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RF/RMRS-99-437.UN

DRAFT

Closeout Radiological Survey Report

**For Building 779, Administration
Building**

Rocky Mountain Remediation Services, L.L.C.

Millennium Services Inc.

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Acronyms

cpm	Counts Per Minute
CRSP	Closeout Radiological Survey Plan
D&D	Decontamination and Decommissioning
DCGL _w	Derived Concentration Guideline Level – Wilcoxon Rank Sum test
DCGL _{EMC}	Derived Concentration Guideline Level – Elevated Measurement Comparison
DOE	U.S. Department of Energy
dpm	Disintegration Per Minute
DQA	Data Quality Assessment
DQO	Data Quality Objectives
FSS	Final Status Survey
FSSP	Final Status Survey Plan
FSSR	Final Status Survey Report
HSA	Historical Site Assessment
LBGR	Lower Bound of the Gray Region
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MDA	Minimum Detectable Activity
MDC	Minimum Detectable Concentration
NIST	National Institute of Standards & Technology
NORM	Naturally Occurring Radioactive Material
PRE	Project Radiological Engineer
PSPC	Position Sensitive Proportional Counter
QA	Quality Assurance
QA/QC	Quality Assurance/Quality Control
QC	Quality Control
RCT	Radiological Control Technician
RE	Radiological Engineer
REFS	Radiological Engineering Field Services
RESS	Radiological Engineering Support Services
RFETS	Rocky Flats Environmental Technology Site
SCM/SIMS	Surface Contamination Monitor/Survey Information Management System
SRA	Shonka Research Associates
TSA (TSC)	Total Surface Activity (or Total Surface Contamination)
V&V	Verification and Validation

Abstract

Total and removable surface contamination surveys, paint/surface media samples (survey units 77909 and 77920 only), and scan surveys were performed in each Administration Building survey unit. The number/frequency of surveys/samples collected in each survey unit was based on the guidance provided in the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM).

All survey/sample results presented in this report meet the DCGLs as defined by the Closeout Radiological Survey Plan for the 779 Cluster. However, the building will not be suitable for unrestricted release until the completion of the roof and roof containment surveys, the survey of the elevator (77918), the survey of the Exhaust Duct Tower interior (77920), the removal of miscellaneous systems and equipment (e.g. conduit, fire protection system, etc.), and the approval of the associated Property Release Evaluations (PREs).

1.0 Introduction

Building 779 was originally constructed in 1965, with additions in 1968 and 1973. The mission of Building 779 was primarily as a nuclear weapons research and development center, and an analytical laboratory in support of Plutonium Operations. This report documents the final survey results of the Administration Building portion of 779 (including the Administration building exterior). The final surveys for other portions of Building 779 and the Building 779 cluster will be documented in separate stand-alone reports.

The Administration Building is a two-level structure that is connected to the east side of Building 779 and has approximate dimensions of 100 ft. long x 60 ft wide x 27 ft high. The exterior walls of the Administration Building are concrete block.

A containment structure was built on the roof of Building 779 to support the removal of contaminated ducting during D&D. This containment is outside the scope of final survey, and will be evaluated and released per a Property Release Evaluation (PRE) in accordance with 3-PRO-141-RSP-09.01, *Unrestricted Release of Property, Material, Equipment, and Waste*, prior to building demolition.

Contamination originating from the duct pipe removed from the roof of 779 was identified on the roof surface outside of the containment on 9/8/99. Previously performed radiological operations surveys indicated that the contamination did not exist on the roof prior to this date. Several square meters of gravel from the ballast layer on the roof is being removed. The tar beneath the gravel will be surveyed to assure that all contamination was identified and removed. These surveys, though not included as part of the final survey data, will be included in survey package 77909 for information purposes.

The upper and lower levels of Administration Building were utilized as office space. The area was completely stripped of radiologically contaminated process piping prior to the performance of final surveys ("clean" pipe and systems still remain, and will be released via PREs). Based on process history and characterization and in-process surveys, the areas were classified in accordance with MARSSIM and the Building 779 Cluster Closeout Radiological Survey Plan (CRSP) described in Section 1.1.

The Administration Building consisted of three survey areas, that were further broken down into six survey units. Three of the six survey units were classified as Class 3. An explanation of the Class 1 and Class 2 survey units is provided below.

A spill occurred on the floor of room 208 (survey unit 77916) on 6/25/99. The total alpha contamination levels were as high as 2000 dpm/100 cm². Decontamination was successfully performed on all of the spots of contamination prior to final survey. However, due to the potential for contamination above the DCGL_w, the floor was classified as Class 1 (walls and ceiling were Class 3). No media samples were required from 77916 due to complete scabbling of the floor media.

The Administration Building exterior (survey unit 77909) is considered Class 2 due to the potential spread of contamination from outside areas (solar ponds, Building 776 fire). Rooms 115 and 115A had a history of fixed contamination that was potentially painted over. In addition, potentially contaminated zone one ventilation was located in the overhead (exhaust duct tower). However, it was not anticipated that residual contamination above the DCGL_w existed. Therefore the area was classified as Class 2.

1.1 Survey Unit Descriptions

The Administration Building consists of all rooms on the first and second floor, the associated hallways and stairwells, the exhaust duct tower (to ground level), and the building exterior (north, south, and east wall and roof). A brief description and the classification of each of the six Administration Building survey units are described below:

- 77909 – Administration Building Exterior (Class 2)
- 77915 – Second Floor Office Areas (201, 201A, 201B, 202, 202A, 203, 204, 204A, 204B, 205, 206, 207, 207A, 207B, 207C, 208 (walls and ceiling), 210, 210A, 211, 212, 212A, 213, 214) (Class 3)
- 77916 – Room 208 Floor (Class 1)
- 77917 – First Floor Office Areas (105, 106, 107, 108, 109, 110, 110A, 111, 113) (Class 3)

- 77918 – Rooms 100, 101, 101A, 104, 116, 116A, 116B, 117, Elevator (Class 3)
- 77920 – Rooms 114, 115, 115A, Exhaust Duct Tower (to ground level) (Class 2)

1.2 Overview Maps

Figures 1.1 and 1.2 depict the location of the Administration Building in the 779 Cluster, and an interior view of the Administration Building, respectively.

