TW06175-NE4 - E6	988	1019	1	17755	50290	83715	ND ³
TW06175-NE4 - E8	988	1029	1	23482	50416	83715	ND ³
TW06175-NE4 - F4	988	1010	1	12600	50178	83715	ND ³
TW06175-NE4 - G1	837	942	1	60137	47348	77052	ND ³
TW06175-NE4 - I4	837	965	1	73310	47653	77052	ND ³
TW06175-NE4 - K10	837	886	1	28064	46597	77052	ND ³
TW06175-NE4 - L6	609	701	1	52692	40630	65726	ND ³
TW06175-NE4 - L8	609	694	1	48683	40521	65726	ND ³

¹ - E_{weighted, total}: 0.0003 , probe active area 582cm²

² - at the 95% confidence level

³ - None detected

CPM/100cm²

8 Average of the measurements

153,126 Gross Beta DCGL

Final Status Survey Results for
Unit - NE5

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BB06175-NE5 - B2	6	13	2	2	15	30	ND ³
BB06175-NE5 - B3	6	12	2	0	14	30	ND ³
BB06175-NE5 - B8	5	11	2	2	13	28	ND ³
BB06175-NE5 - C5	5	11	2	2	13	28	ND ³
BB06175-NE5 - F7	5	10	2	0	13	28	ND ³
BB06175-NE5 - H5	14	68	5	-1	12	29	ND ³
BB06175-NE5 - I8	5	12	2	3	14	28	ND ³
BB06175-NE5 - J7	5	11	2	2	13	28	ND ³
BB06175-NE5 - L3	6	13	2	2	15	30	ND ³

¹ -E_{weighted, total} = .05 and probe active area 582cm²

² - at the 95% confidence level

³ - None detected

CPM/100cm2

1 Largest S measurement
-1 Smallest R measurement
2 Difference
27 Gross Beta DCGL_w

0.1 Average S measurements
0.0 Average R measurements
0.1 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - NE5

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BB06175-NW hall	6	12	2	0	14	30	ND ³
BB06175-NW hall	6	11	2	-2	14	30	ND ³
BB06175-South hall	5	9	2	-2	13	28	ND ³
BB06175-NW hall	5	11	2	2	13	28	ND ³
BB06175-South hall	5	11	2	2	13	28	ND ³
BB06175-20	14	65	5	-3	12	29	ND ³
BB06175-South hall	5	10	2	0	13	28	ND ³
BB06175-South hall	5	12	2	3	14	28	ND ³
BB06175-NW hall	6	12	2	0	14	30	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Survey Results for
Unit - NE5

Sample Point	Bkg (counts)	Gross (counts)	Count time (In min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Beta	Uncertainty ²	MDA	
BB06175-NE5 - A3	797	748	1	-28064	44124	75189	ND ³
BB06175-NE5 - B2	797	778	1	-10882	44550	75189	ND ³
BB06175-NE5 - B3	797	764	1	-18900	44352	75189	ND ³
BB06175-NE5 - B8	862	836	1	-14891	46257	78195	ND ³
BB06175-NE5 - C5	920	919	1	-573	48140	80782	ND ³
BB06175-NE5 - E8	862	870	1	4582	46718	78195	ND ³
BB06175-NE5 - F7	862	852	1	-5727	46475	78195	ND ³
BB06175-NE5 - H5	1141	1131	1	-5727	53508	89963	ND ³
BB06175-NE5 - I8	862	868	1	3436	46691	78195	ND ³
BB06175-NE5 - J7	862	881	1	10882	46866	78195	ND ³
BB06175-NE5 - J8	862	875	1	7446	46786	78195	ND ³
BB06175-NE5 - L3	797	798	1	573	44832	75189	ND ³

¹ - E_{weighted, total}: 0.0003 , probe active area 582cm²

² - at the 95% confidence level

³ - None detected

CPM/100cm²

-1.4 Average of the measurements

153,126 Gross Beta DCGL

Final Status Survey Results for
Unit - NE6

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BE06205-NE6 - C3	6	13	2	2	15	30	ND ³
BE06205-NE6 - C5	5	10	2	0	13	28	ND ³
BE06205-NE6 - E5	12	63	5	2	12	27	ND ³
BE06205-NE6 - F4	5	11	2	2	13	28	ND ³
BE06205-NE6 - G7	6	12	2	0	14	30	ND ³
BE06205-NE6 - CB4	9	43	5	-1	10	24	ND ³
BE06205-NE6 - CF4	9	47	5	1	10	24	ND ³
BE06205-NE6 - CG4	9	45	5	0	10	24	ND ³
BE06205-NE6 - CI4	5	12	2	3	14	28	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

1.0 Largest S measurement
-0.5 Smallest R measurement
1.5 Difference
27 Gross Beta DCGL_w

0.0 Average S measurements
0.0 Average R measurements
0.0 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - NE6

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (In min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
BE06205-8	6	11	2	-2	14	30	ND ³
BE06205-Center hall	5	11	2	2	13	28	ND ³
BE06205-8	12	61	5	1	12	27	ND ³
BE06205-Center hall	5	12	2	3	14	28	ND ³
BE06205-8	6	10	2	-3	13	30	ND ³
BE06205-8	9	46	5	1	10	24	ND ³
BE06205-8	9	45	5	0	10	24	ND ³
BE06205-8	9	44	5	-1	10	24	ND ³
BE06205-8	5	11	2	2	13	28	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Survey Results for
Unit - NE6

Sample Point	Bkg (counts)	Gross (counts)	Count time (In min)	Total Surface Activity ¹ in DPM/100cm2			Removable
				Gross Beta	Uncertainty ²	MDA	Radionuclide
BE06205-NE6 - C3	834	827	1	-4009	45751	76914	ND ³
BE06205-NE6 - C5	945	938	1	-4009	48712	81873	ND ³
BE06205-NE6 - D2	834	831	1	-1718	45806	76914	ND ³
BE06205-NE6 - E1	834	829	1	-2864	45778	76914	ND ³
BE06205-NE6 - E5	1163	1190	1	15464	54453	90826	ND ³
BE06205-NE6 - F4	945	952	1	4009	48893	81873	ND ³
BE06205-NE6 - G1	834	837	1	1718	45888	76914	ND ³
BE06205-NE6 - G4	945	950	1	2864	48867	81873	ND ³
BE06205-NE6 - G7	834	829	1	-2864	45778	76914	ND ³
BE06205-NE6 - J5	945	953	1	4582	48906	81873	ND ³
BE06205-NE6 - CB4	1720	1679	1	-23482	65447	110455	ND ³

¹ - $E_{\text{weighted, total}}$: 0.0003 , probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

0 Average of the measurements
153,126 Gross Beta DCGL

Final Status Survey Results for
Unit - NE7

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
JE06205-NE7 - C4	6	12	2	0	14	30	ND ³
JE06205-NE7 - D2	6	12	2	0	14	30	ND ³
JE06205-NE7 - J1	6	12	2	0	14	30	ND ³
JE06205-NE7 - CG5	9	46	5	1	10	24	ND ³
JE06205-NE7 - CK4	9	47	5	1	10	24	ND ³
JE06205-NE7 - A4	6	12	2	0	14	30	ND ³
JE06205-NE7 - F4	5	8	2	-3	12	28	ND ³
JE06205-NE7 - I2	6	13	2	2	15	30	ND ³
JE06205-NE7 - J7	6	11	2	-2	14	30	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

CPM/100cm2

0.4 Largest S measurement
0.5 Smallest R measurement
-0.1 Difference
27 Gross Beta DCGL_w

0.0 Average S measurements
0.0 Average R measurements
0.0 Difference
27 Gross Beta DCGL_w

Final Status Survey Results for
Unit - NE7

Reference Area Measurements

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Alpha	Uncertainty ²	MDA	
JE06205-8	6	12	2	0	14	30	ND ³
JE06205-8	6	12	2	0	14	30	ND ³
JE06205-8	6	12	2	0	14	30	ND ³
JE06205-8	9	46	5	1	10	24	ND ³
JE06205-8	9	47	5	1	10	24	ND ³
JE06205-8	6	11	2	-2	14	30	ND ³
JE06205-8	5	12	2	3	14	28	ND ³
JE06205-8	6	12	2	0	14	30	ND ³
JE06205-8	6	11	2	-2	14	30	ND ³

¹ -E_{weighted, total}: .05 and probe active area 582cm2

² - at the 95% confidence level

³ - None detected

Final Status Survey Results for
Unit - NE7

Sample Point	Bkg (counts)	Gross (counts)	Count time (In min)	Total Surface Activity ¹ in DPM/100cm2			Removable Radionuclide
				Gross Beta	Uncertainty ²	MDA	
JE06205-NE7 - A5	798	823	1	14318	45196	75236	ND ³
JE06205-NE7 - C4	798	763	1	-20046	44352	75236	ND ³
JE06205-NE7 - D2	798	771	1	-15464	44466	75236	ND ³
JE06205-NE7 - E1	602	614	1	6873	39145	65347	ND ³
JE06205-NE7 - F1	798	771	1	-15464	44466	75236	ND ³
JE06205-NE7 - J1	798	768	1	-17182	44423	75236	ND ³
JE06205-NE7 - J2	798	764	1	-19473	44366	75236	ND ³
JE06205-NE7 - J3	798	763	1	-20046	44352	75236	ND ³
JE06205-NE7 - K2	602	615	1	7446	39161	65347	ND ³
JE06205-NE7 - L7	798	805	1	4009	44945	75236	ND ³
JE06205-NE7 - M8	798	814	1	9164	45071	75236	ND ³
JE06205-NE7 - CD4	1605	1600	1	-2864	63552	106698	ND ³

¹ - E_{weighted, total}: 0.0003 , probe active area 582cm²

² - at the 95% confidence level

³ - None detected

CPM/100cm²

-1.7 Average of the measurements

153,126 Gross Beta DCGL

Swipe Sample Analysis

Removable Surface Activity Measurements - Gross Alpha/Beta

Swipe Sample ID Number	Swipe Sample Location	Removable Surface Activity in DPM/100cm ²			
		Gross Alpha/Beta	Uncertainty (95%CL)	MDA	Radionuclide
BB06085 -2	4D - D3	-1	1	6	ND
BB06085 -3	4D - E6	-1	1	5	ND
BB06085 -4	4D - F6	1	1	5	ND
BB06085 -5	4D - G10	0	1	5	ND
BB06085 -7	4D - CD7	0	1	5	ND
BB06085 -8	4D - CD8	0	1	5	ND
BB06085 -9	4D - CG4	0	1	5	ND
JE06085 -1	4EI - C5	0	1	5	ND
JE06085 -4	4EI - D6	0	1	5	ND
JE06085 -6	4EI - H2	-1	1	5	ND
JE06085 -8	4EI - J8	2	1	5	ND
JE06085 -9	4EI - CH5	-1	1	5	ND
TW06085 -1	16I - D10	3	1	6	ND
TW06085 -2	16I - F8	0	1	6	ND
TW06085 -3	16I - F10	2	1	6	ND
TW06085 -4	16I - I7	2	1	6	ND
TW06085 -5	16I - L5	-2	1	6	ND
TW06085 -6	16I - CG6	2	1	5	ND
TW06085 -7	16I - CH8	0	1	5	ND
TW06085 -8	16I - CH9	0	1	5	ND
TW06085 -9	16I - CI6	3	1	5	ND
TW06105-1	16I - E5	2	1	6	ND
TW06105-2	16I - E10	0	1	6	ND
TW06105-4	16I - I12	-1	1	5	ND
TW06105-5	16I - L10	-1	1	6	ND
TW06105-6	16I - N10	1	1	5	ND
BE06085 -4	17I - F6	1	1	6	ND
BE06085 -5	17I - F8	-2	1	6	ND
BE06085 -6	17I - G2	2	1	5	ND
BE06085 -7	17I - I8	2	1	5	ND
BE06085 -8	17I - I12	1	1	5	ND
BE06085 -9	17I - CD9	0	1	5	ND
TW06095 -1	18I - B5	-1	1	6	ND
TW06095 -2	18I - E8	0	1	6	ND
TW06095 -3	18I - F12	0	1	5	ND

Removable Surface Activity Measurements - Gross Alpha/Beta

Swipe Sample ID Number	Swipe Sample Location	Removable Surface Activity in DPM/100cm2			
		Gross Alpha/Beta	Uncertainty (95%CL)	MDA	Radionuclide
TW06095 -4	18I - H8	2	1	6	ND
TW06095 -5	18I - H10	5	1	6	ND
TW06095 -6	18I - I6	1	1	6	ND
BB06095 -1	21I - B6	2	1	5	ND
BB06095 -2	21I - B9	-1	1	6	ND
BB06095 -3	21I - D11	1	1	5	ND
BB06095 -6	21I - H10	-1	1	5	ND
BB06095 -7	21I - J5	1	1	5	ND
BB06095 -8	21I - J11	1	1	5	ND
JE06095 -10	22 - A5	1	1	5	ND
JE06095 -11	22 - E7	3	1	6	ND
JE06095 -12	22 - J5	3	1	6	ND
JE06095 -13	22 - J8	0	1	5	ND
JE06095 -14	22 - J9	1	1	5	ND
JE06095 -15	22 - K4	-2	1	5	ND
BE06095 -1	23 - C6	0	1	5	ND
BE06095 -2	23 - E9	0	1	5	ND
BE06095 -3	23 - G2	-1	1	5	ND
BE06095 -4	23 - H4	-1	1	5	ND
BE06095 -5	23 - I1	1	1	5	ND
BE06095 -6	23 - L5	1	1	5	ND
BE06135B -1	25I - A5	4	1	5	ND
BE06135B -2	25I - B5	2	1	5	ND
BE06135B -3	25I - E8	2	1	5	ND
BE06135B -4	25I - G11	1	1	5	ND
BE06135B -5	25I - H2	3	1	5	ND
BB06135 -1	25B - A4	2	1	5	ND
BB06135 -2	25B - B4	1	1	5	ND
BB06135 -3	25B - D8	1	1	5	ND
BB06135 -4	25B - F5	2	1	5	ND
BB06135 -5	25B - G4	0	1	5	ND
BB06135 -6	25B - H6	0	1	5	ND
JE06105 -1	27I - E5	1	1	5	ND
JE06105 -2	27I - E9	3	1	5	ND
JE06105 -3	27I - G6	1	1	5	ND

Removable Surface Activity Measurements - Gross Alpha/Beta

Swipe Sample ID Number	Swipe Sample Location	Removable Surface Activity in DPM/100cm2			
		Gross Alpha/Beta	Uncertainty (95%CL)	MDA	Radionuclide
JE06105 -4	27I - I6	0	1	5	ND
JE06105 -5	27I - J1	0	1	5	ND
JE06105 -6	27I - J9	0	1	5	ND
TW06135 -1	29I - D7	2	1	6	ND
TW06135 -2	29I - D9	1	1	6	ND
TW06135 -3	29I - F5	2	1	6	ND
TW06135 -4	29I - K6	0	1	5	ND
TW06135 -5	29I - L4	0	1	5	ND
TW06135 -6	29I - L9	1	1	6	ND
TW06135 -7	29I - CD7	3	1	5	ND
TW06135 -8	29I - CE9	-1	1	5	ND
TW06135 -9	29I - CG9	3	1	5	ND
JE06155 -3	31I - E4	-1	1	5	ND
JE06155 -4	31I - F12	0	1	5	ND
JE06155 -5	31I - G5	1	1	6	ND
JE06155 -8	31I - CE5	2	1	5	ND
JE06155 -9	31I - CF8	0	1	5	ND
TW06145 -2	SW1 - E8	1	1	5	ND
TW06145 -8	SW1 - L8	-1	1	5	ND
TW06145 -11	SW1 - N6	5	1	5	ND
TW06145 -13	SW1 - CJ4	0	1	5	ND
TW06145 -14	SW1 - CL5	2	1	5	ND
BE06145 -1	SW2 - C2	2	1	5	ND
BE06145 -3	SW2 - D5	2	1	5	ND
BE06145 -7	SW2 - F3	1	1	5	ND
BE06145 -9	SW2 - F7	1	1	5	ND
BE06145 -12	SW2 - CB4	1	1	5	ND
BE06145 -13	SW2 - CC4	2	1	5	ND
BE06145 -15	SW2 - CF5	2	1	5	ND
BB06145 -1	SW3 - A5	-2	1	5	ND
BB06145 -2	SW3 - B5	0	1	5	ND
BB06145 -3	SW3 - G4	0	1	5	ND
BB06145 -4	SW3 - D6	1	1	5	ND
BB06145 -8	SW3 - F11	1	1	5	ND
BB06145 -13	SW3 - CE4	1	1	5	ND

Removable Surface Activity Measurements - Gross Alpha/Beta

Swipe Sample ID Number	Swipe Sample Location	Removable Surface Activity in DPM/100cm2			
		Gross Alpha/Beta	Uncertainty (95%CL)	MDA	Radionuclide
TW06155 -3	SW4 - B5	1	1	6	ND
TW06155 -6	SW4 - F8	3	1	5	ND
TW06155 -10	SW4 - J3	1	1	6	ND
TW06155 -11	SW4 - K2	0	1	5	ND
TW06155 -12	SW4 - CB4	1	1	5	ND
TW06155 -13	SW4 - CC4	0	1	5	ND
TW06155 -14	SW4 - CK4	0	1	5	ND
BB06155 -1	SW5 - A8	0	1	5	ND
BB06155 -7	SW5 - G3	1	1	5	ND
BB06155 -8	SW5 - H3	-1	1	8	ND
BB06155 -11	SW5 - K1	0	1	5	ND
BB06155 -12	SW5 - CA5	0	1	5	ND
BB06155 -15	SW5 - CL5	3	1	5	ND
BE06155 -4	SW6 - D7	-1	1	5	ND
BE06155 -6	SW6 - E6	-1	1	5	ND
BE06155 -8	SW6 - G1	0	1	5	ND
BE06155 -9	SW6 - H7	0	1	5	ND
BE06155 -10	SW6 - J5	1	1	6	ND
BE06155 -11	SW6 - K8	-2	1	5	ND
JE06165 -1	SW7 - A8	1	1	5	ND
JE06165 -2	SW7 - E5	0	1	5	ND
JE06165 -4	SW7 - I3	1	1	5	ND
JE06165 -6	SW7 - J8	-1	1	5	ND
JE06165 -8	SW7 - K7	1	1	5	ND
TW06165 -1	N1 - A2	-1	1	5	ND
TW06165 -5	N1 - E5	1	1	6	ND
TW06165 -6	N1 - H2	0	1	5	ND
TW06165 -8	N1 - H7	0	1	5	ND
TW06165 -10	N1 - J4	2	1	6	ND
TW06165 -12	N1 - K7	-2	1	5	ND
JE06165 -2	N2 - D2	0	1	5	ND
JE06165 -7	N2 - F2	3	1	5	ND
JE06165 -8	N2 - F4	-1	1	5	ND
JE06165 -9	N2 - F6	-1	1	5	ND
JE06165 -14	N2 - H2	1	1	5	ND