Figure 1.1
Administration Building Exterior Overview Map

779 CLUSTER EXTERIOR SURVEY UNIT OVERVIEW

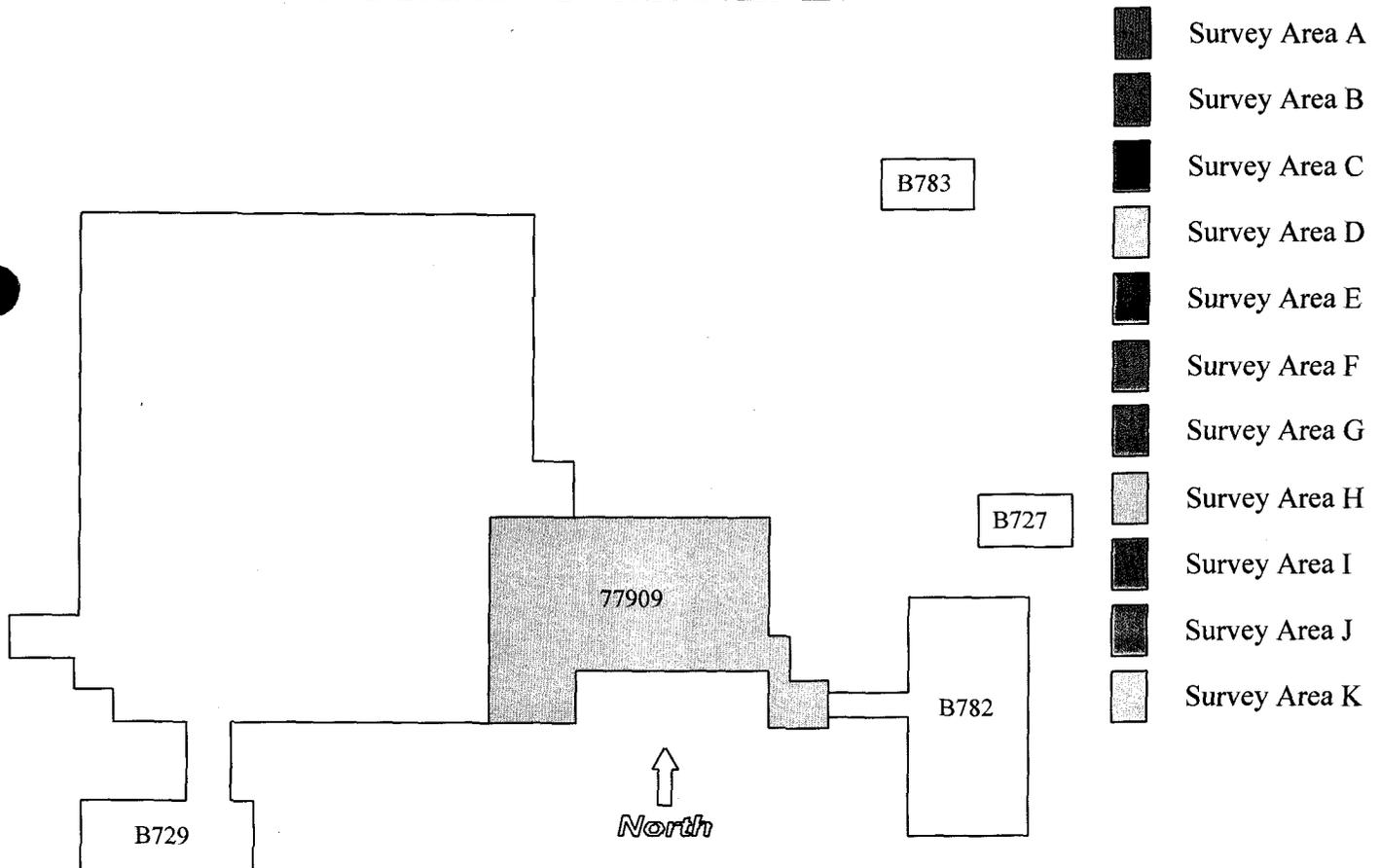
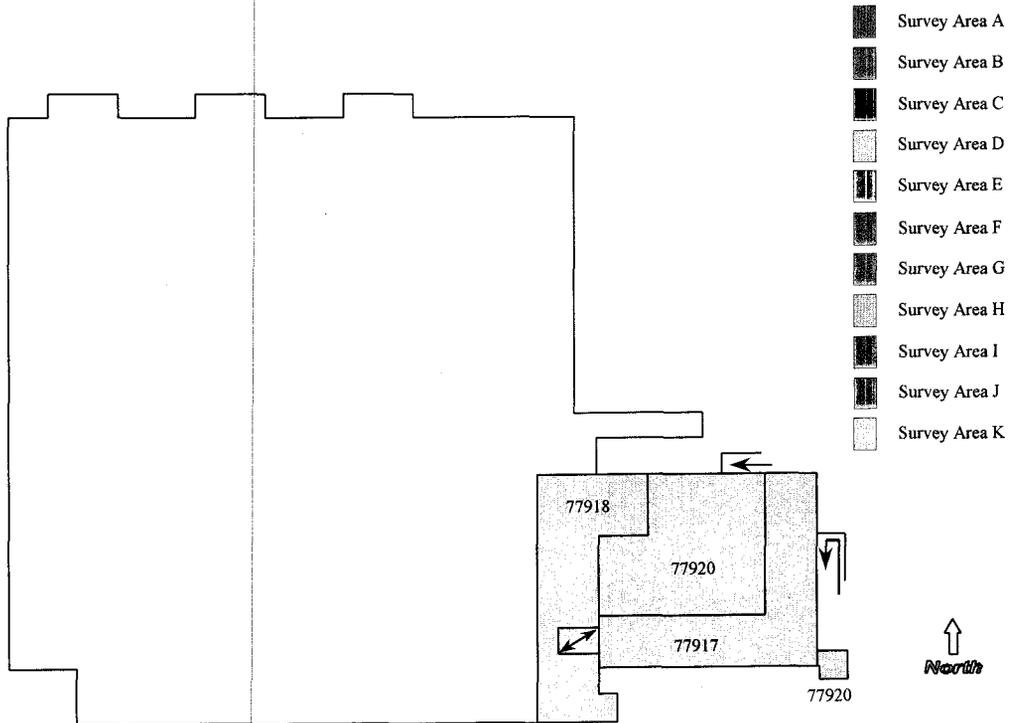
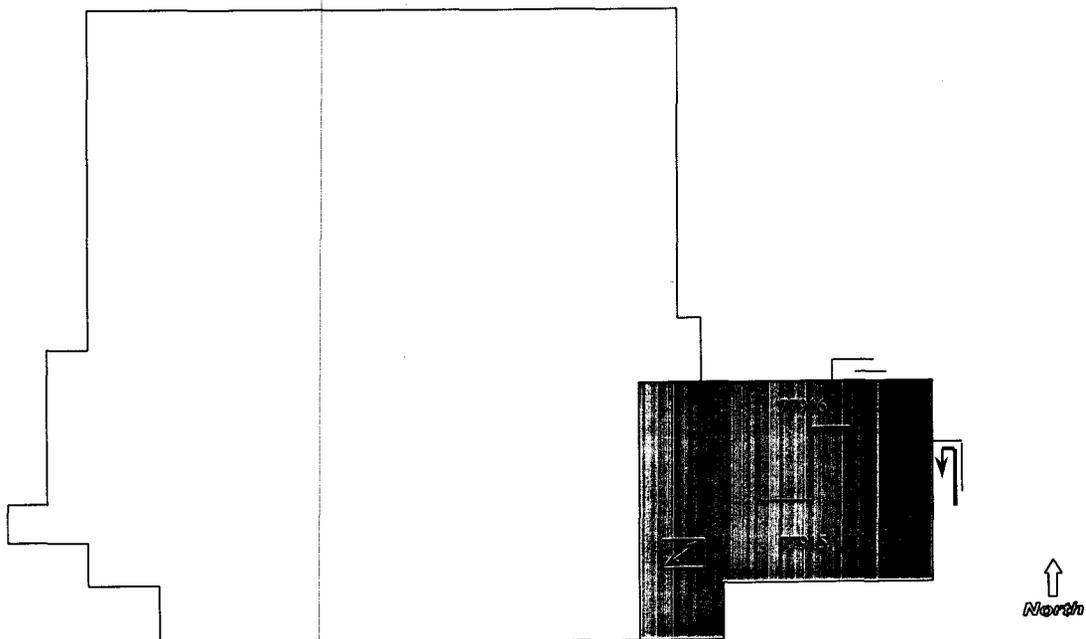