Removable Surface Activity Measurements - Gross Alpha/Beta

Swipe Sample ID Number	Swipe Sample Location	Removable Surface Activity in DPM/100cm2			
		Gross Alpha/Beta	Uncertainty (95%CL)	MDA	Radionuclide
JE06165 -15	N2 - H3	0	1	5	ND
BB06165 - 1	NE1 - B7	1	1	6	ND
BB06165 -2	NE1 - C4	0	1	5	ND
BB06165 -3	NE1 - D3	-1	1	5	ND
BB06165 -5	NE1 - E6	3	1	5	ND
BB06165 -6	NE1 - E7	4	1	5	ND
BB06165 -9	NE1 - E12	2	1	5	ND
BB06165 -10	NE1 - F12	2	1	5	ND
BB06165 -12	NE1 - G12	0	1	5	ND
BB06165 -15	NE1 - J10	0	1	5	ND
JE06175 -2	NE2 - D1	0	1	5	ND
JE06175 -4	NE2 - E2	-1	1	5	ND
JE06175 -5	NE2 - F8	2	1	5	ND
JE06175 -6	NE2 - G2	0	1	5	ND
JE06175 -7	NE2 - G7	0	1	5	ND
JE06175 -10	NE2 - I7	4	1	5	ND
JE06175 -11	NE2 - I8	0	1	5	ND
JE06175 -12	NE2 - J3	-1	1	5	ND
JE06175 -16	NE2 - CE5	0	1	5	ND
BE06175 - 1	NE3 - A2	0	1	5	ND
BE06175 -2	NE3 - A3	1	1	5	ND
BE06175 -3	NE3 - A5	1	1	5	ND
BE06175 -4	NE3 - A8	2	1	5	ND
BE06175 -5	NE3 - B2	1	1	5	ND
BE06175 -6	NE3 - B5	0	1	5	ND
BE06175 -7	NE3 - A6	1	1	5	ND
BE06175 -9	NE3 - F3	1	1	5	ND
BE06175 -10	NE3 - F8	0	1	5	ND
BE06175 -13	NE3 - CB5	2	1	5	ND
BE06175 -15	NE3 - CF5	0	1	5	ND
TW06175 -2	NE4 - C3	2	1	6	ND
TW06175 -3	NE4 - C4	0	1	6	ND
TW06175 -5	NE4 - E6	2	1	6	ND
TW06175 -6	NE4 - E8	3	1	6	ND
TW06175 -8	NE4 - G1	0	1	6	ND

Removable Surface Activity Measurements - Gross Alpha/Beta

Swipe Sample ID Number	Swipe Sample Location	Removable Surface Activity in DPM/100cm2			
		Gross Alpha/Beta	Uncertainty (95%CL)	MDA	Radionuclide
TW06175 -9	NE4 - I4	1	1	5	ND
TW06175 -10	NE4 - K10	0	1	5	ND
TW06175 -12	NE4 - L8	1	1	5	ND
TW06175 -14	NE4 - CD2	2	1	6	ND
BB06175 -2	NE5 - B2	0	1	5	ND
BB06175 -3	NE5 - B3	-1	1	5	ND
BB06175 -4	NE5 - B8	0	1	5	ND
BB06175 -5	NE5 - C5	-1	1	5	ND
BB06175 -7	NE5 - F7	0	1	5	ND
BB06175 -8	NE5 - H5	1	1	6	ND
BB06175 -9	NE5 - I8	0	1	5	ND
BB06175 -10	NE5 - J7	0	1	5	ND
BB06175 -12	NE5 - L3	-1	1	5	ND
BE06205 -1	NE6 - C3	-1	1	5	ND
BE06205 -2	NE6 - C5	1	1	5	ND
BE06205 -5	NE6 - E5	2	1	6	ND
BE06205 -6	NE6 - F4	-1	1	5	ND
BE06205 -9	NE6 - G7	-1	1	5	ND
BE06205 -11	NE6 - CB4	-1	1	5	ND
BE06205 -12	NE6 - CF4	-1	1	5	ND
BE06205 -14	NE6 - CG4	2	1	5	ND
BE06205 -15	NE6 - CI4	0	1	5	ND
BE06205 -2	NE7 - C4	0	1	5	ND
BE06205 -3	NE7 - D2	-1	1	5	ND
BE06205 -6	NE7 - J1	1	1	5	ND
BE06205 -13	NE7 - CG5	1	1	5	ND
BE06205 -15	NE7 - CK4	2	1	5	ND

Removable Surface Activity Measurements - Tritium

Swipe Sample ID Number	Swipe Sample Location	Removable Surface Activity in DPM/100cm2			
		3H	Uncertainty (95%CL)	MDA	Radionuclide
BB06085 - 1	4D - B7	-4	1	8	ND
BB06085 -2	4D - D3	-1	1	8	ND
BB06085 -3	4D - E6	-3	1	8	ND
BB06085 -4	4D - F6	-3	1	8	ND
BB06085 -5	4D - G10	-2	1	8	ND
BB06085 -6	4D - K8	0	1	8	ND
BB06085 -7	4D - CD7	-3	1	8	ND
BB06085 -8	4D - CD8	0	1	8	ND
BB06085 -9	4D - CG4	-1	1	8	ND
BB06105 - 1	4D - C5	-2	1	8	ND
BB06105 - 2	4D - D2	2	1	8	ND
JE06085 - 1	4EI - C5	-1	1	8	ND
JE06085 -2	4EI - C6	0	1	8	ND
JE06085 -3	4EI - C9	0	1	8	ND
JE06085 -4	4EI - D6	-1	1	8	ND
JE06085 -5	4EI - D7	-1	1	8	ND
JE06085 -6	4EI - H2	-2	1	8	ND
JE06085 -7	4EI - H10	0	1	8	ND
JE06085 -8	4EI - J8	0	1	8	ND
JE06085 -9	4EI - CH5	1	1	8	ND
JE06145 -10	4EI - F3	1	1	8	ND
JE06145 -11	4EI - H9	-2	1	8	ND
TW06085 - 1	16I - D10	-10	1	10	ND
TW06085 -2	16I - F8	-7	1	9	ND
TW06085 -3	16I - F10	-3	1	8	ND
TW06085 -4	16I - I7	-8	1	9	ND
TW06085 -5	16I - L5	-5	1	9	ND
TW06085 -6	16I - CG6	1	1	8	ND
TW06085 -7	16I - CH8	-2	1	8	ND
TW06085 -8	16I - CH9	-3	1	8	ND
TW06085 -9	16I - CI6	-2	1	8	ND
TW06105 - 1	16I - E5	-7	1	9	ND
TW06105 - 2	16I - E10	-4	1	8	ND
TW06105 - 3	16I - F3	-2	1	8	ND
BE06085 - 1	17I - B9	1	1	8	ND

Removable Surface Activity Measurements - Tritium

Swipe Sample ID Number	Swipe Sample Location	Removable Surface Activity in DPM/100cm2			
		3H	Uncertainty (95%CL)	MDA	Radionuclide
BE06085 -2	17I - E1	-5	1	8	ND
BE06085 -3	17I - E3	-3	1	9	ND
BE06085 -4	17I -- F6	-5	1	9	ND
BE06085 -5	17I - F8	-3	1	9	ND
BE06085 -6	17I - G2	-1	1	8	ND
BE06085 -7	17I - I8	-6	1	8	ND
BE06085 -8	17I - I12	-2	1	8	ND
BE06085 -9	17I - CD9	-1	1	8	ND
JE06165B -1	17I - G8	-1	1	8	ND
JE06165B -2	17I - H1	-3	1	8	ND
TW06095 - 1	18I - B5	-3	1	9	ND
TW06095 -2	18I - E8	-6	1	9	ND
TW06095 -3	18I - F12	2	1	8	ND
TW06095 -4	18I - H8	-3	1	9	ND
TW06095 -5	18I - H10	-5	1	9	ND
TW06095 -6	18I - I6	-9	1	10	ND
TW06095 -7	18I - L6	-4	1	8	ND
TW06095 -8	18I - CE10	-1	1	8	ND
TW06135 -10	18I - D1	-2	1	8	ND
TW06135 -11	18I - D12	-1	1	8	ND
TW06135 -15	18I - L8	-3	1	8	ND
BB06095 - 1	21I - B6	0	1	8	ND
BB06095 -2	21I - B9	-2	1	8	ND
BB06095 -3	21I - D11	-3	1	8	ND
BB06095 -4	21I - E11	-4	1	8	ND
BB06095 -5	21I - E13	-2	1	8	ND
BB06095 -6	21I - H10	-4	1	8	ND
BB06095 -7	21I - J5	-2	1	8	ND
BB06095 -8	21I - J11	-1	1	8	ND
BB06095 -9	21I - CH5	2	1	8	ND
BB06105 - 9	21I - D12	-3	1	8	ND
BB06105 - 10	21I - F9	-5	1	8	ND
JE06135 - 1	22 - A7	0	1	8	ND
JE06135 -2	22 - B4	-2	1	8	ND
JE06135 -4	22 - F3	1	1	8	ND

Removable Surface Activity Measurements - Tritium

Swipe Sample ID Number	Swipe Sample Location	Removable Surface Activity in DPM/100cm2			
		3H	Uncertainty (95%CL)	MDA	Radionuclide
JE06095 -10	22 - A5	2	1	8	ND
JE06095 -11	22 - E7	0	1	9	ND
JE06095 -12	22 - J5	-3	1	9	ND
JE06095 -13	22 - J8	-1	1	8	ND
JE06095 -14	22 - J9	1	1	8	ND
JE06095 -15	22 - K4	-2	1	8	ND
JE06095 -16	22 - CD4	2	1	8	ND
JE06095 -17	22 - CI5	-4	1	8	ND
JE06095 -18	22 - CJ6	-2	1	8	ND
BE06095 - 1	23 - C6	-1	1	8	ND
BE06095 -2	23 - E9	-2	1	8	ND
BE06095 -3	23 - G2	-3	1	8	ND
BE06095 -4	23 - H4	-3	1	8	ND
BE06095 -5	23 - I1	1	1	8	ND
BE06095 -6	23 - L5	-1	1	8	ND
BE06095 -7	23 - CD6	-6	1	8	ND
BE06095 -8	23 - CG5	0	1	8	ND
BE06095 -9	23 - CI4	-2	1	8	ND
BE06135 -10	23 - F8	-3	1	8	ND
BE06135 -11	23 - H7	-3	1	8	ND
BE06135B - 1	25I - A5	-5	1	8	ND
BE06135B -2	25I - B5	2	1	8	ND
BE06135B -3	25I - E8	-3	1	8	ND
BE06135B -4	25I - G11	2	1	8	ND
BE06135B -5	25I - H2	0	1	8	ND
BE06135B -6	25I - H6	-1	1	8	ND
BE06135B -7	25I - H12	-4	1	8	ND
BE06135B -8	25I - K7	-1	1	8	ND
BE06135B -9	25I - L7	-3	1	8	ND
BE06135B -10	25I - G2	-2	1	8	ND
BE06135B -11	25I - H5	-3	1	8	ND
BB06135 - 1	25B - A4	-1	1	8	ND
BB06135 -2	25B - B4	-1	1	8	ND
BB06135 -3	25B - D8	0	1	8	ND
BB06135 -4	25B - F5	-1	1	8	ND

Removable Surface Activity Measurements - Tritium

Swipe Sample ID Number	Swipe Sample Location	Removable Surface Activity in DPM/100cm2			
		3H	Uncertainty (95%CL)	MDA	Radionuclide
BB06135 -5	25B - G4	-1	1	8	ND
BB06135 -6	25B - H6	-1	1	8	ND
BB06135 -7	25B - CD4	1	1	8	ND
BB06135 -8	25B - CD5	1	1	8	ND
BB06135 -9	25B - CE4	1	1	8	ND
BB06135 -10	25B - A6	-2	1	8	ND
BB06135 -11	25B - D1	-2	1	8	ND
JE06105 -1	27I - E5	5	1	8	ND
JE06105 -2	27I - E9	2	1	8	ND
JE06105 -3	27I - G6	-2	1	8	ND
JE06105 -4	27I - I6	2	1	8	ND
JE06105 -5	27I - J1	-2	1	8	ND
JE06105 -6	27I - J9	1	1	8	ND
JE06105 -7	27I - K3	-1	1	8	ND
JE06105 -8	27I - M5	-6	1	8	ND
JE06105 -9	27I - N6	-1	1	8	ND
JE06135 -10	27I - A5	-1	1	8	ND
JE06135 -11	27I - E3	-1	1	8	ND
JE06135 -12	27I - F1	-2	1	8	ND
JE06135 -13	27I - G10	-1	1	8	ND
JE06135 -14	27I - H5	-4	1	9	ND
JE06135 -15	27I - J4	1	1	8	ND
TW06135 -1	29I - D7	-7	1	10	ND
TW06135 -2	29I - D9	-4	1	9	ND
TW06135 -3	29I - F5	-4	1	9	ND
TW06135 -4	29I - K6	-3	1	8	ND
TW06135 -5	29I - L4	0	1	8	ND
TW06135 -6	29I - L9	0	1	9	ND
TW06135 -7	29I - CD7	0	1	8	ND
TW06135 -8	29I - CE9	-3	1	8	ND
TW06135 -9	29I - CG9	-2	1	8	ND
TW06135 -10	29I - F11	-6	1	9	ND
TW06135 -11	29I - I6	-8	1	9	ND
JE06155 -1	31I - B6	1	1	8	ND
JE06155 -2	31I - D7	-2	1	8	ND

Removable Surface Activity Measurements - Tritium

Swipe Sample ID Number	Swipe Sample Location	Removable Surface Activity in DPM/100cm2			
		3H	Uncertainty (95%CL)	MDA	Radionuclide
JE06155 -3	31I - E4	-4	1	8	ND
JE06155 -4	31I - F12	-2	1	8	ND
JE06155 -5	31I - G5	-3	1	9	ND
JE06155 -6	31I - H2	3	1	8	ND
JE06155 -7	31I - H11	-4	1	8	ND
JE06155 -8	31I - CE5	-2	1	8	ND
JE06155 -9	31I - CF8	-1	1	8	ND
JE06145 -10	31I - C6	-3	1	8	ND
JE06145 -11	31I - C11	-3	1	8	ND
JE06145 -12	31I - E3	-1	1	8	ND
TW06145 -1	SW1 - D6	-4	1	8	ND
TW06145 -2	SW1 - E8	-3	1	8	ND
TW06145 -3	SW1 - I4	-10	1	9	ND
TW06145 -4	SW1 - J3	-1	1	8	ND
TW06145 -5	SW1 - K4	-9	1	9	ND
TW06145 -6	SW1 - K8	-6	1	8	ND
TW06145 -7	SW1 - L4	-8	1	10	ND
TW06145 -8	SW1 - L8	-2	1	8	ND
TW06145 -9	SW1 - M7	-2	1	8	ND
TW06145 -10	SW1 - N5	-6	1	10	ND
TW06145 -11	SW1 - N6	1	1	8	ND
TW06145 -12	SW1 - O2	-3	1	9	ND
BE06145 -1	SW2 - C2	0	1	8	ND
BE06145 -2	SW2 - C5	1	1	8	ND
BE06145 -3	SW2 - D5	-3	1	8	ND
BE06145 -4	SW2 - E1	0	1	8	ND
BE06145 -5	SW2 - E3	-3	1	8	ND
BE06145 -6	SW2 - F2	-1	1	8	ND
BE06145 -7	SW2 - F3	-3	1	8	ND
BE06145 -8	SW2 - F6	-3	1	8	ND
BE06145 -9	SW2 - F7	-2	1	8	ND
BE06145 -10	SW2 - G8	-2	1	8	ND
BE06145 -11	SW2 - CA4	-1	1	8	ND
BB06145 -1	SW3 - A5	2	1	8	ND
BB06145 -2	SW3 - B5	3	1	8	ND