Figure 1.2 Administration Building Interior Overview Maps

779 FIRST FLOOR ADMIN INTERIOR SURVEY UNIT OVERVIEW



779 SECOND FLOOR ADMIN INTERIOR SURVEY UNIT OVERVIEW



2.0 Scope of Work

2.1 Paint/Surface Media Samples

Paint/surface media samples were obtained in 77909 and 77920 (Class 2 survey units) to ensure average contamination did not exist below painted surfaces or other forms of surface media such as roofing material, floor adhesive, or within the paint or roofing/adhesive material itself. No samples were collected from 77916 (Class 1) because the area was completely scabbled prior to final survey. In addition, no media samples were collected from Class 3 areas (not required per the CRSP).

Due to the fact that there was no evidence (as discovered during the historical site assessment, characterization, and final status surveys) that contamination had migrated into cinder block, concrete, or any other base material and disappeared from the surface, total surface activity measurements and surface media sampling were utilized as the detection methods for any contamination that occurred on building surfaces. Therefore, no volumetric samples were collected.

The sample collection method for coated surfaces (paint or adhesive) involved the collection of cover material to a depth where the underlying base material was exposed.

The quantity of samples was determined based on MARSSIM statistical calculations to satisfy Impacted Class 2 survey requirements. The calculation methodology for the number of media samples is presented in the Closeout Radiological Survey Plan for the 779 Cluster (Section 5.2.6.2). Based on the calculations included in each survey package, 15 paint/surface media samples were required for each survey unit (refer to Building 779 project files).

Instrument calibration, maintenance, source check requirements, data reduction and MDC equations are controlled per applicable Kaiser Hill Analytical Services Division procedures.

2.2 Removable Surface Contamination Survey

Removable surface contamination surveys were obtained in each survey unit to ensure that removable contamination did not exist above the Building 779 Cluster DCGL_{ws}. The quantity of removable contamination measurements was determined based on MARSSIM statistical calculations as presented in the Closeout Radiological Survey Plan for the 779 Cluster, RF/RMRS-97-123.UN (Section 5.2.6.2). Based on calculations included in each survey package, a minimum of 15 removable contamination measurements were required for each survey unit (refer to Building 779 project files).