Removable Surface Activity Measurements - Tritium

Swipe Sample ID Number	Swipe Sample Location	Removable Surface Activity in DPM/100cm2			
		3H	Uncertainty (95%CL)	MDA	Radionuclide
BB06145 -3	SW3 - G4	-1	1	8	ND
BB06145 -4	SW3 - D6	-1	1	8	ND
BB06145 -5	SW3 - E7	-5	1	8	ND
BB06145 -6	SW3 - F2	0	1	8	ND
BB06145 -7	SW3 - F8	-1	1	8	ND
BB06145 -8	SW3 - F11	-2	1	8	ND
BB06145 -9	SW3 - G3	-6	1	8	ND
BB06145 -10	SW3 - H1	-2	1	8	ND
BB06145 -12	SW3 - H9	-3	1	8	ND
TW06155 -1	SW4 - A1	0	1	8	ND
TW06155 -2	SW4 - A5	-7	1	9	ND
TW06155 -3	SW4 - B5	-8	1	9	ND
TW06155 -4	SW4 - C4	-6	1	9	ND
TW06155 -6	SW4 - F8	1	1	8	ND
TW06155 -7	SW4 - H5	-3	1	9	ND
TW06155 -8	SW4 - H6	-5	1	9	ND
TW06155 -9	SW4 - I6	-2	1	8	ND
TW06155 -10	SW4 - J3	-9	1	9	ND
TW06155 -11	SW4 - K2	-1	1	8	ND
TW06155 -12	SW4 - CB4	1	1	8	ND
TW06155 -13	SW4 - CC4	-4	1	8	ND
BB06155 -1	SW5 - A8	1	1	8	ND
BB06155 -2	SW5 - C1	0	1	8	ND
BB06155 -3	SW5 - C6	-2	1	8	ND
BB06155 -4	SW5 - D1	-6	1	9	ND
BB06155 -5	SW5 - D5	-4	1	8	ND
BB06155 -6	SW5 - E5	-1	1	8	ND
BB06155 -7	SW5 - G3	2	1	8	ND
BB06155 -8	SW5 - H3	1	1	8	ND
BB06155 -9	SW5 - B8	-1	1	8	ND
BB06155 -10	SW5 - L1	-4	1	8	ND
BB06155 -11	SW5 - K1	2	1	8	ND
BE06155 -1	SW6 - A3	0	1	8	ND
BE06155 -2	SW6 - B3	2	1	8	ND
BE06155 -3	SW6 - D2	-3	1	8	ND

Removable Surface Activity Measurements - Tritium

Swipe Sample ID Number	Swipe Sample Location	Removable Surface Activity in DPM/100cm2			
		3H	Uncertainty (95%CL)	MDA	Radionuclide
BE06155 -4	SW6 - D7	3	1	8	ND
BE06155 -5	SW6 - D8	-1	1	8	ND
BE06155 -6	SW6 - E6	1	1	8	ND
BE06155 -7	SW6 - K7	-4	1	8	ND
BE06155 -8	SW6 - G1	-3	1	8	ND
BE06155 -9	SW6 - H7	-1	1	8	ND
BE06155 -10	SW6 - J5	-2	1	9	ND
BE06155 -11	SW6 - K8	-2	1	8	ND
JE06165 -1	SW7 - A8	-3	1	8	ND
JE06165 -2	SW7 - E5	-3	1	8	ND
JE06165 -3	SW7 - H1	1	1	8	ND
JE06165 -4	SW7 - I3	2	1	8	ND
JE06165 -5	SW7 - J7	-1	1	8	ND
JE06165 -6	SW7 - J8	-2	1	8	ND
JE06165 -7	SW7 - K5	-3	1	9	ND
JE06165 -8	SW7 - K7	0	1	8	ND
JE06165 -9	SW7 - L6	-6	1	9	ND
JE06165 -10	SW7 - L7	-2	1	8	ND
TW06165 -1	N1 - A2	-4	1	8	ND
TW06165 -2	N1 - B4	-9	1	9	ND
TW06165 -3	N1 - C2	-3	1	8	ND
TW06165 -4	N1 - D6	-5	1	9	ND
TW06165 -5	N1 - E5	-4	1	9	ND
TW06165 -6	N1 - H2	-1	1	8	ND
TW06165 -7	N1 - H3	-3	1	9	ND
TW06165 -8	N1 - H7	-2	1	8	ND
TW06165 -9	N1 - J1	-1	1	8	ND
TW06165 -10	N1 - J4	-6	1	9	ND
TW06165 -12	N1 - K7	-1	1	8	ND
JE06165 -1	N2 - A4	-2	1	8	ND
JE06165 -2	N2 - D2	0	1	8	ND
JE06165 -3	N2 - D4	2	1	8	ND
JE06165 -4	N2 - D5	-5	1	9	ND
JE06165 -5	N2 -D7	-2	1	8	ND
JE06165 -6	N2 - E5	-3	1	8	ND

Removable Surface Activity Measurements - Tritium

Swipe Sample ID Number	Swipe Sample Location	Removable Surface Activity in DPM/100cm2			
		3H	Uncertainty (95%CL)	MDA	Radionuclide
JE06165 -7	N2 - F2	-3	1	8	ND
JE06165 -8	N2 - F4	-1	1	8	ND
JE06165 -9	N2 - F6	-1	1	8	ND
JE06165 -10	N2 - G1	-2	1	8	ND
JE06165 -11	N2 - G3	-1	1	8	ND
JE06165 -16	N2 - H6	-2	1	8	ND
BB06165 -1	NE1 - B7	-3	1	9	ND
BB06165 -2	NE1 - C4	-2	1	8	ND
BB06165 -3	NE1 - D3	2	1	8	ND
BB06165 -4	NE1 - D8	-3	1	8	ND
BB06165 -5	NE1 - E6	-5	1	8	ND
BB06165 -6	NE1 - E7	-1	1	8	ND
BB06165 -7	NE1 - E9	-2	1	8	ND
BB06165 -8	NE1 - E11	-1	1	8	ND
BB06165 -9	NE1 - E12	-1	1	8	ND
BB06165 -10	NE1 - F12	0	1	8	ND
BB06165 -11	NE1 - G5	-7	1	9	ND
BB06165 -12	NE1 - G12	0	1	8	ND
JE06175 -1	NE2 - F1	0	1	8	ND
JE06175 -2	NE2 - D1	-2	1	8	ND
JE06175 -3	NE2 - G4	-1	1	9	ND
JE06175 -4	NE2 - E2	-3	1	8	ND
JE06175 -5	NE2 - F8	-5	1	8	ND
JE06175 -6	NE2 - G2	-2	1	8	ND
JE06175 -7	NE2 - G7	-1	1	8	ND
JE06175 -8	NE2 - H5	-4	1	8	ND
JE06175 -9	NE2 - I5	-1	1	8	ND
JE06175 -10	NE2 - I7	-5	1	8	ND
JE06175 -11	NE2 - I8	-2	1	8	ND
BE06175 -1	NE3 - A2	-3	1	8	ND
BE06175 -2	NE3 - A3	-3	1	8	ND
BE06175 -3	NE3 - A5	-4	1	8	ND
BE06175 -4	NE3 - A8	-4	1	8	ND
BE06175 -5	NE3 - B2	-2	1	8	ND
BE06175 -6	NE3 - B5	3	1	8	ND

Removable Surface Activity Measurements - Tritium

Swipe Sample ID Number	Swipe Sample Location	Removable Surface Activity in DPM/100cm2			
		3H	Uncertainty (95%CL)	MDA	Radionuclide
BE06175 -7	NE3 - A6	-1	1	8	ND
BE06175 -8	NE3 - E5	-4	1	9	ND
BE06175 -9	NE3 - F3	-2	1	8	ND
BE06175 -10	NE3 - F8	0	1	8	ND
BE06175 -11	NE3 - CA5	-2	1	8	ND
BE06175 -12	NE3 - CB4	3	1	8	ND
TW06175 - 1	NE4 - A5	-2	1	8	ND
TW06175 -2	NE4 - C3	-4	1	9	ND
TW06175 -3	NE4 - C4	-6	1	9	ND
TW06175 -4	NE4 - D6	-12	1	9	ND
TW06175 -5	NE4 - E6	-9	1	9	ND
TW06175 -6	NE4 - E8	-12	1	11	ND
TW06175 -7	NE4 - F4	-6	1	9	ND
TW06175 -8	NE4 - G1	-3	1	9	ND
TW06175 -9	NE4 - I4	-3	1	8	ND
TW06175 -10	NE4 - K10	-4	1	8	ND
TW06175 -11	NE4 - L6	-1	1	8	ND
TW06175 -12	NE4 - L8	-3	1	8	ND
BB06175 - 1	NE5 - A3	0	1	8	ND
BB06175 -2	NE5 - B2	-1	1	8	ND
BB06175 -3	NE5 - B3	0	1	8	ND
BB06175 -4	NE5 - B8	1	1	8	ND
BB06175 -5	NE5 - C5	0	1	8	ND
BB06175 -6	NE5 - E8	-1	1	8	ND
BB06175 -7	NE5 - F7	1	1	8	ND
BB06175 -8	NE5 - H5	-2	1	9	ND
BB06175 -9	NE5 - I8	-2	1	8	ND
BB06175 -10	NE5 - J7	-5	1	8	ND
BB06175 -11	NE5 - J8	0	1	8	ND
BB06175 -12	NE5 - L3	-2	1	8	ND
BE06205 - 1	NE6 - C3	-1	1	8	ND
BE06205 -2	NE6 - C5	0	1	8	ND
BE06205 -3	NE6 - D2	-2	1	8	ND
BE06205 -4	NE6 - E1	1	1	8	ND
BE06205 -5	NE6 - E5	-4	1	9	ND

Removable Surface Activity Measurements - Tritium

Swipe Sample ID Number	Swipe Sample Location	Removable Surface Activity in DPM/100cm2			
		3H	Uncertainty (95%CL)	MDA	Radionuclide
BE06205 -6	NE6 - F4	-1	1	8	ND
BE06205 -7	NE6 - G1	0	1	8	ND
BE06205 -8	NE6 - G4	0	1	8	ND
BE06205 -9	NE6 - G7	0	1	8	ND
BE06205 -10	NE6 - J5	-5	1	8	ND
BE06205 -11	NE6 - CB4	2	1	8	ND
BE06205 - 1	NE7 - A5	1	1	8	ND
BE06205 -2	NE7 - C4	-5	1	8	ND
BE06205 -3	NE7 - D2	-2	1	8	ND
BE06205 -4	NE7 - E1	-2	1	8	ND
BE06205 -5	NE7 - F1	2	1	8	ND
BE06205 -6	NE7 - J1	-1	1	8	ND
BE06205 -7	NE7 - J2	-1	1	8	ND
BE06205 -8	NE7 - J3	1	1	8	ND
BE06205 -9	NE7 - K2	-2	1	8	ND
BE06205 -10	NE7 - L7	1	1	8	ND
BE06205 -11	NE7 - M8	-2	1	8	ND
BE06205 -12	NE7 - CD4	-2	1	8	ND

ATTACHMENT 8

Wilcoxon Rank Sum Test
Survey Unit 17C2

LBGR
2000

Wr 2983
Ws 1545

DATA	AREA	ADJUSTED DATA	RANKS	SURVEY UNIT RANKS
10446 R		10446	68	0
10862 R		10862	81	0
10310 R		10310	65	0
10889 R		10889	83	0
10403 R		10403	67	0
10994 R		10994	86	0
10543 R		10543	71	0
16440 R		16440	104	0
12291 R		12291	98	0
10854 R		10854	79	0
10523 R		10523	70	0
16324 R		16324	102	0
12528 R		12528	100	0
16318 R		16318	101	0
10281 R		10281	63	0
16425 R		16425	103	0
12348 R		12348	99	0
10779 R		10779	76	0
10362 R		10362	66	0
10679 R		10679	74	0
10305 R		10305	64	0
10837 R		10837	78	0
10226 R		10226	62	0
10670 R		10670	72	0
10153 R		10153	61	0
10780 R		10780	77	0
9924 R		9924	50	0
11258 R		11258	95	0
9921 R		9921	49	0
11078 R		11078	89	0
9959 R		9959	55	0
11023 R		11023	87	0
9916 R		9916	48	0
11194 R		11194	93	0
9942 R		9942	53	0
10867 R		10867	82	0
9935 R		9935	51	0
11205 R		11205	94	0
9968 R		9968	57	0
11266 R		11266	96	0
9936 R		9936	52	0
11098 R		11098	90	0
9945 R		9945	54	0
11150 R		11150	91	0
9966 R		9966	56	0
11058 R		11058	88	0
10106 R		10106	60	0
10701 R		10701	75	0

Wilcoxon Rank Sum Test
Survey Unit 17C2

10858 R	10858	80	0
10488 R	10488	69	0
9855 R	9855	47	0
10892 R	10892	84	0
10602 S	8602	31	31
12674 S	10674	73	73
11181 S	9181	40	40
8644 S	6644	15	15
11753 S	9753	46	46
9430 S	7430	21	21
13189 S	11189	92	92
9087 S	7087	19	19
12040 S	10040	59	59
11525 S	9525	43	43
10832 S	8832	33	33
11102 S	9102	39	39
8572 S	6572	14	14
12936 S	10936	85	85
13544 S	11544	97	97
10983 S	8983	36	36
11540 S	9540	44	44
11077 S	9077	38	38
10779 S	8779	32	32
11187 S	9187	41	41
10874 S	8874	34	34
10985 S	8985	37	37
8300 S	6300	11	11
11719 S	9719	45	45
7956 S	5956	9	9
8433 S	6433	12	12
9806 S	7806	24	24
8729 S	6729	16	16
7922 S	5922	8	8
10544 S	8544	30	30
7450 S	5450	4	4
8750 S	6750	17	17
9904 S	7904	26	26
9240 S	7240	20	20
8839 S	6839	18	18
7661 S	5661	6	6
11230 S	9230	42	42
7221 S	5221	2	2
9743 S	7743	23	23
8251 S	6251	10	10
10302 S	8302	29	29
11985 S	9985	58	58
9962 S	7962	27	27
7268 S	5268	3	3
7465 S	5465	5	5
6748 S	4748	1	1
9623 S	7623	22	22
8558 S	6558	13	13

Wilcoxon Rank Sum Test
Survey Unit 17C2

10914 S	8914	35	35
10106 S	8106	28	28
7858 S	5858	7	7
9855 S	7855	25	25
Sum =		5460	1545

ATTACHMENT 9

Quantile Test
Survey Unit 17C2

LBGR
2000

DATA	AREA	ADJUSTED DATA	RANKS	SURVEY UNIT RANKS	SORTED RANKS	ASSOCIATED AREA
10446 R		10446	68	0	1	S
10862 R		10862	81	0	2	S
10310 R		10310	65	0	3	S
10889 R		10889	83	0	4	S
10403 R		10403	67	0	5	S
10994 R		10994	86	0	6	S
10543 R		10543	71	0	7	S
16440 R		16440	104	0	8	S
12291 R		12291	98	0	9	S
10854 R		10854	79	0	10	S
10523 R		10523	70	0	11	S
16324 R		16324	102	0	12	S
12528 R		12528	100	0	13	S
16318 R		16318	101	0	14	S
10281 R		10281	63	0	15	S
16425 R		16425	103	0	16	S
12348 R		12348	99	0	17	S
10779 R		10779	76	0	18	S
10362 R		10362	66	0	19	S
10679 R		10679	74	0	20	S
10305 R		10305	64	0	21	S
10837 R		10837	78	0	22	S
10226 R		10226	62	0	23	S
10670 R		10670	72	0	24	S
10153 R		10153	61	0	25	S
10780 R		10780	77	0	26	S
9924 R		9924	50	0	27	S
11258 R		11258	95	0	28	S
9921 R		9921	49	0	29	S
11078 R		11078	89	0	30	S
9959 R		9959	55	0	31	S
11023 R		11023	87	0	32	S
9916 R		9916	48	0	33	S
11194 R		11194	93	0	34	S
9942 R		9942	53	0	35	S
10867 R		10867	82	0	36	S
9935 R		9935	51	0	37	S
11205 R		11205	94	0	38	S
9968 R		9968	57	0	39	S
11266 R		11266	96	0	40	S
9936 R		9936	52	0	41	S
11098 R		11098	90	0	42	S
9945 R		9945	54	0	43	S
11150 R		11150	91	0	44	S
9966 R		9966	56	0	45	S
11058 R		11058	88	0	46	S
10106 R		10106	60	0	47	R

Quantile Test
Survey Unit 17C2

10701 R	10701	75	0	48	R
10858 R	10858	80	0	49	R
10488 R	10488	69	0	50	R
9855 R	9855	47	0	51	R
10892 R	10892	84	0	52	R
10602 S	8602	31	31	53	R
12674 S	10674	73	73	54	R
11181 S	9181	40	40	55	R
8644 S	6644	15	15	56	R
11753 S	9753	46	46	57	R
9430 S	7430	21	21	58	S
13189 S	11189	92	92	59	S
9087 S	7087	19	19	60	R
12040 S	10040	59	59	61	R
11525 S	9525	43	43	62	R
10832 S	8832	33	33	63	R
11102 S	9102	39	39	64	R
8572 S	6572	14	14	65	R
12936 S	10936	85	85	66	R
13544 S	11544	97	97	67	R
10983 S	8983	36	36	68	R
11540 S	9540	44	44	69	R
11077 S	9077	38	38	70	R
10779 S	8779	32	32	71	R
11187 S	9187	41	41	72	R
10874 S	8874	34	34	73	S
10985 S	8985	37	37	74	R
8300 S	6300	11	11	75	R
11719 S	9719	45	45	76	R
7956 S	5956	9	9	77	R
8433 S	6433	12	12	78	R
9806 S	7806	24	24	79	R
8729 S	6729	16	16	80	R
7922 S	5922	8	8	81	R
10544 S	8544	30	30	82	R
7450 S	5450	4	4	83	R
8750 S	6750	17	17	84	R
9904 S	7904	26	26	85	S
9240 S	7240	20	20	86	R
8839 S	6839	18	18	87	R
7661 S	5661	6	6	88	R
11230 S	9230	42	42	89	R
7221 S	5221	2	2	90	R
9743 S	7743	23	23	91	R
8251 S	6251	10	10	92	S
10302 S	8302	29	29	93	R
11985 S	9985	58	58	94	R
9962 S	7962	27	27	95	R
7268 S	5268	3	3	96	R
7465 S	5465	5	5	97	S
6748 S	4748	1	1	98	R

Quantile Test
Survey Unit 17C2

9623 S	7623	22	22	99	R
8558 S	6558	13	13	100	R
10914 S	8914	35	35	101	R
10106 S	8106	28	28	102	R
7858 S	5858	7	7	103	R
9855 S	7855	25	25	104	R
Sum =		5460	1545		

ATTACHMENT 10

k=	Prob	α
0	0.028142	1
1	0.152947	0.971858
2	0.318911	0.818911
3	0.318911	0.5
4	0.152947	0.181089
5	0.028142	0.028142

mean k=	2.50
std dev=	11.12

k=	Prob	α
0	0.000834	1
1	0.009826	0.999166
2	0.04936	0.98934
3	0.138731	0.93998
4	0.240467	0.80125
5	0.266604	0.560783
6	0.189081	0.294179
7	0.082723	0.105098
8	0.020259	0.022375

mean k=	4.71
std dev=	15.28

ATTACHMENT 11

Daily Portable Survey Instrument Quality Assurance Checks

Instrument:	Scaler/rate meter
Detector:	Gas proportional

Model:	Ludlum 2221	Serial Nr:	197770
Model:	Ludlum 43-37A	Serial Nr:	O92765

Calibration Date:	03/22/05
Calibration Date:	03/22/06

Date	Time	Technician Reviewer	Background in CPM		Acceptable Range (CPM)		Source ID Nr.	Isotope	Source Reading in CPM		Acceptable Range (CPM)		Results
			X	-	+50% -50%	+3σ -3σ			X	-	+10% -10%	+3σ -3σ	
6/8/05	0900	BB FW	4	4	<u>6</u> 2	<u>5</u> 3	O4053	210Po	26307 ²	26307	<u>28937</u> 23676	<u>27845</u> 24768	PASS
6/9/05	1300	BB FW	5	4	<u>6</u> 2	<u>5</u> 3	O4053	210Po	23514	23514	<u>25866</u> 21163	<u>24051</u> 22978	PASS
6/10/05	0600	BB FW	4	4	<u>6</u> 2	<u>5</u> 3	O4053	210Po	23161	23503	<u>25853</u> 21153	<u>24056</u> 22950	PASS
6/13/05	1300	BB FW	4	4	<u>6</u> 2	<u>5</u> 3	O4053	210Po	23472	23502	<u>25852</u> 21152	<u>24046</u> 22958	PASS
6/14/05	0700	BB FW	4	4	<u>6</u> 2	<u>5</u> 3	O4053	210Po	23384	23498	<u>25848</u> 21149	<u>24036</u> 22961	PASS
6/15/05	1300	BB FW	5	4	<u>6</u> 2	<u>6</u> 3	O4053	210Po	23449	23497	<u>25847</u> 21147	<u>24027</u> 22967	PASS
6/17/05	1100	BB FW	4	4	<u>6</u> 2	<u>5</u> 3	O4053	210Po	23419	23495	<u>25844</u> 21145	<u>24018</u> 22971	PASS
6/20/05	0630	BB FW	4	4	<u>6</u> 2	<u>5</u> 3	O4053	210Po	23477	23494	<u>25844</u> 21145	<u>24010</u> 22978	PASS
6/21/05	0615	BB FW	5	4	<u>6</u> 2	<u>5</u> 3	O4053	210Po	23515	23495	<u>25844</u> 21145	<u>24003</u> 23106	PASS
6/22/05	1300	BB FW	4	4	<u>6</u> 2	<u>5</u> 3	O4053	210Po	23433	23493	<u>25842</u> 21144	<u>23996</u> 22991	PASS
6/23/05	1530	BB FW	5	4	<u>6</u> 2	<u>5</u> 3	O4053	210Po	23491	23493	<u>25842</u> 21144	<u>23989</u> 22997	PASS
6/29/05	0700	BB FW	5	4	<u>6</u> 2	<u>5</u> 3	O4053	210Po	23203	23486	<u>25834</u> 21137	<u>23989</u> 22982	PASS

² - Used different jig

Daily Portable Survey Instrument Quality Assurance Checks

Instrument:	Scaler/rate meter
Detector:	Gas proportional

Model:	Ludlum 2221	Serial Nr:	197770
Model:	Ludlum 43-37B	Serial Nr:	O92765

Calibration Date:	03/22/05
Calibration Date:	03/22/06

Date	Time	Technician Reviewer	Background in CPM		Acceptable Range (CPM)		Source ID Nr.	Isotope	Source Reading in CPM		Acceptable Range (CPM)		Results
			X	-	+20% -20%	+3σ -3σ			X	-	+10% -10%	+3σ -3σ	
6/8/05	1300	BB FW	1082	1082	<u>1299</u> 866	<u>1159</u> 1006	1838	137Cs	128596	128596	<u>141455</u> 115736	<u>131258</u> 125933	PASS
6/9/05	0800	BB FW	1079	1082	<u>1299</u> 866	<u>1155</u> 1010	1838	137Cs	135758 ²	135758	<u>149334</u> 122182	<u>139931</u> 131585	PASS
6/10/05	1000	BB FW	1035	1078	<u>1294</u> 863	<u>1156</u> 1001	1838	137Cs	128617	128596	<u>141456</u> 115737	<u>131214</u> 125978	PASS
6/13/05	0700	BB FW	1034	1075	<u>1290</u> 860	<u>1156</u> 994	1838	137Cs	129694	128631	<u>141494</u> 115767	<u>131254</u> 126007	PASS
6/14/05	1300	BB FW	996 ¹	996	<u>1196</u> 797	<u>1024</u> 969	1838	137Cs	129522	128658	<u>141523</u> 115792	<u>131271</u> 126044	PASS
6/15/05	0630	BB FW	1000 ¹	997	<u>1196</u> 797	<u>1023</u> 970	1838	137Cs	129923	128695	<u>141564</u> 115825	<u>131328</u> 126061	PASS
6/17/05	0855	BB FW	1031	1072	<u>1286</u> 857	<u>1155</u> 989	1838	137Cs	129702	128724	<u>141596</u> 115851	<u>131355</u> 126092	PASS
6/21/05	1400	BB FW	1062	1071	<u>1285</u> 857	<u>1152</u> 991	1838	137Cs	129784	128753	<u>141628</u> 115878	<u>131387</u> 126119	PASS
6/22/05	0615	BB FW	1015	1068	<u>1281</u> 854	<u>1154</u> 982	1838	137Cs	129749	128780	<u>141658</u> 115902	<u>131411</u> 126149	PASS
6/23/05	1300	BB FW	1010	1064	<u>1277</u> 851	<u>1155</u> 974	1838	137Cs	129549	128800	<u>141680</u> 115920	<u>131415</u> 126815	PASS
6/24/05	0630	BB FW	1045	1063	<u>1276</u> 851	<u>1152</u> 975	1838	137Cs	129626	128821	<u>141703</u> 115939	<u>131424</u> 126219	PASS

¹ - Made In a different location

² - Used different jig

Daily Portable Survey Instrument Quality Assurance Checks

Instrument:	Scaler/rate meter
Detector:	Gas proportional

Model:	Ludlum 2221	Serial Nr:	168577
Model:	Ludlum 43-37A	Serial Nr:	190909

Calibration Date:	10/19/04
Calibration Date:	10/19/05

Date	Time	Technician Reviewer	Background in CPM		Acceptable Range (CPM)		Source ID Nr.	Isotope	Source Reading in CPM		Acceptable Range (CPM)		Results
			X	-	+50% -50%	+3σ -3σ			X	-	+10% -10%	+3σ -3σ	
6/8/05	1515	BE			<u>6</u>	<u>5</u>	O4051	210Po	26609	26609	<u>29270</u>	<u>27463</u>	PASS
		FW	4	4	2	3					23949	25756	
6/9/05	1330	BE			<u>6</u>	<u>5</u>	O4051	210Po	25770	25751	<u>28326</u>	<u>28120</u>	PASS
		FW	4	4	2	3					23176	23383	
6/10/05	0630	BE			<u>6</u>	<u>5</u>	O4051	210Po	25911	26252	<u>28877</u>	<u>27710</u>	PASS
		FW	5	4	2	3					23627	24795	
6/14/05	1330	BE			<u>6</u>	<u>5</u>	O4051	210Po	25985	26248	<u>28873</u>	<u>27696</u>	PASS
		FW	4	4	2	3					23623	24800	
6/15/05	0630	BE			<u>7</u>	<u>6</u>	O4051	210Po	25984	26244	<u>28868</u>	<u>27683</u>	PASS
		FW	5	4	2	3					23619	24805	
6/16/05	1400	BE			<u>7</u>	<u>6</u>	O4051	210Po	25921	26239	<u>28862</u>	<u>27670</u>	PASS
		FW	4	4	2	3					23615	24807	
6/17/05	0630	BE			<u>7</u>	<u>6</u>	O4051	210Po	25840	26232	<u>28856</u>	<u>27658</u>	PASS
		FW	5	5	2	3					23609	24807	
6/20/05	1120	BE			<u>7</u>	<u>6</u>	O4051	210Po	25704	26224	<u>28847</u>	<u>27649</u>	PASS
		FW	5	5	2	3					23602	24800	
6/21/05	0630	BE			<u>7</u>	<u>6</u>	O4051	210Po	25633	26216	<u>28837</u>	<u>27642</u>	PASS
		FW	5	5	2	3					23594	24789	
6/21/05	1250	BE			<u>7</u>	<u>6</u>	O4051	210Po	25667	26207	<u>28828</u>	<u>27633</u>	PASS
		FW	5	5	2	3					23587	24782	
6/23/05	1300	BE			<u>7</u>	<u>6</u>	O4051	210Po	25874	26203	<u>28823</u>	<u>27622</u>	PASS
		FW	5	5	2	3					23582	24784	
6/24/05	0945	BE			<u>7</u>	<u>6</u>	O4051	210Po	25858	26198	<u>28818</u>	<u>27610</u>	PASS
		FW	5	5	2	3					23578	24785	

Daily Portable Survey Instrument Quality Assurance Checks

Instrument: Scaler/rate meter
Detector: Gas proportional

Model: Ludlum 2221 **Serial Nr:** 168577
Model: Ludlum 43-37B **Serial Nr:** 190909

Calibration Date: 10/19/04
Calibration Date: 10/19/05

Date	Time	Technician Reviewer	Background in CPM		Acceptable Range (CPM)		Source ID Nr.	Isotope	Source Reading in CPM		Acceptable Range (CPM)		Results
			X	- X	+20% -20%	+3σ -3σ			X	- X	+10% -10%	+3σ -3σ	
6/8/05	1515	BE FW	1192	1192	1431 954	1259 1125	2100	137Cs	106260	106260	116886 95634	109937 102582	PASS
6/9/05	0800	BE FW	1103	1103	1323 882	1158 1048	2100	137Cs	109643	106369	117006 95732	110309 102428	PASS
6/13/05	0600	BE FW	1019	1095	1314 876	1179 1012	2100	137Cs	109283	106460	117106 95814	110558 102362	PASS
6/13/05	1300	BE FW	1077	1094	1313 875	1174 1013	2100	137Cs	106243	106453	117099 95808	110488 102418	PASS
6/14/05	0700	BE FW	1080	1093	1312 875	1169 1018	2100	137Cs	109343	106538	117192 95884	110712 102364	PASS
6/15/05	1320	BE FW	1027	1089	1307 871	1174 1004	2100	137Cs	109360	106619	117281 95957	110911 102327	PASS
6/17/05	1145	BE FW	1049	1087	1304 869	1172 1001	2100	137Cs	109289	106693	117362 96024	111077 102309	PASS
6/20/05	0630	BE FW	1060	1085	1302 868	1170 1000	2100	137Cs	109019	106756	117431 96080	111189 102322	PASS
6/22/05	0630	BE FW	1064	1084	1301 867	1167 1000	2100	137Cs	109101	106818	117499 96136	111299 102336	PASS
6/23/05	0830	BE FW	1059	1083	1299 866	1165 1000	2100	137Cs	109036	106874	117562 96187	111391 102358	PASS
6/24/05	0630	BE FW	1089	1083	1299 866	1163 1003	2100	137Cs	109035	106928	117621 96236	111473 102384	PASS
6/29/05	0630	BE FW	1099	1084	1300 867	1162 1005	2100	137Cs	109146	106983	117981 96284	111558 102407	PASS

Daily Portable Survey Instrument Quality Assurance Checks

Instrument:	Scaler/rate meter
Detector:	Gas proportional

Model:	Ludlum 2221	Serial Nr:	169217
Model:	Ludlum 43-37A	Serial Nr:	190946

Calibration Date:	03/22/05
Calibration Date:	03/22/06

Date	Time	Technician Reviewer	Background in CPM		Acceptable Range (CPM)		Source ID Nr.	Isotope	Source Reading in CPM		Acceptable Range (CPM)		Results
			X	-	+50% -50%	+3σ -3σ			X	-	+10% -10%	+3σ -3σ	
6/8/05	0900	TW FW	4	4	<u>7</u> 2	<u>5</u> 4	O4054	210Po	27370	27370	<u>30107</u> 24633	<u>28238</u> 26502	PASS
6/9/05	1230	TW FW	4	4	<u>7</u> 2	<u>5</u> 4	O4054	210Po	26893	26487	<u>29136</u> 23839	<u>28927</u> 24047	PASS
6/10/05	1000	TW FW	4	4	<u>7</u> 2	<u>5</u> 4	O4054	210Po	27547	27361	<u>30097</u> 24625	<u>28233</u> 26489	PASS
6/13/05	0700	TW FW	4	4	<u>7</u> 2	<u>5</u> 4	O4054	210Po	27299	27357	<u>30093</u> 24621	<u>28217</u> 26497	PASS
6/14/05	0715	TW FW	4	4	<u>6</u> 2	<u>5</u> 3	O4054	210Po	27180	27352	<u>30086</u> 24617	<u>28202</u> 26501	PASS
6/15/05	0700	TW FW	4	4	<u>6</u> 2	<u>5</u> 2	O4054	210Po	27074	27344	<u>30078</u> 24609	<u>28190</u> 26497	PASS
6/17/05	0630	TW FW	4	4	<u>7</u> 2	<u>5</u> 4	O4054	210Po	26886	27331	<u>30064</u> 24598	<u>28188</u> 26474	PASS
6/21/05	1330	TW FW	4	4	<u>7</u> 2	<u>5</u> 4	O4054	210Po	27032	27323	<u>30055</u> 24591	<u>28178</u> 26468	PASS
6/22/05	0630	TW FW	4	4	<u>7</u> 2	<u>5</u> 4	O4054	210Po	26660	27306	<u>30036</u> 24575	<u>28193</u> 26418	PASS
6/23/05	1300	TW FW	4	4	<u>7</u> 2	<u>5</u> 4	O4054	210Po	26756	27291	<u>30021</u> 24562	<u>28196</u> 26387	PASS
6/29/05	0700	TW FW	4	4	<u>7</u> 2	<u>5</u> 4	O4054	210Po	26992	27284	<u>30012</u> 24556	<u>28185</u> 26383	PASS

Daily Portable Survey Instrument Quality Assurance Checks

Instrument:	Scaler/rate meter
Detector:	Gas proportional

Model:	Ludlum 2221	Serial Nr:	168217
Model:	Ludlum 43-37B	Serial Nr:	190946

Calibration Date:	03/22/05
Calibration Date:	03/22/06

Date	Time	Technician Reviewer	Background in CPM		Acceptable Range (CPM)		Source ID Nr.	Isotope	Source Reading in CPM		Acceptable Range (CPM)		Results
			X	-	+20% -20%	+3σ -3σ			X	-	+10% -10%	+3σ -3σ	
6/8/05	1500	TW FW	1107	1107	1329 886	1160 1055	1838	137Cs	132804 ²	132804	146084 119523	138448 127160	PASS
6/9/05	0900	TW FW	1073	1104	1325 884	1161 1048	1838	137Cs	138163	138163	151979 124347	150671 125655	PASS
6/10/05	1000	TW FW	1053	1100	1320 880	1166 1034	1838	137Cs	136046	138095	151904 124285	150431 125758	PASS
6/13/05	0700	TW FW	1063	1097	1317 878	1166 1028	1838	137Cs	139438	138137	151950 124323	150288 125985	PASS
6/14/05	1115	TW FW	1089	1097	1316 877	1163 1030	1838	137Cs	139220	138169	151986 124352	150139 126200	PASS
6/15/05	1300	TW FW	1115	1098	1318 878	1163 1033	1838	137Cs	139671	138214	152035 124392	150019 126408	PASS
6/17/05	1100	TW FW	1082	1097	1316 878	1161 1033	1838	137Cs	138280	138215	152037 124394	149846 126585	PASS
6/20/05	0630	TW FW	1034	1093	1312 875	1166 1020	1838	137Cs	140003	138265	152092 124439	149754 126776	PASS
6/21/05	0630	TW FW	1031	1090	1208 872	1170 1009	1838	137Cs	138255	138265	152091 124438	149593 126936	PASS
6/23/05	1530	TW FW	1063	1088	1306 871	1168 1009	1838	137Cs	137510	138245	152070 124421	149424 127006	PASS
6/29/05	1130	TW FW	1113	1121	1346 897	1299 944	1838	137Cs	138527	138252	152077 124427	149284 127221	PASS
6/30/05	0800	TW FW	1046	1118	1341 894	1287 948	1838	137Cs	138527	138255	152081 124430	149145 127366	PASS

² - Used different jig

Daily Portable Survey Instrument Quality Assurance Checks

Instrument: Scaler/rate meter
Detector: Gas proportional

Model: Ludlum 2221 **Serial Nr:** 190169
Model: Ludlum 43-37A **Serial Nr:** 190672