Smears were counted on a SAC-4. Instrument calibration, maintenance, source check requirements, data reduction and MDC equations are provided in 3-PRO-112-RSP-03.01, Revision 1, "Radiological Instrumentation".

2.3 Total Surface Activity Survey

Total surface activity surveys were obtained in each survey unit to ensure the average total activity levels did not exist above the Building 779 Cluster DCGL_{WS}. The number of total surface activity surveys was also determined based on MARSSIM statistical calculations as presented in the Closeout Radiological Survey Plan for the 779 Cluster (Section 5.2.6.2). Based on the calculations included in each survey package, 15 total surface activity measurements were required for each survey unit (refer to Building 779 project files).

The surveys were performed with an NE Electra with the 100 cm² DP6 detector. The survey count time was ninety seconds. Local area background determinations are discussed in Section 4.0. Instrument calibration, maintenance, source check requirements, as well as data reduction and MDC equations are provided in 3-PRO-112-RSP-03.01, Revision 1, "Radiological Instrumentation".

The Electra MDC is verified in a radiological engineering site operations technical basis document entitled "Methods to Demonstrate Compliance with Performance Requirements for Swipe Counting and Portable Contamination Survey Instrumentation used to Evaluate Property and Waste for Unrestricted Release", dated June 7, 1995.

2.4 Scan Surveys

Surface scans were conducted in each survey unit per two methods 1) with the position-sensitive SCM system and 2) with conventional hand-held NE Electra dual scintillation detectors. The two methods are described in the following sections.

2.4.1 SCM/SIMS Scan Surveys

The majority of the surface scans were conducted using the Surface Contamination Monitor/Survey Information Management System (SCM/SIMS) developed by Shonka Research Associates, Inc. (SRA). The SCM/SIMS system consists of a position sensitive proportional counter (PSPC) coupled to a computerized data acquisition system. The PSPC is a long detector that acts as an array of many small radiation detectors. This allows the instrument to measure more area per unit time than a smaller detector and still separate out localized areas of contamination. The PSPC is typically mounted to a motor driven cart. The drive motor provides speed control for the unit, and a precision wheel encoder, affixed to the cart, provides travel distance input to the computer.

Counts are accumulated in each 5 cm channel every 5 cm travel by the system. The result is data retained in 5 cm x 5 cm (25 cm²) pixels, available for analysis and presentation via the SIMS software. Surveys were conducted at a speed of 0.4 to 0.8 inch/sec. A recount detector was employed for all surveys performed with the cart-mounted detectors. Recount detectors perform a second survey of the area surveyed by the primary detector. The main purpose of the recount detector is to reduce the number of false positive results due to the low DCGL_W for alpha emitting isotopes, the low and variable background, and the short count time. A few background counts occurring in a small area can result in an indication of elevated activity. The probability of background affecting both the primary and the recount detector is greatly reduced, thus reducing the need to perform verification surveys.

SCM/SIMS detector surface areas are 900 cm² and 1800 cm². Choice of detector was based on the floor space available and the interferences in the area. To complete surveys in areas that were not accessible with the standard cart mounted detectors, either corner detectors were employed or hand-held instruments were utilized (refer to section 2.4.2). The corner detector is a similar PSPC used in a static count mode with data binned in 5 cm increments. The corner detector accumulates data for eight seconds. The longer count time eliminated the need for recount. The output of the corner detector is integrated into the SIMS software.

Wall surveys were performed by mounting the detectors vertically to the side of the SCM cart. All other aspects of the survey were consistent with floor monitoring. The drive wheel maintained speed control, and position sensitivity was established through the wheel encoder. The height above grade was identified on the survey maps.

Surveys were conducted in accordance with equipment operation and calibration procedures developed by SRA and incorporated in the Millennium Services, Inc. Quality Assurance Plan. Detector efficiencies were determined with a NIST traceable Plutonium-238 source with an active area of approximately 50 cm² and an alpha energy of 5.5 MeV. The energy of the source is similar to the 5.1 MeV of Plutonium-239, the principle isotope of the primary suspected contaminant. Periodic quality control checks were performed for each detector in use, and used to establish the efficiency for the detectors based on data that spanned the use of that detector during the survey (Refer to Section 4.0). All quality control checks were performed under the same operating and environmental conditions as the surveys in accordance with applicable Radiological Safety Procedures.

The SCM/SIMS sensitivity for the surveys performed in the Administration Building is documented in the B779 project file. The Minimum Detectable Concentration for alpha surveys for 100 cm² areas is 128 dpm (refer to "Evaluation of Surface Contamination Monitor/Survey Information Management (SCM/SIMS) for the identification of contamination against the DCGL_{EMC} for the 779 Closure Project at the Rocky Flats Environmental Technology Site"). All

RFETS-specified instrument performance requirements are satisfied with SCM/SIMS survey methodology based on data discussion provided in Appendix 5 of the CRSR for Building 729, RF/RMRS-99-358.UN.

2.4.2 NE Electra Scan Surveys

Areas that were not scanned with the SCM/SIMS were scanned with the hand-held NE Electra with 100 cm² DP6 probes, or NE Electra Plus with 600 cm² DP8 probes.

The scan rate for the DP6 was established as 1.5 inches per second in order to comply with the recommendations for probabilities of detection provided in ANSI N13.12, *Draft American National Standards: Control of Radioactive Surface Contamination on Materials, Equipment, and Facilities to be Released for Uncontrolled Use*. Scanned areas in excess of 225 dpm/100 cm² were flagged. If no flags were identified during the scan, the scan result was recorded as <225 dpm/100 cm² (refer to Tables 7.5 to 7.10).