Calibration Date: 10/19/04
Calibration Date: 10/19/05

Date	Time	Technician Reviewer	Background In CPM		Acceptable Range (CPM)		Source ID Nr.	Isotope	Source Reading in CPM		Acceptable Range (CPM)		Results
			X	-	+50%	+3σ			X	-	+10%	+3σ	
6/8/05	1300	JE FW	4	4	6 2	5 3	O4052	210Po	26939	26939	32603 26675	30035 29243	PASS
6/9/05	1300	JE FW	5	4	6 2	5 3	O4052	210Po	28128	28683	31551 25185	31194 26172	PASS
6/10/05	0600	JE FW	5	4	6 2	5 3	O4052	210Po	28066	29543	32497 26588	30594 28492	PASS
6/13/05	0600	JE FW	5	4	6 2	5 3	O4052	210Po	28095 ²	28095	30904 25285	30465 25724	PASS
6/14/05	0600	JE FW	5	4	6 2	5 3	O4052	210Po	28212 ²	28095	30908 25289	30430 25767	PASS
6/15/05	1345	JE FW	5	5	7 2	7 3	O4052	210Po	28130 ²	28099	30909 25289	30393 25806	PASS
6/17/05	0600	JE FW	5	5	7 2	6 3	O4052	210Po	28374 ²	28108	30918 25297	30368 25847	PASS
6/20/05	0600	JE FW	5	5	7 2	6 3	O4052	210Po	28199 ²	28110	30921 25299	30337 25884	PASS
6/22/05	0600	JE FW	5	5	7 2	6 3	O4052	210Po	28077 ²	28109	30920 25298	30303 25916	PASS
6/23/05	1300	JE FW	5	5	7 2	6 3	O4052	210Po	27995 ²	28106	30917 25296	30269 25944	PASS
6/24/05	0630	JE FW	5	5	7 2	6 3	O4052	210Po	28207 ²	28109	30920 25298	30242 25976	PASS
6/29/05	0630	JE FW	5	5	7 2	6 3	O4052	210Po	28032 ²	28107	30918 25296	30211 26003	PASS

² - Used different jig

Daily Portable Survey Instrument Quality Assurance Checks

Instrument:	Scaler/rate meter
Detector:	Gas proportional

Model:	Ludlum 2221	Serial Nr:	190169
Model:	Ludlum 43-37B	Serial Nr:	190672

Calibration Date:	10/19/04
Calibration Date:	10/19/05

Date	Time	Technician Reviewer	Background In CPM		Acceptable Range (CPM)		Source ID Nr.	Isotope	Source Reading In CPM		Acceptable Range (CPM)		Results
			X	-	+20% -20%	+3σ -3σ			X	-	+10% -10%	+3σ -3σ	
6/8/05	1300	JE FW	1328 ¹	1328	1594 1063	1432 1224	2100	137Cs	107573	107573	118330 96816	109269 105876	PASS
6/9/05	0700	JE FW	1055	1055	1266 844	1123 986	2100	137Cs	109494	107635	118398 96871	109526 105744	PASS
6/13/05	1300	JE FW	1055	1055	1266 844	1120 990	2100	137Cs	106243	107591	118350 96832	109557 105262	PASS
6/14/05	0830	JE FW	1028	1052	1263 842	1118 987	2100	137Cs	106237	107550	118305 96795	109578 105523	PASS
6/14/05	1300	JE FW	1057	1053	1263 842	1115 990	2100	137Cs	106124	107508	118259 96757	109602 105414	PASS
6/16/05	1300	JE FW	1130	1158	1270 847	1139 978	2100	137Cs	106492	107479	118227 96731	109589 105369	PASS
6/17/05	1100	JE FW	1093	1061	1273 848	1141 980	2100	137Cs	106261	107445	118190 96701	109590 105301	PASS
6/20/05	1120	JE FW	1028	1059	1270 847	1139 978	2100	137Cs	106869	107430	118173 96687	109559 105301	PASS
6/21/05	0630	JE FW	1045	1058	1269 846	1136 979	2100	137Cs	106176	107397	118137 96657	109561 105232	PASS
6/21/05	1330	JE FW	1029	1056	1267 845	1134 978	2100	137Cs	105821	107356	118092 96621	109589 105124	PASS
6/22/05	1240	JE FW	1082	1058	1269 846	1135 980	2100	137Cs	106359	107332	118065 96598	109573 105090	PASS
6/23/05	1100	JE FW	982	1054	1265 843	1141 967	2100	137Cs	106388	107309	118039 96578	109554 105063	PASS
6/24/05	1030	JE FW	978	1050	1260 840	1145 955	2100	137Cs	106181	107282	118010 96554	109545 105019	PASS
6/30/05	0630	JE FW	1087	1050	1260 840	1146 953	2100	137Cs	106179	107256	117982 96530	109534 104979	PASS

1 - Made In a different location

Instrument:	Scaler/rate meter
Detector:	Fidler B2 Nai

Model:	Ludlum 2350	Serial Nr:	79037
Model:	Ludlum G5	Serial Nr:	JP245

Calibration Date:	06/14/05
Calibration Date:	06/14/05

Date	Time	Technician Reviewer	Background in CPM		Acceptable Range (CPM)		Source ID Nr.	Isotope	Source Reading in CPM		Acceptable Range (CPM)		Results
			X	-	+20% -20%	+3σ -3σ			X	-	+10% -10%	+3σ -3σ	
6/17/05	0610	BB FW	3467	3467	4160 2774	3603 3331	1838	137Cs	248441	248441	273252 223570	249539 247282	PASS
6/20/05	0900	BB FW	3833	3500	4200 2800	3813 3188	1838	137Cs	254507	248965	273862 224069	253827 244103	PASS
6/27/05	0645	BB FW	3675	3515	4218 2812	3840 3190	1838	137Cs	250305	249077	273984 224169	253818 244335	PASS
6/28/05	0900	BB FW	3626	3523	4228 2819	3845 3202	1838	137Cs	250046	249151	274066 224236	253744 244559	PASS
7/7/05	0900	BB FW	3739	3539	4247 2831	3881 3196	1838	137Cs	252825	249414	274355 224472	254501 244326	PASS
7/8/05	0630	BB FW	3746	3553	4263 2842	3910 3195	1838	137Cs	272561	250957	276052 225861	267137 234776	PASS

ATTACHMENT 12

Verification Measurements - Gross Alpha

Sample Point	Bkg (CPM)	Gross (counts)	Count time (in min)	Total Surface Activity ¹ in DPM/100cm ²		
				Gross Alpha	Uncertainty ²	MDA
JE06215-4D - D3	6	13	2	2	15	24
JE06215-4D - E6	18	85	5	-3	14	39
BB06215-4EI - C5	6	13	2	2	15	30
BB06215-4EI - H2	6	14	2	3	15	30
BE06215-16I - F10	18	87	5	-2	14	16
BE06215-16I - L5	6	11	2	-2	14	22
TW06215-17I - G2	6	13	2	2	15	24
TW06215-17I - I8	10	53	5	2	11	30
BE06215-18I - F12	6	12	2	0	14	30
BE06215-18I - I6	5	10	2	0	13	28
BB06095-21I - D11	18	95	5	3	14	33
BB06095-21I - J5	6	13	2	2	15	30
BB06215 - 22- E7	9	45	5	0	10	24
BB06215 - 22- J9	6	10	2	-3	13	30
TW06215-23 - C6	5	12	2	3	14	28
TW06215-23 - H4	5	11	2	2	13	28
TW06215-25I - B5	8	43	5	2	10	23
TW06215-25I - E8	15	64	5	-8	12	30
JE06215-25B - F5	5	14	2	7	15	28
JE06215-25B - H6	6	12	2	0	14	30
BB06215-27I - E9	4	8	2	0	12	25
BB06215-27I - J1	4	9	2	2	12	25
BE06215-29I - L4	6	13	2	2	15	30
BE06215-29I - CG9	9	47	5	1	10	24
BB06215-31I - E4	11	50	5	-3	11	26
BB06215-31I - G5	5	14	2	7	15	28
BE06215-SW1 - E8	5	12	2	3	14	28
BE06215-SW1 - CJ4	8	44	5	3	10	23
TW06215-SW2 - F3	5	10	2	0	13	28
TW06215-SW2 - CC4	8	41	5	1	9	23
JE06215-SW3 - D6	6	13	2	2	15	30
JE06215-SW3 - F11	6	11	2	-2	14	30
BE06215-SW4 - B5	18	92	5	1	14	33
BE06215-SW4 - J3	7	30	5	-3	8	22
JE06215-SW5 - G3	5	12	2	3	14	28
JE06215-SW5 - K1	6	14	2	3	15	30
TW06215-SW6 - E6	5	10	2	0	13	28
TW06215-SW6 - K8	5	9	2	-2	13	28
BB06215-SW7 - A8	6	13	2	2	15	30
BB06215-SW7 - J8	6	11	2	-2	14	30
BE06215-N1 - J4	18	92	5	1	14	33
BE06215-N1 - K7	6	13	2	2	15	30
TW06215-N2 - F4	4	9	2	2	12	25
TW06215-N2 - H2	5	10	2	0	13	28
JE06215-NE1 - B7	6	12	2	0	14	30
JE06215-NE1 - J10	6	12	2	0	14	30
BB06215-NE2 - G7	6	13	2	2	15	30
BB06215-NE2 - J3	6	11	2	-2	14	30
BB06175-NE3 - A5	15	77	5	1	13	30
BB06175-NE3 - F3	5	11	2	2	13	28

Verification Measurements - Gross Alpha

Sample Point	Bkg (CPM)	Gross (counts)	Count time (In min)	Total Surface Activity ¹ in DPM/100cm2		
				Gross Alpha	Uncertainty ²	MDA
BE06215-NE4 - C3	6	12	2	0	14	30
BE06215-NE4 - L8	4	9	2	2	12	25
JE06215-NE5 - B8	6	12	2	0	14	30
JE06215-NE5 - I8	5	11	2	2	13	28
BB06225-NE6 - C3	6	12	2	0	14	30
BB06225-NE6 - C5	5	10	2	0	13	28
BB06225-NE7 - C4	6	13	2	2	15	30
BB06225-NE7 - J1	6	12	2	0	14	30

Verification Measurements - Gross Beta

Sample Point	Bkg (counts)	Gross (counts)	Count time (In min)	Total Surface Activity in DPM/100cm2		
				Gross Beta	Uncertainty	MDA
JE06215-4D - D3	798	788	1	-5727	44706	75236
JE06215-4D - E6	1113	1101	1	-6873	52820	88852
BB06215-4EI - C5	780	780	1	0	44338	74383
BB06215-4EI - H9	590	586	1	-2291	38496	64692
BE06215-16I - F10	1087	1091	1	2291	52389	87809
BE06215-16I - L5	834	839	1	2864	45916	76914
TW06215-17I - G2	837	960	1	70447	47587	77052
TW06215-17I - I8	1070	1084	1	8018	52100	87119
BE06215-18I - D12	834	836	1	1145	45874	76914
BE06215-18I - L8	834	821	1	-7446	45668	76914
JE06215-21I - D11	1113	1131	1	10309	53177	88852
JE06215-21I - J5	798	806	1	4582	44959	75236
BB06215-22 - E7	1196	1200	1	2291	54948	92106
BB06215-22 - F3	590	592	1	1145	38594	64692
TW06215-23 - I1	905	923	1	10309	47995	80121
TW06215-23 - F8	905	897	1	-4582	47653	80121
TW06215-25I - E8	1008	989	1	-10882	50165	84558
TW06215-25I - K7	667	673	1	3436	41093	68784
JE06215-25B - F5	888	880	1	-4582	47201	79365
JE06215-25B - A6	798	827	1	16609	45252	75236
BB06215-27I - E9	681	693	1	6873	41611	69502
BB06215-27I - K3	797	788	1	-5155	44692	75189
BE06215-29I - L4	834	821	1	-7446	45668	76914
BE06215-29I - CD7	1650	1623	1	-15464	64222	108184
BB06215-31I - F12	797	799	1	1145	44846	75189
BB06215-31I - H2	797	760	1	-21191	44295	75189
BE06215-SW1 - J3	622	610	1	-6873	39402	66423
BE06215-SW1 - N6	834	831	1	-1718	45806	76914
TW06215-SW2 - F2	905	952	1	26919	48375	80121
TW06215-SW2 - F7	905	926	1	12027	48035	80121
JE06215-SW3 - G4	910	924	1	8018	48074	80342
JE06215-SW3 - H9	798	867	1	39519	45806	75236
BE06215-SW4 - H6	834	837	1	1718	45888	76914
BE06215-SW4 - J3	901	876	1	-14318	47321	79944
JE06215-SW5 - C6	602	614	1	6873	39145	65347
JE06215-SW5 - E5	925	951	1	14891	48621	81002
TW06215-SW6 - B3	905	906	1	573	47772	80121
TW06215-SW6 - D8	905	892	1	-7446	47587	80121
BB06215-SW7 - J7	600	594	1	-3436	38789	65238
BB06215-SW7 - CD4	1650	1672	1	12600	64701	108184
BE06215-N1 - J4	1087	1091	1	2291	52389	87809
BE06215-N1 - K7	834	826	1	-4582	45737	76914
TW06215-N2 - F4	988	997	1	5155	50014	83715
TW06215-N2 - H6	905	957	1	29782	48440	80121
JE06215-NE1 - C4	798	852	1	30928	45599	75236
JE06215-NE1 - G5	1113	1136	1	13173	53236	88852
BB06215-NE2 - G7	797	818	1	12027	45113	75189
BB06215-NE2 - I8	797	787	1	-5727	44678	75189
TW06215-NE3 - A5	1102	1171	1	39519	53519	88412
TW06215-NE3 - B5	1102	1116	1	8018	52868	88412

Verification Measurements - Gross Beta

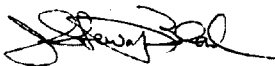
Sample Point	Bkg (counts)	Gross (counts)	Count time (in min)	Total Surface Activity in DPM/100cm2		
				Gross Beta	Uncertainty	MDA
BE06215-NE4 - G1	901	878	1	-13173	47348	79944
BE06215-NE4 - L6	622	640	1	10309	39879	66423
JE06215-NE5 - E8	884	889	1	2864	47268	79186
JE06215-NE5 - I8	884	894	1	5727	47334	79186
BB06225-NE6 - E5	1196	1214	1	10309	55109	92106
BB06225-NE6 - F4	920	907	1	-7446	47982	80782
BB06225-NE7 - L7	797	801	1	2291	44875	75189
BB06225-NE7 - CD4	1650	1643	1	-4009	64418	108184

ATTACHMENT 13

Quality Assurance Review of Decommissioning
Activities at FDA Laboratory

12709 Twinbrook Parkway, Rockville, Maryland

Prepared by:



J. Stewart Bland, CHP

July 21, 2005

Date



CHESAPEAKE NUCLEAR SERVICES, INC.
A J STEWART BLAND COMPANY

788 Sonne Drive, Annapolis, MD 21401
410-266-9174 (voice) 410-266-5811 (fax)

INTRODUCTION

The Food and Drug Administration (FDA) is a Nuclear Regulatory Commission (NRC) radioactive materials licensee. The FDA operated research and testing laboratories at a facility located at 12709 Twinbrook Parkway, Rockville MD. The FDA has now relocated research operations and administrative personnel to facilities elsewhere in the Washington, DC area. This facility is undergoing decommissioning, including decontamination and final status surveys for demonstrating that the facility may be released for unrestricted release.

The FDA is required to demonstrate that the site and property is acceptable for release in accordance with the requirements and conditions specified by the NRC. The FDA has retained the services of Clym Environmental Services, LLC (Clym) to assist in the decommissioning. All decommissioning-related activities (scoping, characterization and final status surveys; remediation; and waste disposal) have been conducted under the authority of FDA's NRC radioactive materials license.

This Quality Assurance review was conducted to provide independent verification that the procedures and methods used by Clym were appropriate for release of Twinbrook Parkway laboratory in accordance with generally acceptable decommissioning practices and final status surveys meeting MARSSIM guidelines. The review was performed at the request of Clym on June 21st and 22nd, 2005 by J. Stewart Bland. Mr. Bland holds current certification in the comprehensive practice of health physics by the American Board of Health Physics.

SCOPE

The scope of this review focuses on activities conducted late in the FSS process. There were four key criteria evaluated:

1. Appropriate application of the site characterization to the specified surveys.
2. Appropriate use of instruments/detectors/lab analysis, including calibrations, correlations to characterization radionuclides, detection capability, and use in the field.
3. Independent observation of survey method and documentation.
4. Review of records for completeness (limited).
5. Independent gamma spectral measurement of an excavated trench with identified elevated levels of radiation.

METHOD

The review included assessment of project documents, a tour of facility, observation of routine instrument operability checks and surveys, interviews with project personnel, and a limited review of survey records. No independent surveys were performed.

REFERENCES

1. Survey records for Survey Unit NE 6 and NE 7.
2. Operational Checks log (calibration certificates, semi-daily instrument operability checks).
3. Daily Portable Survey Instrument Quality Assurance Checks (6/8 thru 6/15, 2005).