Areas scanned with the DP8 detectors consisted of eight-second static counts. In the event that the eight-second count exceeded 225 dpm/100 cm², two additional measurements were performed at the same location. If one of the two additional measurements exceeded 225 dpm/100 cm², an investigation was performed.

Differentiation between SCM and handheld instrument surveys is captured within each individual survey package that is maintained in the project files.

3.0 DCGLs

The surface contamination criteria from DOE Order 5400.5 were used as the DCGLs for the final survey. The applicable transuranic DCGL_w for removable contamination, and total surface activity measured by direct surface emission are as follows:

Category	DCGL _w Removable Alpha (dpm/100 cm ²)	DCGL _w Total Alpha (dpm/100 cm ²)	DCGL _{EMC} Total Alpha (dpm/100 cm ²)
Transuranic	20	100	300
Uranium	N/A	5000	15,000

The applicable transuranic DCGL_w for paint/surface media samples is 100 dpm/100 cm².

4.0 Background

Final radiological surveys of the Administration Building were focussed on alpha emitting isotopes, principally Plutonium-239, and Plutonium-240. Natural activity present in construction materials was not expected to contribute a significant amount to the field measurements. Historical data from other RFETS building indicates that surface emission rates from concrete, typically the material containing the highest quantities of naturally-occurring alpha-emitting isotopes, would contribute negligible activity when compared to the $DCGL_{EMC}$. Therefore, no material background subtract was performed for alpha surface scan measurements, and results were compared directly to the applicable $DCGL_{EMC}$ defined in Section 3.0.

For total surface activity data collected with the NE Electra, a ninety-second background measurement was collected at each total surface activity location. The average of these measurements was calculated, and the mean value subtracted from total surface activity measurements to obtain the net total surface activity results.

Paint/Surface media samples were analyzed by alpha spectroscopy methods. Individual isotopic data results are contained in Attachments B through G. Transuranic isotopes are not present in natural radioactivity; therefore no background concerns exist. Uranium isotopes, though present in nature, are not expected to exist in significant quantities in paint/surface media samples. As in surface activity measurements, total reported activity from paint/surface media sample analyses was evaluated against the applicable uranium or transuranic $DCGL_w$ defined in Section 3.0.

Other than instrument background, which is quantified prior to analysis, background is not a factor during performance of removable contamination surveys. Reported values from the removable contamination surveys were evaluated against the applicable $DCGL_w$ defined in Section 3.0.

5.0 Quality Assurance/Quality Control

Quality control for each type of instrument utilized in the Administration Building survey is discussed in the sections below. As described in MARSSIM, a data quality assessment (DQA) was also performed and documented (refer to Attachment I).

5.1 Paint/Surface Media Samples

Measures of laboratory precision and accuracy were assessed per applicable laboratory procedures. All QA data indicated that sample results were valid (refer to Attachment I, Data Quality Assessment).

5.2 Removable Surface Contamination Surveys

The instruments utilized for removable surface contamination analysis (Eberline SAC-4) were calibrated with NIST-traceable sources. A daily background and QC check was also performed. All background and QC checks were within required tolerances as delineated in the Building 779 CRSP RF/RMRS-97-123.UN (also refer to Attachment I, Data Quality Assessment).

5.3 Total Surface Activity Surveys

An additional 5% of total surface activity measurements were obtained for quality control purposes (refer to Attachments B through G). The results from these measurements were compared to the applicable DCGL_w to ensure survey compliance (i.e., all QC measurements were less than DCGL_w). All QC measurements were less than DCGL_w (refer to Attachment I, Data Quality Assessment).

5.4 Scan Surveys

5.4.1 SCM/SIMS Scan Surveys

Quality control surveys for SCM/SIMS scans were performed with a NIST traceable Plutonium-238 source with an activity of 194,400 dpm. The source, RFETS ID# RS3911, Manufacturer's ID ER716, is a 71 mm x 71 mm (approximately 50 cm²) plated source. The source manufacturer's certificate is in the 779 Closure Project file. Quality control surveys consisted of a minimum of three measurements of the source by the detector in the configuration used in the actual survey. SCM quality control surveys were performed with the source on the floor or wall and the detector assembly moving at the appropriate survey speed (i.e., 0.4 to 0.8 inches/sec). Corner detector quality control surveys consisted of measurements of the source placed on a surface and the data acquisition set for the survey time (i.e., 8 to 10 seconds).

A quality control survey was performed at the beginning and end of each detector use each day and periodically during the surveys. The response of the detector over the duration of its use became the basis for the detector's efficiency. Additionally, each survey was evaluated to ensure that it was bracketed by acceptable quality control surveys. At least two of the three measurements must fall within the specified tolerance (within 20% of the mean of all quality control surveys for each specific detector) in order for the data to be considered valid. The above criteria were satisfied. Therefore, the detector results were considered valid.

Source checks were conducted daily prior to start of survey, whenever the detector configuration was changed, and whenever any other electronic adjustments or maintenance was performed. The mean of the valid quality control surveys, determined from all acceptable results over the duration of the survey, was used to establish the efficiency for a specific detector. Attachment H

includes the quality control charts for the SCM/SIMS detectors used during the survey.

5.4.2 NE Electra Scan Surveys

Performance checks were performed on the NE Electra prior to field use. The results were required to fall within the established range ($\pm 20\%$ in accordance with the applicable Radiological Safety Procedures) in order for the instrument and the associated data to be considered valid (refer to Attachment I, Data Quality Assessment).

6.0 Investigation Methodology

Follow up investigations were conducted for each scan result in excess of 75% of the $DCGL_{EMC}$. No investigations were required for Total and Removable Surface Activity, or Paint/Media samples because no result was in excess of 75% of the $DCGL_W$. Scan results in excess of $225 \text{ dpm}/100\text{cm}^2$ (75% of the $DCGL_{EMC}$) were investigated by performing a survey of the flagged area with a hand held instrument, the NE Electra with a DP6 probe.