OBSERVATIONS

1. The scope and extent of surveys being performed should provide sufficient, quality data as needed for meeting FSS requirements. A conservative approach has been taken to establishing survey requirements. Each survey unit is subjected to a 100% alpha and beta scan and a pre-determined number of alpha and beta static one-minute measurements, with the required number being determined based on appropriate statistical testing. Smear samples are also collected at the measurement locations for loose surface contamination evaluation. Smears are analyzed for gross beta, gross alpha, and tritium.
2. Sample results are evaluated based on appropriate statistical testing considering the contaminant -- Wilcoxon Rank Sum test for those contaminants that also exist naturally in background; Sign test for contaminants not present in background; and Quantile test for determining indistinguishable from background. The approaches selected are consistent with MARSSIM guidance. For simplicity, since essentially all FSS surface measurements are showing no detectable levels above background, and the minimum detectable concentration (MDC) is a small fraction of the default DCGL; no additional statistical evaluations, such as WRS are required for demonstrating compliance. MARSSIM Table 8.2 provides the following criterion: A survey unit meets release criterion if the difference between the largest survey unit measurement and the smallest reference area measurement is less than the DCGL.
3. From discussions with the Project Manager, during the FSS process there were areas in two survey units where surface activity was detected. In survey unit 17I, section of wall surface that resided behind a laboratory benchtop was found to have gross alpha activity. The area was 0.25 m² in size. The detected activity ranged from 13 to 11 cpm above background (43 to 38 dpm/100 cm²). The second area resided in survey unit 18I. This area of floor surface (~2m²) was located to the right of a chemical fume hood. The detected activity ranged from 10 to 6 cpm above background (33 to 31 dpm/100 cm²), gross alpha. Although these areas of residual activity were less than the gross alpha DCGL_w (46 dpm/100 cm²), each was remediated in keeping with the ALARA goal. At the time of the audit, one area remained with detectable residual contamination, again below the gross alpha DCGL_w; however, remediation was anticipated, which should reduce the levels to no-detectable. All other areas appear to have been decontaminated to below detectable levels during past remediation activities.
4. A major hindrance in performing the FSS is the lack of an approved decommissioning plan. This obstacle has been overcome by the conservative application of generally acceptable survey methods and use of default DCGL values. One item that remains to be resolved is acceptable DCGL values for uranium in soil. At the time of this audit, discussions were still on-going between Clym and NRC Region 1 related to this subject. This issue requires resolution before final resolution of the potentially contaminated soil issue can be resolved.
5. QA verifications of measurements for FSS were being performed in all areas. This approach is a conservative application for ensuring quality data. From discussions with the technicians, no anomalies were being identified; all measurements were confirming no detectable levels of residual contamination.
6. Survey instruments were found to be in current calibration and were checked for operability in accordance with Reference 4. Survey technicians handled and operated survey instruments and completed survey documentation using established logs.
7. Appropriate consideration has been given to the selection of survey instruments considering the characteristics of for the contaminants. Gas flow proportional detectors are being used

for performing both beta and alpha scan and static measurement surveys. Additionally, smear samples are being evaluated for tritium contamination to provide added assurance. From conversations with the Project Manager, it was defined that detector efficiencies have been selected based on application of vendor data to the identified contaminants coupled with calibration data provided by the vendor. Appropriate consideration has been given to the beta and alpha energies for the contaminants, the application of surface efficiencies, and nuclide abundances. The determination of total efficiency is the product of the instrument efficiency and the surface efficiency. The instrument efficiency should be based on a 2π emission rate evaluation. For this application, the 4π efficiency was used, which results in a lower assumed instrument efficiency than that based on the 2π emission rate. An instrument specific efficiency for Ni-63 had not been determined; however, the reliance on vendor data appears conservative and reasonable, especially considering its overall relative abundance of 0.1%.

8. The Project Manager and survey technicians were knowledgeable in decommissioning practices and project-specific procedures and conducted operations in a professional manner.

RECOMMENDATIONS

1. A resolution on the DCGL for uranium in soil is required.

ATTACHMENTS

1. Independent In-Field Gamma Spectral Analysis of Trench Soil

Independent In-Field Gamma Spectral Analysis of Trench Soil

An in-field gamma spectral analysis was performed of the trench soil located in room _____. The measurement was collected using the Chesapeake Nuclear Services' MARSS Responder system. This system incorporates a co-planar grid cadmium-zinc-telluride (CZT) detector coupled with a gamma spectroscopy system for performing in-field radionuclide identification, coupled with post-processing for more detailed evaluation. The CZT crystal was 15x15x7.5 mm with a nominal 3.2% to 4.2% energy resolution at full-width-half-maximum for 662 keV gammas. This resolution is a marked improvement over the typical NaI detector, allowing for better identification of individual gamma peaks and resulting radionuclide identification. However, there are limits, as discussed below, when radionuclides have competing gamma energies with similar energies, typically within a nominal 10%. A copy of the system specifications is attached.

The detector was positioned at a depth of approximately fifty (50) centimeters below grade, suspended in the middle of the deep end of the trench. The total acquisition time was 195 minutes. The measurements were performed in a qualitative manner for determining relative abundances for principal gamma emitting radionuclides. No attempt was made for correlating the measurements to source geometry for a quantitative determination. A copy of the resulting gamma spectral analysis and spectrum are attached.

An energy calibration for the detector was performed using a Eu-152 source (serial number 021600). Based on this measurement/energy calibration, the following relative energy efficiency was derived:

$$\text{Efficiency} = 0.0157 * e^{-0.0034 * x}$$

where: *Efficiency* = relative energy efficiency based on gamma energy
x = gamma energy (keV).

Table 1 summarizes the results of the gamma spectral analysis with the identified radionuclides and net count rate. Using the above energy calibration and the decay characteristics in Table 2, the relative activity levels for the identified radionuclides are presented in Table 3. Relative abundances are presented in Table 4.

Examining the data, the following conclusions can be drawn:

1. Only naturally occurring radionuclides were identified.
2. No unidentified peaks, which could indicate an unevaluated or unexpected contaminant, were detected.
3. Considering relative abundances, it appears that the Th-232 decay series is present at a higher relative abundance compared with the uranium series.¹

¹ Because of higher gamma energies and abundances, the Ac-228 identification provides the better estimate of the Th-232 decay series abundances and Bi-214 is the better indicator for the U-238 decay series. It should also be recognized that due to Rn-222 emanation in the uranium series (with its longer 3.8 day half-life compared with 55.6 second half-life for Rn-220 from the Th-232 series) it is likely that the measured Bi-214 and Pb-214 may not be representative of the absolute U-238 abundance.

4. Potassium 40 (K-40) represent the most abundant radionuclide, representing 90% of the total identified activity. This relative abundance is typical for normal soils, where K-40 is typically ten (10) to twenty (20) times that for U-238 and Th-232. (NCRP Report 94, Exposure of the Population in the United States and Canada from Natural Background Radiation, December 30, 1987)

Table 1						
Location	Net Count Rate for Nuclide Gamma Peak					
	Bi-214	Pb-214	Ac-228	Pb-212	Tl-208	K-40
FDA Trench Soil	0.71	0.584	0.42	2.28	0.29	0.59

Table 2						
Nuclide Decay Data						
	Bi-214	Pb-214	Ac-228	Pb-212	Tl-208	K-40
Gamma Energy (keV)	609	295	968	239	511	1460
Gamma Abun	0.461	0.192	0.23	0.431	0.225	0.107

Table 3							
Location	Relative Activity Level						
	Bi-214	Pb-214	Ac-228	Pb-212	Tl-208	K-40	Total
FDA Trench Soil	7.78E+02	5.28E+02	3.13E+03	7.59E+02	4.67E+02	5.03E+04	5.59E+04

Table 4							
Location	Relative Abundances						
	Bi-214	Pb-214	Ac-228	Pb-212	Tl-208	K-40	Total
FDA Trench Soil	1.4%	0.9%	5.6%	1.4%	0.8%	90%	100%

MARSS Responder Specifications

Detector Unit

Physical

Size: 3.6 in x 4.9 in x 8 in (width x height x length)
Weight: 4.5 lbs

Power (Selectable)

Battery: 10 high-capacity "AA" NiMH, option to operate with "AA" standard Alkaline batteries
Optional External Power: 12V DC

Communication (Selectable)

Wired: 9-pin RS-232 serial port
Wireless: via Bluetooth™ - internally powered, FCC compliant, with external antenna

Visual (LED) and Audible Indicators

- Power On
- Charging
- External power supply
- Neutron warning/alarm
- Gamma warning/alarm

Warning alarms indicated by blinking, alarm levels by solid on

Audible, switched speaker and earphone

Detectors

Gamma: Co-Planar Grid (CPG) Cadmium Zinc Telluride (CZT) Detector

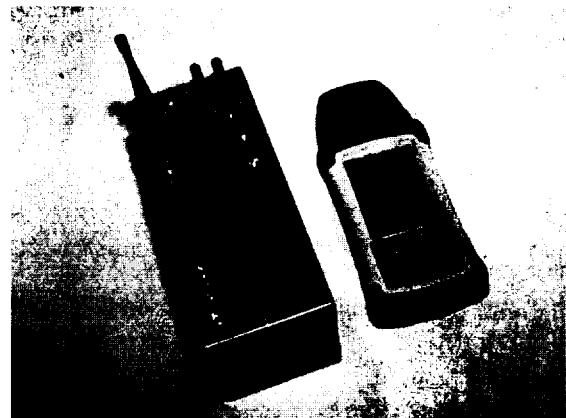
Size: 15mm x 15mm x 7.5mm
Resolution: 3.2-4.2% @ 662 keV

Neutron: Cylindrical ³He Neutron Detector

Gas Pressure: 15,200 (Torr)
Cathode Material: Stainless Steel
Maximum length: 4.41/111.9 (inch/mm)
Effective Length: 2.50/63.5 (inch/mm)
Maximum Diameter: 0.50/12.7 (inch/mm)
Effective Diameter: 0.45/11.4 (inch/mm)
Operating Temperature: -40 to +100 (F)
Effective Volume: 6.51 (cm³)
Thermal Neutron Sensitivity: 15.5 (cps/nV)

Optional External Detector:

A MHV connector allows for a pulse-based detector (such as NaI) to be used in lieu of the internal detector.



Rugged PDA

Physical

Size: 16.5 cm x 9.5 cm x 4.5 cm (6.5 in x 3.75 in x 1.75 in)
Weight: 0.49/17 (kg/oz)

Processor: 400 MHz Intel PXA255 Xscale CPU
Memory: 64 MB high-speed SD-RAM
Battery: Internal 3800 mAh NiMH
Operating Temperature: -30°C to +60°C



URSA-II MCA: Peak-Based ID and Activity Report

Spectrum File: C:\Documents and Settings\J
Stewart Bland\My Documents\Clym\Clym.usf
Spectrum File saved 6/22/2005 3:06:28 PM
Background File: (no background was
subtracted)
Sample Description: None
Sample Quantity: None

URSA-II s/n 299990
Detector s/n xxxx, Generic Generic, 36 in. cable
Operating Voltage = 1000V
Coarse Gain = 125
Fine Gain = 0.887
Overall Gain = 110.840
Threshold = 60 mV
Acquisition Time = 11697.2 seconds = 195
minutes

Peak Search Parameters

FWHM = $\sqrt{\text{centroid keV}} \cdot 2.35$
Full peak width = $\text{FWHM} \cdot 1$
Peak identified if library energy within $\pm 4\%$

There were 8 peaks found

Peak Data

Peak #1 Centroid energy = 90.59 keV
Associated nuclide(s):
UNIDENTIFIED
Peak ranges from 79.57 keV to 103.8 keV,
FWHM = 22.7077%
Gross counts = 22594 counts = 115.894 cpm
Compton counts = 21910.5 counts = 112.388
cpm
Background counts = 0 counts = 0 cpm
Net counts = 683.5 counts = 3.50597 cpm

Peak #2 Centroid energy = 237.2 keV
Associated nuclide(s):
Pb-212
Peak ranges from 219.1 keV to 255.3 keV,
FWHM = %
Gross counts = 9296 counts = 47.6832 cpm
Compton counts = 8850.7 counts = 45.3991
cpm
Background counts = 0 counts = 0 cpm
Net counts = 445.3 counts = 2.28414 cpm

Peak #3 Centroid energy = 291.2 keV
Associated nuclide(s):
Pb-214²
Peak ranges from 271.1 keV to 311.3 keV,
FWHM = 13.7712%
Gross counts = 4983 counts = 25.56 cpm
Compton counts = 4869.2 counts = 24.9762
cpm
Background counts = 0 counts = 0 cpm
Net counts = 113.8 counts = 0.583729 cpm

Peak #4 Centroid energy = 344.6 keV
Associated nuclide(s):
Ac-228, Pb-214
Peak ranges from 323.1 keV to 366.1 keV,
FWHM = 12.8663%
Gross counts = 3294 counts = 16.8964 cpm
Compton counts = 2946.7 counts = 15.1149
cpm
Background counts = 0 counts = 0 cpm
Net counts = 347.3 counts = 1.78145 cpm

Peak #5 Centroid energy = 512.1 keV
Associated nuclide(s):
Tl-208²
Peak ranges from 485.5 keV to 538.7 keV,
FWHM = 10.3846%
Gross counts = 1463 counts = 7.50436 cpm
Compton counts = 1406.5 counts = 7.21455
cpm
Background counts = 0 counts = 0 cpm
Net counts = 56.5 counts = 0.289813 cpm

Peak #6 Centroid energy = 599.7 keV
Associated nuclide(s):
Bi-214, Tl-208
Peak ranges from 570.9 keV to 628.5 keV,
FWHM = 9.59623%
Gross counts = 1242 counts = 6.37076 cpm
Compton counts = 934.5 counts = 4.79345 cpm
Background counts = 0 counts = 0 cpm
Net counts = 307.5 counts = 1.5773 cpm

Peak #7 Centroid energy = 983.2 keV
Associated nuclide(s):
Ac-228²
Peak ranges from 946.9 keV to 1020 keV,

FWHM = 22.5296%

Gross counts = 524 counts = 2.68782 cpm

Compton counts = 442.2 counts = 2.26824 cpm

Background counts = 0 counts = 0 cpm

Net counts = 81.8 counts = 0.419588 cpm

Peak #8 Centroid energy = 1459 keV

Associated nuclide(s):

K-40

Peak ranges from 1414 keV to 1504 keV,

FWHM = 11.7456%

Gross counts = 296 counts = 1.51831 cpm

Compton counts = 180.4 counts = 0.92535 cpm

Background counts = 0 counts = 0 cpm

Net counts = 115.6 counts = 0.592962 cpm

Identified Nuclides

The peak at 237.2 keV is probably Pb-212

The yield for Pb-212 at 237.2 keV is 43.1%

Net peak counts = 445.3 counts = 2.28414 cpm

The peak at 344.6 keV is probably Ac-228

Confirmatory peak corresponding to 968 keV

The yield for Ac-228 at 344.6 keV is 14.5702%

Net peak counts = 347.3 counts = 1.78145 cpm

The peak at 344.6 keV is probably Pb-214

Confirmatory peak corresponding to 295.22 keV

The yield for Pb-214 at 344.6 keV is 37.1%

Net peak counts = 347.3 counts = 1.78145 cpm

The peak at 599.7 keV is probably Bi-214

The yield for Bi-214 at 599.7 keV is 46.09%

Net peak counts = 307.5 counts = 1.5773 cpm

The peak at 599.7 keV is probably Tl-208

Confirmatory peak corresponding to 510.72 keV

The yield for Tl-208 at 599.7 keV is 86%

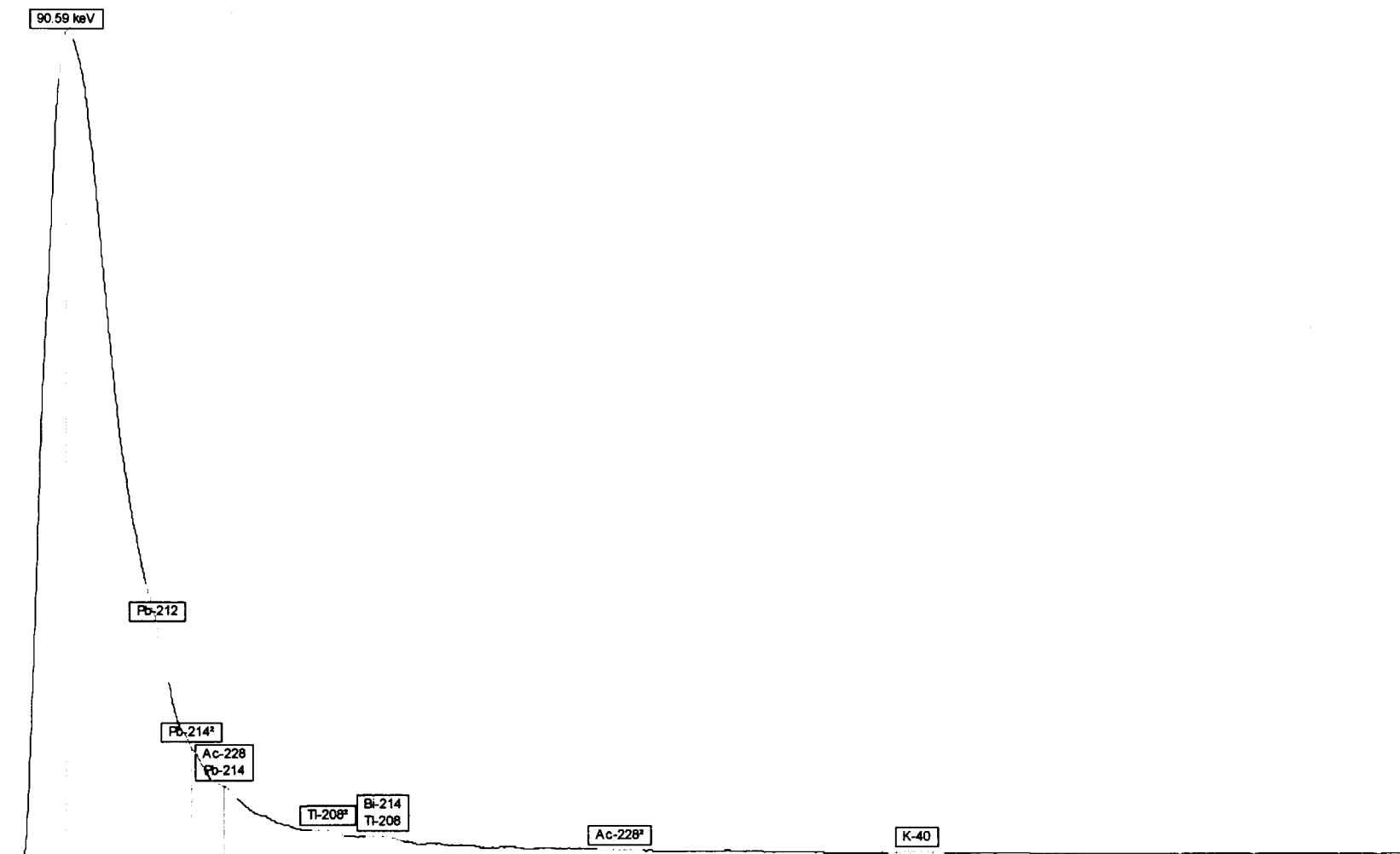
Net peak counts = 307.5 counts = 1.5773 cpm