Investigation surveys utilizing the NE Electra were performed by first scanning the surrounding suspect area to determine if any elevated activity areas could be identified. Following the scan, a shielded local area background measurement (one minute count) and an unshielded direct measurement (one minute count) were obtained in the area of highest activity identified during the scan.

Remediation and a follow-up survey were performed at each confirmed location that produced an NE Electra result in excess of $225 \text{ dpm}/100 \text{ cm}^2$ (as described in Tables 7.5 to 7.10).

Each investigation measurement was documented on an investigation form. In some cases, more than one investigation result was documented for a given grid.

All investigation results are presented in Tables 7.5 to 7.10.

7.0 Survey Results

7.1 Paint/Surface Media Samples

Paint/surface media samples were obtained at each grid location where paint/surface media existed in accordance with approved instructions in each survey package, ensuring that the minimum required paint/surface media samples were obtained for survey units 77909 and 77920. Attachments B and G present results and a data summary of paint/surface media sample analyses for these survey unit. Alpha spectroscopy was performed to determine the activity of Uranium-233/234, Uranium-235, Uranium-238, Plutonium-239/240, and Americium-241. Values for each isotope(s) are reported separately. All reported

values for the two survey units were below the applicable total uranium and total transuranic DCGL_w. The number of media samples obtained was verified to be adequate by re-calculating the required number of samples with the actual survey unit sample standard deviation (refer to the "Post Survey Paint/Media Sample Summary Statistics Calculation Verification Worksheet" in the Building 779 project files, for each applicable survey unit). Tables 7.1 and 7.2 summarize the results of the paint/surface media samples.

Table 7.1
Paint/Surface Media Summary Results for Transuranics

Survey Unit	Minimum (dpm/100 cm ²)	Maximum (dpm/100 cm ²)	Mean (dpm/100 cm ²)	Std. Dev. (dpm/100 cm ²)	DCGL _w
77909					100
77920	0.0	5.7	2.1	1.7	

Table 7.2
Paint/Surface Media Summary Results for Uranium

Survey Unit	Minimum (dpm/100 cm ²)	Maximum (dpm/100 cm ²)	Mean (dpm/100 cm ²)	Std. Dev. (dpm/100 cm ²)	DCGL _w
77909					5000
77920	21.3	169.0	68.8	40.0	

Detailed sampling instructions and paint/surface media sample results are on file in the Building 779 project files.

7.2 Removable Surface Contamination Surveys

Removable contamination measurements were obtained at each accessible grid location in accordance with approved instructions in each survey package. The minimum required removable contamination measurements were obtained for each survey unit. Removable contamination survey results are presented by survey unit in Attachments B through G. Surveys were performed at each location from which paint/surface media samples were obtained, ensuring that the minimum required number of smears was collected for each survey unit. For those points, measurements were obtained prior to and after the media sample. For those areas from which no paint/media sample was obtained, a single removable contamination measurement was obtained. The results of all smears show that the removable contamination levels met the DCGL_w described in Section 3.0. The number of removable activity measurements obtained was verified to be adequate by re-calculating the required number of measurements with the actual survey unit measurement standard (refer to the "Post Survey Removable Contamination Summary Statistics Calculation Verification Worksheet" in the Building 779 project files, for each survey unit). Table 7.3 summarizes the results of removable surface contamination surveys.

Table 7.3
Removable Surface Contamination Summary Results

Survey Unit	Minimum (dpm/100 cm ²)	Maximum (dpm/100 cm ²)	Mean (dpm/100 cm ²)	Std. Dev. (dpm/100 cm ²)	DCGL _w
77909	-2	10	2	3	20
77915	-0.6	2.4	0.7	1.0	
77916	-0.6	3.9	0.6	1.5	
77917	-0.3	2.7	0.9	1.1	
77918	-0.9	3.6	0.5	1.5	
77920					

Detailed survey instructions and removable surface contamination results are on file in the Building 779 project files.

7.3 Total Surface Activity Surveys

Total surface activity measurements were obtained in accordance with approved instructions in each survey package, at each accessible grid location, ensuring that the minimum required total surface activity measurements were obtained for each survey unit. Total surface activity survey results for each survey unit are presented in Attachments B through G. Total surface activity surveys were performed at each location where paint/surface media samples were obtained. For those areas where no media sample was obtained, a single total surface activity measurement was obtained. The results of all surveys showed that all total surface activity levels were less than the DCGL_w described in Section 3.0. The number of total surface activity measurements obtained was verified to be adequate by re-calculating the required number of measurements with the actual survey unit standard deviation (refer to the "Post Survey Total Surface Activity Summary Statistics Calculation Verification Worksheet" in the Building 779 project files, for each survey unit). Table 7.4 summarizes the total surface contamination survey results.

Table 7.4
Total Surface Contamination Summary Results

Survey Unit	Minimum (dpm/100 cm ²)	Maximum (dpm/100 cm ²)	Mean (dpm/100 cm ²)	Std. Dev. (dpm/100 cm ²)	DCGL _w
77909	-0.9	56.6	22.5	15.5	100
77915	-6.3	60.2	19.0	17.6	
77916	0.0	45.6	15.2	11.3	
77917	-7.7	43.7	9.8	13.6	
77918	-4.5	29.1	8.5	8.8	
77920					

Detailed survey instructions and total surface contamination results are on file in the Building 779 project files.