The peak at 1459 keV is probably K-40

The yield for K-40 at 1459 keV is 10.7%

Net peak counts = 115.6 counts = 0.592962 cpm

July 2005



*Quality Assurance Review of Decommissioning Activities at
FDA Laboratory, 12709 Twinbrook Parkway*

July 2005

ATTACHMENT 14

FORM 540		Duratek, Inc. - Commercial Processing		5. SHIPPER - NAME AND FACILITY Clym Environmental Services 8184 Pagurus Ct. Suite J Frederick, MD 21704		SUPPLIER ID NUMBER T-MD083-L03 <input type="checkbox"/> COLLECTOR <input checked="" type="checkbox"/> PROCESSOR <input type="checkbox"/> GENERATOR TYPE (Specify)		7. FORM 540 AND 541A FORM 541 AND 541A FORM 542 AND 542A ADDITIONAL INFORMATION		8. MANIFEST NUMBER (Use this number on all continuation pages) Clym 06-01	
UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST SHIPPING PAPER				USER PERMIT NUMBER T-MD006-L01		SHIPMENT NUMBER Clym 03-01		9. CONSIGNEE - Name and Facility Duratek, Inc. - Commercial Processing Bear Creek Operations 1860 Bear Creek Road Oak Ridge, TN 37830		CONTACT Shipping and Receiving TELEPHONE (Include Area Code) 888-481-0222 DATE	
1. EMERGENCY TELEPHONE NUMBER (Include Area Code) 800-424-8300				CONTACT Bill Pennington		TELEPHONE NUMBER (Include Area Code) 301-494-4450					
ORGANIZATION ChemPro				2. IS THIS AN "EXCLUSIVE USE" SHIPMENT? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		3. TOTAL NUMBER OF PACKAGES IDENTIFIED ON THIS MANIFEST 34		4. DOES EPA REGULATE WASTE REQUIRING A MANIFEST ACCOMPANY THIS SHIPMENT? If "Yes," provide Manifest Number:		5. CARRIER - Name and Address Tri-State Motor Transp. Co. PO Box 113 Joplin, MO 64802 Truck #: Trailer #	
6. EPA MANIFEST NUMBER				CONTACT Cassa Gardner		EPA ID NUMBER MO0000038955		SHIPMENT DATE 06/02/05		10. CERTIFICATION This is to certify that the herein named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. This also certifies that the materials are classified, packaged, marked, and labeled and are in proper condition for transportation and disposal as described in accordance with the requirements of 10 CFR Parts 20 and 61, or equivalent state regulations.	
11. U.S. DEPARTMENT OF TRANSPORTATION DESCRIPTION (including proper shipping name, hazard class, UN ID number, and any additional information)				12. DOT LABEL "RADIOACTIVE"		13. TRANSPORT INDEX		14. PHYSICAL AND CHEMICAL FORM		15. INDIVIDUAL RADIONUCLIDES	
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 dry active				NA		NA		Solid salts and proteins		H3 5-35	
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 dry active				NA		NA		Solid salts and proteins		C-14 H-3	
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 dry active				NA		NA		Solid salts and proteins		C-14 H-3	
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 dry active				NA		NA		Solid salts and proteins		H3 I-125	
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 dry active				NA		NA		Solid salts and proteins		H3	
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 dry active bio				NA		NA		Solid salts and proteins		C-14	
16. TOTAL PACKAGE ACTIVITY (MCi)				17. ISANCO CLASS		18. TOTAL WEIGHT OR VOLUME (Use appropriate units)		19. IDENTIFICATION NUMBER OF PACKAGE		20. GENERATOR CERTIFICATION STATEMENT	
3.4136E+02				9.2260E+00		NA		82 LBS; 7.5 FT3		ABL #1	
3.0488E+01				8.2400E-01		NA		114 LBS; 7.6 FT3		Bloqual #1	
7.7700E+00				2.1000E-01		NA		89 LBS; 7.5 FT3		Bloqual #2	
8.6940E+01				2.8200E+00		NA		133 LBS; 7.5 FT3		Bloqual #3	
4.4400E+00				1.2000E-01		NA		131 LBS; 7.6 FT3		Bloqual #4	
9.2600E+00				2.8000E-01		NA		48 LBS; 3 FT3		Bloqual #6	
FOR SHIPPER USE ONLY				21. GENERATOR CERTIFICATION STATEMENT							
TENNESSEE LICENSE FOR DELIVERY NO				A) Radioactive Materials. Certification is hereby made to DOT, Inc. that this shipment of low-level radioactive materials has been prepared in accordance with radioactive waste management program which has been approved by the Nuclear Regulatory Commission or an Agreement State regulatory agency and with the recommendations of the Duratek Material Acceptance Criteria.							
SOUTH CAROLINA TRANSPORT PERMIT NO				B) Hazardous Materials. Generator hereby certifies that this material does not constitute a hazardous waste as defined in 40 CFR 261.							
US ECOLOGY GENERATOR NO				C) Data. Generator hereby represents and warrants that all data set forth in this (UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST) are true and correct in all respects and in accordance with all applicable governmental laws, rules, regulations and Duratek, Inc. State of Tennessee Radiation Material License.							
US ECOLOGY PERMIT NO				BILL PENNINGTON Print Name Date 6/4/05							

FORM 648A										Duratek, Inc. - Commercial Processing		8. MANIFEST NUMBER (Use this number on all continuation pages) Clym PR-91	
UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST SHIPPING PAPER (CONTINUATION)										PAGE 2 OF 4		PAGE(S)	
11. U.S. DEPARTMENT OF TRANSPORTATION DESCRIPTION (Including proper shipping name, hazard class, UN ID number, and any additional information)	12. DOT LABEL "RADIOACTIVE"	13. TRANSPORT INDEX	14. PHYSICAL AND CHEMICAL FORM	15. INDIVIDUAL RADIONUCLIDES		16. TOTAL PACKAGE ACTIVITY MBq mCi		17. LSAS/CO CLASS	18. TOTAL WEIGHT OR VOLUME (Use appropriate units)	19. IDENTIFICATION NUMBER OF PACKAGE			
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 soil	NA	NA	Solid salts & proteins	U-238		5.0912E-03	1.3789E-04	NA	887 LBS; 7.4 FT3	FDA/CDRH #1			
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 soil	NA	NA	Solid salts & proteins	U-238		5.0912E-03	1.3789E-04	NA	884 LBS; 7.5 FT3	FDA/CDRH #2			
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 soil	NA	NA	Solid salts & proteins	U-238		5.0912E-03	1.3789E-04	NA	846 LBS; 7.6 FT3	FDA/CDRH #3			
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 soil/debris	NA	NA	Solid salts & proteins	U-238		5.0912E-03	1.3789E-04	NA	498 LBS; 7.6 FT3	FDA/CDRH #4			
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 dry active	NA	NA	Solid salts & proteins	U-238		5.0912E-03	1.3789E-04	NA	68 LBS; 7.6 FT3	FDA/CDRH #5			
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 soil	NA	NA	Solid salts & proteins	U-235		5.0912E-03	1.3789E-04	NA	322 LBS; 4.1 FT3	FDA/CDRH #6			
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 dry active	NA	NA	Solid salts & proteins	C-14	H-3	1.8462E+02	5.2800E+00	NA	10 LBS; 1.68 FT3	Howard Univ. #1			
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 dry active	NA	NA	Solid salts and proteins	C-14	Cr-51	H-3	5-35	1.4800E-01	4.0000E-03	NA	58 LBS; 7.5 FT3	Medimmune GB-1	
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 dry active	NA	NA	Solid salts and proteins	C-14	Cr-51	H-3	5-38	1.4800E-01	4.0000E-03	NA	74 LBS; 7.6 FT3	Medimmune GB-2	
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 dry active	NA	NA	Solid salts and proteins	C-14	Cr-51	H-3	5-36	1.4800E-01	4.0000E-03	NA	59 LBS; 7.4 FT3	Medimmune GB-3	
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 dry active	NA	NA	Solid salts and proteins	C-14	Cr-51	H-3	5-35	1.4800E-01	4.0000E-03	NA	127 LBS; 7.5 FT3	Medimmune GB-4	
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 dry active	NA	NA	Solid salts and proteins	C-14	Cr-51	H-3	5-36	1.4800E-01	4.0000E-03	NA	88 LBS; 7.6 FT3	Medimmune GB-5	
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 dry active	NA	NA	Solid salts and proteins	C-14	Cr-51	H-3	5-35	1.4800E-01	4.0000E-03	NA	111 LBS; 7.6 FT3	Medimmune GB-6	

FORM 648A (10-95)

FORM 640A										Duxtek, Inc. - Commercial Processing		5. MANIFEST NUMBER (Use 156 number on all instruction pages) Clym 05-01	
UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST SHIPPING PAPER (CONTINUATION)										PAGE 3 OF 4		PAGE(S)	
1. U.S. DEPARTMENT OF TRANSPORTATION DESCRIPTION (including proper shipping name, hazard class, UN ID number, and any additional information)	2. DOT LABEL "RADIOACTIVE"	3. TRANSPORT INDEX	4. PHYSICAL AND CHEMICAL FORM	5. INDIVIDUAL RADIONUCLIDES				6. TOTAL PACKAGE ACTIVITY MBq mCi		7. LEAKAGE CLASS	8. TOTAL WEIGHT OR VOLUME (Use appropriate units)	9. IDENTIFICATION NUMBER OF PACKAGE	
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 dry active	NA	NA	Solid salts and proteins	C-14	Cr-51	H-3	S-35	1.4800E-01	4.0000E-03	NA	100 LBS; 7.5 FT3	MedImmune GB- 7	
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 dry active	NA	NA	Solid salts and proteins	C-14	Cr-51	H-3	S-35	1.4800E-01	4.0000E-03	NA	89 LBS; 7.5 FT3	MedImmune GB- 8	
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 dry active	NA	NA	Solid salts and proteins	C-14	Cr-51	H-3	S-35	1.4800E-01	4.0000E-03	NA	68 LBS; 7.5 FT3	MedImmune GB- 9	
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 dry active	NA	NA	Solid salts and proteins	C-14	P-32			1.8602E+02	2.6456E+00	NA	61 LBS; 4.1 FT3	MedImmune ref. #1	
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 dry active	NA	NA	Solid salts and proteins	C-14	H-3			1.7700E+00	4.0000E-02	NA	81 LBS; 7.5 FT3	Shire #1	
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 aqueous	NA	NA	Liquid salts and proteins	C-14	H-3			6.6130E+00	1.4900E-01	NA	100 LBS; 0.75 FT3	Shire #1 BAL	
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 dry active	NA	NA	Solid salts and proteins	C-14	H-3			1.7700E+00	4.0000E-02	NA	75 LBS; 7.5 FT3	Shire #2	
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 dry active	NA	NA	Solid salts and proteins	C-14	H-3			1.7700E+00	4.0000E-02	NA	79 LBS; 7.5 FT3	Shire #3	
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 dry active	NA	NA	Solid salts and proteins	C-14	H-3			1.7700E+00	4.0000E-02	NA	82 LBS; 7.5 FT3	Shire #4	
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 dry active	NA	NA	Solid salts and proteins	C-14	H-3			1.7700E+00	4.0000E-02	NA	74 LBS; 7.5 FT3	Shire #5	
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 dry active	NA	NA	Solid salts and proteins	C-14	H-3			2.2200E-01	6.0000E-03	NA	73 LBS; 7.5 FT3	Shire #6	
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 dry active	NA	NA	Solid salts and proteins	C-14	H-3			2.2200E-01	6.0000E-03	NA	61 LBS; 7.5 FT3	Shire #7	
Radioactive material, excepted package-limited quantity of material, 7, UN 2910 dry active	NA	NA	Solid salts and proteins	C-14	H-3			1.7000E-02	1.0000E-03	NA	84 LBS; 7.5 FT3	Shire #8	

FORM 640A (10-2001)

[illegible]

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST CONTAINER AND WASTE DESCRIPTION	Additional Nuclear Regulatory Commission (NRC) Requirements for Control, Transfer and Disposal of Radioactive Waste	1. MANIFEST TOTALS	2. MANIFEST NUMBER Clym 05-01								
3. PAGE 1 OF 8 PAGE(S)	4. SHIPPER NAME Clym Environmental Services	SHIPMENT ID NUMBER T-MD005-L05	5. WASTE CLASSIFICATION AS Class A B, BML AS Class A Unstable B-Class B C-Class C								
				6. SPECIAL NUCLEAR MATERIAL (Specs)	7. ACTIVITY	8. SOURCE (kg)					
							9. ALL NUCLEIDS	10. TRITIUM	11. C-14	12. Tc-99	13. I-129
U-235	U-238	Pu	Total								
m3	kg	kg	kg								
34	231.1300	2248.4678	4837.0080								
m3	kg	kg	kg								
2.1834E+01	8.7460E+00	1.4730E+00	NA								
m3	kg	kg	kg								
2.1834E+01	8.7460E+00	1.4730E+00	NA								

DISPOSAL CONTAINER DESCRIPTION	WASTE DESCRIPTION FOR EACH WASTE TYPE IN CONTAINER	WASTE CLASSIFICATION AS Class A B, BML AS Class A Unstable B-Class B C-Class C						
A. CONTAINER IDENTIFICATION NUMBER/GENERATOR ID NUMBER	B. CONTAINER DESCRIPTION (See Note 1) PROCESS REQUESTED (See Note 1A) BURIAL/DISPOSITION (See Note 2A)	C. VOLUME (m3)	D. WASTE AND CONTAINER WEIGHT (kg)	E. SURFACE RADIATION LEVEL (mSv/hr)	F. SURFACE CONTAMINATION (mSv/100 cm2)	G. PHYSICAL DESCRIPTION	H. CHEMICAL DESCRIPTION	I. RADIOLOGICAL DESCRIPTION
ASL 0001	4	0.2124	37.1048	<0.0005E-03	<0.0740E-08	<0.0740E-07	30	H-3
7.0000	02.0000	<0.0005E-01	<2.3000E-05	<2.3000E-01	7.0000	100	cells and proteins/NA	NA
Subtotal	Total	1.4400E+02	3.9100E+08	AU	1.9847E+02	5.3100E+08	3.4135E+02	1.2200E+09
Biological 01/Biological	4	0.2124	53.8231	<0.0005E-03	<0.0740E-08	<0.0740E-07	32	H-3
7.0000	118.0000	<0.0005E-01	<2.3000E+00	<2.3000E+01	7.0000	100	cells and proteins/NA	NA
Subtotal	Total	1.9300E+01	4.2400E-01	AU	1.1100E+01	3.6000E-01	3.0400E+01	4.2400E-01
Biological 02/Biological	6	0.2124	40.3071	<0.0005E-03	<0.0740E-08	<0.0740E-07	38	H-3
7.0000	02.0000	<0.0005E-01	<2.3000E+00	<2.3000E+01	7.0000	100	cells and proteins/NA	NA
Subtotal	Total	7.4000E+00	2.8000E-01	AU	3.7000E-01	1.9000E-02	7.7700E+00	2.1000E-01
Biological 03/Biological	4	0.2124	68.3274	<0.0005E-03	<0.0740E-08	<0.0740E-07	39	H-3
7.0000								

[illegible]

FORM 541A										UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST				Deratek, Inc. - Commercial Processing		2. MANIFEST NUMBER Clym 06-01		
CONTAINER AND WASTE DESCRIPTION (CONTINUATION)										3. PAGE 3 OF 5 PAGE(B)								
DISPOSAL CONTAINER DESCRIPTION						WASTE DESCRIPTION FOR EACH WASTE TYPE IN CONTAINER												16. WASTE CLASSIFICATION All Class A Radioactive All Class B Unradioactive Class C
1. CONTAINER IDENTIFICATION NUMBER OR OPERATOR ID NUMBER	2. CONTAINER DESCRIPTION (See Note 1) PROCESS REQUESTED (See Note 1A) SURF. DISPOSITION (See Note 2A)	7. VOLUME (m³) (liters)	8. WASTE AND CONTAINER WEIGHT (kg) (pounds)	9. SURFACE RADIATION LEVEL (mSv/h) (mR/hr)	10. SURFACE CONTAMINATION (Bq/100 cm²) (dpm/100 cm²)	11. PHYSICAL DESCRIPTION		12. SOLIDIFICATION OR STABILIZATION MEDIA (See Note 3)	13. CHEMICAL FORM OR CHELATING AGENT (See Note 4)	14. WEIGHT % CHELATING AGENT IF > 0.1%	15. RADIOLOGICAL DESCRIPTION							
						WASTE DESCRIPTOR (See Note 2)	APPROXIMATE WASTE VOLUME(S) IN CONTAINER (m³) (GAL)				INDIVIDUAL RADIONUCLIDES AND ACTIVITY (Bq) AND CONTAINER TOTAL ACTIVITY AND RADIONUCLIDE PERCENT	RADIONUCLIDES						
												U-235	U-238	Plutonium				
Radioactive SS - Solidification	4	0.2124	32.8800	<0.000E-03	<1.6740E-04	<1.6740E-07	30	0.2124	100 100	solid and polymer/BA	NA	C-14 Cr-51 H-3 S-35	3.7000E-02	1.0000E-03	AU			
		7.0000	74.8000	<0.000E-01	<2.2900E+00	<2.2900E+01							3.7000E-02	1.0000E-03				
												Subtotal	1.4000E-01	4.0000E-03				
												Total	1.4000E-01	4.0000E-03				
Radioactive SS - Solidification	4	0.2124	49.2000	<0.000E-03	<1.6740E-04	<1.6740E-07	30	0.2124	100 100	solid and polymer/BA	NA	C-14 Cr-51 H-3 S-35	3.7000E-02	1.0000E-03	AU			
		7.0000	20.8000	<0.000E-01	<2.2900E+00	<2.2900E+01							3.7000E-02	1.0000E-03				
												Subtotal	1.4000E-01	4.0000E-03				
												Total	1.4000E-01	4.0000E-03				
Radioactive SS - Solidification	4	0.2124	32.8800	<0.000E-03	<1.6740E-04	<1.6740E-07	30	0.2124	100 100	solid and polymer/BA	NA	C-14 Cr-51 H-3 S-35	3.7000E-02	1.0000E-03	AU			
		7.0000	127.8000	<0.000E-01	<2.2900E+00	<2.2900E+01							3.7000E-02	1.0000E-03				
												Subtotal	1.4000E-01	4.0000E-03				
												Total	1.4000E-01	4.0000E-03				
Radioactive SS - Solidification	4	0.2124	30.8700	<0.000E-03	<1.6740E-04	<1.6740E-07	30	0.2124	100 100	solid and polymer/BA	NA	C-14 Cr-51 H-3 S-35	3.7000E-02	1.0000E-03	AU			
		7.0000	64.8000	<0.000E-01	<2.2900E+00	<2.2900E+01							3.7000E-02	1.0000E-03				
												Subtotal	1.4000E-01	4.0000E-03				
												Total	1.4000E-01	4.0000E-03				
Radioactive SS - Solidification	4	0.2124	30.2400	<0.000E-03	<1.6740E-04	<1.6740E-07	30	0.2124	100 100	solid and polymer/BA	NA	C-14 Cr-51 H-3 S-35	3.7000E-02	1.0000E-03	AU			
		7.0000	111.8000	<0.000E-01	<2.2900E+00	<2.2900E+01							3.7000E-02	1.0000E-03				
												Subtotal	1.4000E-01	4.0000E-03				
												Total	1.4000E-01	4.0000E-03				

FORM 541A (Rev. 10)

[illegible]

FORM 641A		UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST										2. MANIFEST NUMBER Clyn 85-41						
CONTAINER AND WASTE DESCRIPTION (CONTINUATION)												3. PAGE 5 OF 6 PAGE(S)						
DISPOSAL CONTAINER DESCRIPTION						WASTE DESCRIPTION FOR EACH WASTE TYPE IN CONTAINER												
1. CONTAINER IDENTIFICATION NUMBER GENERATOR ID NUMBER	2. CONTAINER DESCRIPTION (See Note 1) PROCESS ACQUIRED (See Note 1A) SURFACE DEPOSITION (See Note 2A)	3. VOLUME (mL) (L)	4. WASTE AND CONTAINER WEIGHT (lb) (kg)	5. SURFACE RADIATION LEVEL (mR/hr) (μSv/hr)	6. SURFACE CONTAMINATION (dpm/100 cm²) (cpm/100 cm²)		7. PHYSICAL DESCRIPTION		11. WASTE DESCRIPTION (See Note 2)	12. APPROXIMATE WASTE VOLUME(S) IN CONTAINER (m³) (ft³)	13. SOLIDIFICATION OR STABILIZATION MEDIA (See Note 3)	14. CHEMICAL FORM OR ELUTING AGENT	15. WEIGHT % CHELATING AGENT F > 95%	16. RADIOLOGICAL DESCRIPTION			17. WASTE CLASSIFICATION AS-Cont A SL-Cont A AL-Cont A LL-Cont A B-Cont B C-Cont C	
					ALPHA	BETA-GAMMA	INDIVIDUAL RADIOISOTOPES AND ACTIVITY (mCi) AND CONTAINER TOTAL; OR CONTAINER TOTAL ACTIVITY AND RADIOISOTOPE PERCENT	RADIOISOTOPES						mCi	mCi			
0001	0001	0.0012	48.0000	1.000E-04	<3.570E-04	<3.570E-04			25	0.0012	100	solid and particulate	NA		C-14 H-3 Subtotal Total	1.640E-01 1.370E-01 5.513E-04 5.513E-04	2.300E-02 1.200E-01 1.400E-01 1.400E-01	AS
0002	0002	0.0012	48.0000	1.000E-04	<3.570E-04	<3.570E-04			26	0.0012	100	solid and particulate	NA		C-14 H-3 Subtotal Total	1.640E-01 1.370E-01 5.513E-04 5.513E-04	2.300E-02 1.200E-01 1.400E-01 1.400E-01	AS
0003	0003	0.0012	48.0000	1.000E-04	<3.570E-04	<3.570E-04			27	0.0012	100	solid and particulate	NA		C-14 H-3 Subtotal Total	1.640E-01 1.370E-01 5.513E-04 5.513E-04	2.300E-02 1.200E-01 1.400E-01 1.400E-01	AS
0004	0004	0.0012	48.0000	1.000E-04	<3.570E-04	<3.570E-04			28	0.0012	100	solid and particulate	NA		C-14 H-3 Subtotal Total	1.640E-01 1.370E-01 5.513E-04 5.513E-04	2.300E-02 1.200E-01 1.400E-01 1.400E-01	AS
0005	0005	0.0012	48.0000	1.000E-04	<3.570E-04	<3.570E-04			29	0.0012	100	solid and particulate	NA		C-14 H-3 Subtotal Total	1.640E-01 1.370E-01 5.513E-04 5.513E-04	2.300E-02 1.200E-01 1.400E-01 1.400E-01	AS
0006	0006	0.0012	48.0000	1.000E-04	<3.570E-04	<3.570E-04			30	0.0012	100	solid and particulate	NA		C-14 H-3 Subtotal Total	1.640E-01 1.370E-01 5.513E-04 5.513E-04	2.300E-02 1.200E-01 1.400E-01 1.400E-01	AS
0007	0007	0.0012	48.0000	1.000E-04	<3.570E-04	<3.570E-04			31	0.0012	100	solid and particulate	NA		C-14 H-3 Subtotal Total	1.640E-01 1.370E-01 5.513E-04 5.513E-04	2.300E-02 1.200E-01 1.400E-01 1.400E-01	AS
0008	0008	0.0012	48.0000	1.000E-04	<3.570E-04	<3.570E-04			32	0.0012	100	solid and particulate	NA		C-14 H-3 Subtotal Total	1.640E-01 1.370E-01 5.513E-04 5.513E-04	2.300E-02 1.200E-01 1.400E-01 1.400E-01	AS
0009	0009	0.0012	48.0000	1.000E-04	<3.570E-04	<3.570E-04			33	0.0012	100	solid and particulate	NA		C-14 H-3 Subtotal Total	1.640E-01 1.370E-01 5.513E-04 5.513E-04	2.300E-02 1.200E-01 1.400E-01 1.400E-01	AS
0010	0010	0.0012	48.0000	1.000E-04	<3.570E-04	<3.570E-04			34	0.0012	100	solid and particulate	NA		C-14 H-3 Subtotal Total	1.640E-01 1.370E-01 5.513E-04 5.513E-04	2.300E-02 1.200E-01 1.400E-01 1.400E-01	AS
0011	0011	0.0012	48.0000	1.000E-04	<3.570E-04	<3.570E-04			35	0.0012	100	solid and particulate	NA		C-14 H-3 Subtotal Total	1.640E-01 1.370E-01 5.513E-04 5.513E-04	2.300E-02 1.200E-01 1.400E-01 1.400E-01	AS
0012	0012	0.0012	48.0000	1.000E-04	<3.570E-04	<3.570E-04			36	0.0012	100	solid and particulate	NA		C-14 H-3 Subtotal Total	1.640E-01 1.370E-01 5.513E-04 5.513E-04	2.300E-02 1.200E-01 1.400E-01 1.400E-01</	

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST										2. MANIFEST NUMBER Chyn 05-01					
CONTAINER AND WASTE DESCRIPTION (CONTINUATION)										3. PAGE 1 OF 6 PAGE(S)					
DISPOSAL CONTAINER DESCRIPTION						WASTE DESCRIPTION FOR EACH WASTE TYPE IN CONTAINER									
1. CONTAINER IDENTIFICATION NUMBER/GENERATOR ID NUMBER	2. CONTAINER DESCRIPTION (See Note 1) PROCESS REQUESTED (See Note 1A) SURROUNDING CONDITION (See Note 1A)	3. VOLUME (m³) (L)	4. WASTE AND CONTAINER HEIGHT (ft) (in)	5. SURFACE AREA/LEVEL (ft²) (m²)	6. SURFACE CONTAMINATION (dpm/100 cm²) (dpm/cm²)	7. PHYSICAL DESCRIPTION		8. SOLIDIFICATION OR STABILIZATION MEDIA (See Note 2)	9. CHEMICAL FORM/ CHELATING AGENT	10. WEIGHT % CHELATING AGENT (F = 0.1%)	11. RADIOLOGICAL DESCRIPTION			12. WASTE CLASSIFICATION (See Note 3)	
						11. WASTE DESCRIPTION (See Note 2)	12. APPROXIMATE WASTE VOLUME(S) IN CONTAINER (m³) (FT³)				13. INDIVIDUAL RADIONUCLIDES AND ACTIVITY (MBq) AND CONTAINER TOTAL OR CONTAINER TOTAL ACTIVITY AND RADIONUCLIDE PERCENT				
						ALPHA	BETA-GAMMA				RADIONUCLIDES	MBq	mCi		
Waste 1 (PST) (See Note 1)		0.001	0.001	0.000000-01	<1.0000E-01	<1.0000E-07		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
		0.001	0.001	0.000000-01	<1.0000E-01	<1.0000E-07		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
		0.001	0.001	0.000000-01	<1.0000E-01	<1.0000E-07		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
		0.001	0.001	0.000000-01	<1.0000E-01	<1.0000E-07		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
		0.001	0.001	0.000000-01	<1.0000E-01	<1.0000E-07		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
		0.001	0.001	0.000000-01	<1.0000E-01	<1.0000E-07		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
		0.001	0.001	0.000000-01	<1.0000E-01	<1.0000E-07		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
		0.001	0.001	0.000000-01	<1.0000E-01	<1.0000E-07		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
		0.001	0.001	0.000000-01	<1.0000E-01	<1.0000E-07		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
		0.001	0.001	0.000000-01	<1.0000E-01	<1.0000E-07		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
		0.001	0.001	0.000000-01	<1.0000E-01	<1.0000E-07		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
		0.001	0.001	0.000000-01	<1.0000E-01	<1.0000E-07		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
		0.001	0.001	0.000000-01	<1.0000E-01	<1.0000E-07		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
		0.001	0.001	0.000000-01	<1.0000E-01	<1.0000E-07		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
		0.001	0.001	0.000000-01	<1.0000E-01	<1.0000E-07		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
		0.001	0.001	0.000000-01	<1.0000E-01	<1.0000E-07		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
		0.001	0.001	0.000000-01	<1.0000E-01	<1.0000E-07		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
		0.001	0.001	0.000000-01	<1.0000E-01	<1.0000E-07		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
		0.001	0.001	0.000000-01	<1.0000E-01	<1.0000E-07		0.001	0.001	0.001	0.001	0.			

FORM 542 UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST			Duralek, Inc. - Commercial Processing		1. WASTE COLLECTOR/PROCESSOR				2. MANIFEST NUMBER			
MANIFEST INDEX AND REGIONAL COMPACT TABULATION			NAME Clym Environmental Services		SHIPPER USE ONLY				Clym 03-04			
List all original "PROCESSED WASTE" generators (if any) before "COLLECTED WASTE" generators.			IDENTIFICATION NUMBER Clym						3. PAGE 1 OF 2 PAGE(S)			
			SHIPING DATE 06/02/2004									
4. GENERATOR IDENTIFICATION NUMBER	5. GENERATOR NAME PERMIT NUMBER (IF APPLICABLE) AND TELEPHONE NUMBER	6. GENERATOR FACILITY ADDRESS	7. PREPROCESSED WASTE (OR MATERIAL) VOLUME (m3) (L)		8. MANIFEST NUMBER (N UNDER WHICH WASTE OR MATERIAL RECEIVED AND DATE OF RECEIPT)	9. WASTE CODE P = PROCESSED O = COLLECTED	10. ORIGINATING COUNTY REGION OR STATE	11. ALL PROCESSED/COLLECTED TOTAL				
								A. SOURCE MATERIAL (m3) (L)	B. SNM (m3)	C. ACTIVITY (MBq) (mCi)	D. VOLUME (m3) (L)	
ABL	Advanced Bioscience Laboratories 301-816-5225	8950 Nicholson Ln. Kensington, MD 20895	0.2100	7.6134	Clym 05-01 (06/02/2004)	C	Maryland	0.0000E+00	0.0000E+00	0.0000E+00	0.2124	
Bioquest	Bioquest, Inc. 301-261-1269	9001 Medical Center Dr. Rockville, MD 20850	0.0200	22.0001	Clym 05-04 (06/02/2004)	O	Maryland	0.0000E+00	0.0000E+00	0.0000E+00	0.0345	
CDRE	Food and Drug Administration/CDRE	12700 Twinbrook Parkway CDRE Rockville, MD 20850	1.0000	40.0000	Clym 05-01 (06/02/2004)	C	Maryland	0.0000E+00	0.0000E+00	0.0000E+00	1.1754	
Hopwood U	Hopwood University 1-800-533-1366	536 College St. Washington, DC 20004	0.0030	3.0017	Clym 05-04 (06/02/2004)	C	West. DC	0.0000E+00	0.0000E+00	0.0000E+00	0.0474	
Fredrick	Med Immune, Inc.	610 Research Dr. Frederick, MD 21704	0.0100	3.0048	Clym 05-01 (06/02/2004)	C	Maryland	0.0000E+00	0.0000E+00	0.0000E+00	0.0161	
Bethesda	McGraw-Hill, Inc.	1 McGraw-Hill Way Bethesda, MD 20814	1.0000	35.7047	Clym 05-01 (06/02/2004)	C	Maryland	0.0000E+00	0.0000E+00	0.0000E+00	1.0414	
Glaxo	Glaxo Laboratories 301-435-1621	1200 Pinedale Dr. Rockville, MD 20850	1.0000	62.0035	Clym 05-01 (06/02/2004)	C	Maryland	0.0000E+00	0.0000E+00	0.0000E+00	1.7302	
TOTALS OF ALL PAGES (FORMS 542 AND 542A)								0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	

FORM 542 (W-04)

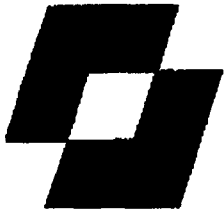
[illegible]

**UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST
ISOTOPES REPORT**

For Manifest # Cym 05-01
Dunetek, Inc. - Commercial Processing

Total Activity

Isotopes	(mCi)	(mCi)
C-14	5.4501E+01	1.4730E+00
Cr-51	3.3300E+01	9.0900E-03
H-3	3.0000E+02	9.7400E+00
I-125	8.9400E+01	2.4100E+00
P-32	1.0000E+01	2.0000E+00
S-35	1.0000E+02	3.3150E+00
Tb-232	7.4000E+01	2.0000E-02
V-238	3.0547E-02	9.2500E-04



**CLYM
ENVIRONMENTAL
SERVICES, LLC**

Facsimile Transmission

**5104 Pegasus Court
Frederick, MD 21704
(301) 694-6000
Fax: (301) 694-6797**

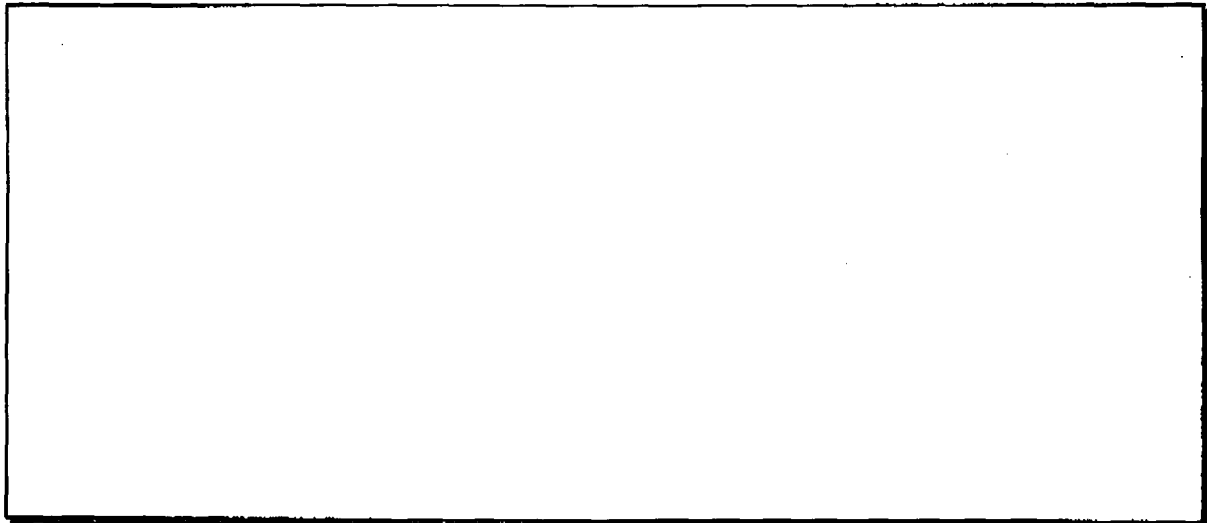
Date: August 22, 2005

Pages:

14

To:	Pete Shandruk
Fax #:	(301) 594-4760
From:	Charles Watts

MESSAGE:



If you did not receive the total number of pages indicated, or if there is a problem with this facsimile transmission, please call 301 694-6000. NOTE: This communication may contain confidential or privileged information from Clym Environmental Services, LLC. Disclosure, copying, distribution or use of the contents of this information by any individual or entity not intended to receive the same is prohibited. If you are not the intended recipient, please contact the individual listed above.

This is to acknowledge the receipt of your letter/application dated

8/23/2005, and to inform you that the initial processing which includes an administrative review has been performed.

☒ AMEND. 19-07538-01
There were no administrative omissions. Your application was assigned to a technical reviewer. Please note that the technical review may identify additional omissions or require additional information.

☐ Please provide to this office within 30 days of your receipt of this card

A copy of your action has been forwarded to our License Fee & Accounts Receivable Branch, who will contact you separately if there is a fee issue involved.

Your action has been assigned Mail Control Number 137555.
When calling to inquire about this action, please refer to this control number.
You may call us on (610) 337-5398, or 337-5260.