7.4 Scan Surveys

Scan surveys were performed at the required density in accordance with approved instructions in each survey package. The survey results are presented in Attachments A through G. Survey results are grouped by survey unit. Each survey unit is divided into a number of subunits, which is typically represented by a single surface (e.g. floor, wall < 2 meters, wall > 2 meters, ceiling, etc.). Within each subunit, survey(s) are performed. For SCM scan surveys, a report is automatically generated. For the NE Electra scan surveys, the results are reported as < 225 dpm/100 cm² (given that no areas are flagged for investigation). For both scan methods, survey information is documented on survey forms and maps. A consistent numbering system (per the survey unit numbers outlined in the Final Survey Breakdown Structure, Rev 2) is used to identify the survey unit, subunit, survey number, and type of detector used.

The scan survey overlay maps (refer to Attachment A) delineate the subunit locations so that all surveys can be traced to the location surveyed. The yellow-shaded areas represent areas requiring 100% scan. The blue-shaded areas represent areas requiring 10% scan. The required scan frequency for each survey unit, per the Closeout Radiological Survey Plan for the 779 Cluster, was verified.

Due to the low expected count rate and the random nature of radioactivity, a low occurrence of individual 100 cm² area false positive results are expected. This phenomenon is amplified when using the SCM/SIMS system due to the large amounts of data generated (i.e. a result is recorded for each 25 cm² area scanned). The utilization of a recount detector allows for a rapid evaluation of an area that indicates a higher than normal value. If one detector indicates a slightly elevated reading but the event is not confirmed by the second detector, the measurement is likely a false positive. Readings that approach an investigation level with either detector are averaged with the results from the other detector. An average value in excess of 225 dpm/100 cm² requires an investigation.

Surveys taken with the SCM operating in the timer mode are presented as a single survey. Survey time for those detectors have been increased to minimize the probability of false positives. Timer mode surveys are performed when the cart mounted, motor driven SCM can not physically access an area due to area size, interference, or accessibility. The timer mode setting was 8 to 10 seconds, providing the same surface area measurement as the time measured by both the primary and recount operating at 0.4 to 0.8 inches/sec.

7.4.1 Survey Unit 77909 Scan and Investigation Data Summary

Table 7.5 summarizes the SCM/SIMS and NE Electra scans and follow-up investigations conducted in survey unit 77909:

**Table 7.5
 Survey Unit 77909 Scan Data Summary**

Final Scan Survey Number ⁽¹⁾	Scan Survey Date	Max. Result (dpm/100cm ²) ⁽²⁾	Investigation Survey Number ⁽¹⁾	SCM value >75% of EMC (dpm/100 cm ²)	Electra Investigation Result (dpm/100cm ²) ⁽³⁾	Decon required (Y/N)	Final Investigation Value (dpm/100cm ²) ⁽³⁾
00920100	7/21/99	193	n/a	n/a	n/a	N	n/a
00920200	7/21/99	232	00920290	232	48	N	n/a
00920300	7/21/99	270	00920390	229	52	N	n/a
				270	52	N	n/a
00920400	7/21/99	387	00920490	232	60	N	n/a
				256	80	N	n/a
				270	40	N	n/a
				387	52	N	n/a
				271	56	N	n/a
				232	48	N	n/a
				232	56	N	n/a
				232	60	N	n/a
				270	40	N	n/a
00920500	7/21/99	270	00920590	232	16	N	n/a
				258	40	N	n/a
				270	80	N	n/a
00920600	7/21/99	270	00920690	232	32	N	n/a
				232	36	N	n/a
				270	8	N	n/a
				259	24	N	n/a
00920700	7/21/99	194	n/a	n/a	n/a	N	n/a
00920800	7/21/99	309	00920890	309	48	N	n/a
				232	4	N	n/a
				291	16	N	n/a
00920900	7/21/99	309	00920990	232	22	N	n/a
				270	46	N	n/a
				226	38	N	n/a
				295	34	N	n/a
				232	18	N	n/a
				253	54	N	n/a
				309	58	N	n/a
00921000	7/21/99	309	00921090	271	24	N	n/a
				308	32	N	n/a
				309	52	N	n/a
				270	48	N	n/a
				270	32	N	n/a
00921100	7/21/99	270	00921190	270	44	N	n/a
				232	36	N	n/a

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Final Scan Survey Number ⁽¹⁾	Scan Survey Date	Max. Result (dpm/100cm ²) ⁽²⁾	Investigation Survey Number ⁽¹⁾	SCM value >75% of EMC (dpm/100 cm ²)	Electra Investigation Result (dpm/100cm ²) ⁽³⁾	Decon required (Y/N)	Final Investigation Value (dpm/100cm ²) ⁽³⁾
00921200	7/21/99	271	00921290	232	60	N	n/a
				232	36	N	n/a
				231	80	N	n/a
				232	64	N	n/a
				271	36	N	n/a
00921300	7/21/99	252	00621390	252	24	N	n/a
00921400	7/21/99	309	00921490	232	36	N	n/a
				309	32	N	n/a
				232	28	N	n/a
				268	40	N	n/a
				238	88	N	n/a
				270	36	N	n/a
				231	12	N	n/a
00921500	7/21/99	298	00921590	232	32	N	n/a
				232	68	N	n/a
				270	20	N	n/a
				232	4	N	n/a
				232	24	N	n/a
				232	24	N	n/a
				232	12	N	n/a
				298	56	N	n/a
00921600	7/22/99	309	00921690	271	40	N	n/a
				257	20	N	n/a
				232	28	N	n/a
				309	60	N	n/a
				270	28	N	n/a
				309	40	N	n/a
00921601	8/24/99	203	n/a	n/a	n/a	N	n/a
00921700	7/22/99	348	00921790	232	68	N	n/a
				232	32	N	n/a
				309	28	N	n/a
				271	36	N	n/a
				232	40	N	n/a
				232	32	N	n/a
				232	60	N	n/a
				348	4	N	n/a
				309	40	N	n/a
				232	8	N	n/a
				232	40	N	n/a
				243	40	N	n/a
				309	16	N	n/a
				00921800	7/22/99	318	00921890
309	80	N	n/a				
271	68	N	n/a				
232	76	N	n/a				
232	100	N	n/a				

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Final Scan Survey Number ⁽¹⁾	Scan Survey Date	Max. Result (dpm/100cm ²) ⁽²⁾	Investigation Survey Number ⁽¹⁾	SCM value >75% of EMC (dpm/100 cm ²)	Electra Investigation Result (dpm/100cm ²) ⁽³⁾	Decon required (Y/N)	Final Investigation Value (dpm/100cm ²) ⁽³⁾
00921800	7/22/99	318	00921890	318	68	N	n/a
				271	56	N	n/a
				292	52	N	n/a
				231	36	N	n/a
				227	64	N	n/a
				309	48	N	n/a
				309	52	N	n/a
00921900	7/22/99	270	20	270	20	N	n/a
00922000	7/22/99	309	00922090	309	68	N	n/a
				232	64	N	n/a
				232	60	N	n/a
				232	12	N	n/a
				232	28	N	n/a
00922100	7/20/99	232	00922190	245	48	N	n/a
				232	32	N	n/a
				232	-4	N	n/a
				232	32	N	n/a
00922200	7/20/99	243	00922290	232	44	N	n/a
				243	32	N	n/a
00922300	7/20/99	232	00922390	232	8	N	n/a
00965300	8/24/99	135	n/a	n/a	n/a	N	n/a
00965400	8/24/99	203	n/a	n/a	n/a	N	n/a
00965501	8/24/99	270	00965590	270	40	N	n/a
00965600	7/27/99	194	n/a	n/a	n/a	N	n/a
00965601	8/24/99	102	n/a	n/a	n/a	N	n/a
00965700	7/27/99	270	00965790	270	24	N	n/a
00965701	8/24/99	135	n/a	n/a	n/a	N	n/a
00965800	7/27/99	194	n/a	n/a	n/a	N	n/a
00965801	8/24/99	101	n/a	n/a	n/a	N	n/a
00965900	8/24/99	169	n/a	n/a	n/a	N	n/a
00966000	7/23/99	461	00966090	270	12	N	n/a
				461	36	N	n/a
00966001	8/24/99	203	n/a	n/a	n/a	N	n/a
00966100	7/23/99	257	00966190	242	20	N	n/a
				232	24	N	n/a
				257	24	N	n/a
00966101	8/24/99	237	00966191	237	36	N	n/a
00966200	7/23/99	232	00966290	229	28	N	n/a
				232	24	N	n/a
00966201	8/24/99	169	n/a	n/a	n/a	N	n/a
00966300	7/23/99	232	00966390	232	28	N	n/a
00966400	7/23/99	503	00966490	503	40	N	n/a
				309	36	N	n/a
				309	40	N	n/a
00966500	8/24/99	372	00966590	372	20	N	n/a
00966600	8/24/99	135	n/a	n/a	n/a	N	n/a
00966800	8/24/99	270	00966890	270	60	N	n/a

Final Scan Survey Number ⁽¹⁾	Scan Survey Date	Max. Result (dpm/100cm ²) ⁽²⁾	Investigation Survey Number ⁽¹⁾	SCM value >75% of EMC (dpm/100 cm ²)	Electra Investigation Result (dpm/100cm ²) ⁽³⁾	Decon required (Y/N)	Final Investigation Value (dpm/100cm ²) ⁽³⁾
00966800	8/24/99	270	00966890	270	84	N	n/a
00967000	7/22/99	194	n/a	n/a	n/a	N	n/a
00967001	8/24/99	169	n/a	n/a	n/a	N	n/a
00967100	7/23/99	309	00967190	309	76	N	n/a
00967201	7/23/99	380	00967290	380	44	N	n/a
				232	52	N	n/a

(1) The first six characters represent the survey subunit number. The last two numbers represent the detector type.

(2) NE Electra scan results are reported as < 225 dpm/100 cm² when no areas are flagged.

(3) One-square meter averages are verified as less than 75 dpm/100 cm² when individual measurements in excess of 100 dpm/100 cm² are present.

Detailed scan survey instructions and results are on file in the Building 779 project files.

7.4.2 Survey Unit 77915 Scan and Investigation Data Summary

Table 7.6 summarizes the SCM/SIMS and NE Electra scans and follow-up investigations conducted in survey unit 77915:

Table 7.6
Survey Unit 77915 Scan Data Summary

Final Scan Survey Number ⁽¹⁾	Scan Survey Date	Max. Result (dpm/100cm ²) ⁽²⁾	Investigation Survey Number ⁽¹⁾	SCM value >75% of EMC (dpm/100cm ²)	Electra Investigation Result (dpm/100cm ²) ⁽³⁾	Decon required (Y/N)	Final Investigation Value (dpm/100cm ²) ⁽³⁾
01500100	8/16/99	251	01500191	251	0	N	n/a
01500300	8/17/99	251	01500391	251	32	N	n/a
01500430	7/14/99	349	01500490	238	60	N	n/a
				227	40	N	n/a
				237	8	N	n/a
				349	16	N	n/a
				225	4	N	n/a
				226	24	N	n/a
				232	16	N	n/a
				254	36	N	n/a
01500530	7/13/99	254	01500590	254	36	N	n/a
01500600	7/17/99	208	n/a	n/a	n/a	N	n/a
01500700	8/17/99	349	01500791	349	8	N	n/a
				301	4	N	n/a
				251	40	N	n/a
				251	16	N	n/a
01500900	7/17/99	348	01500990	270	16	N	n/a
				232	0	N	n/a
				232	12	N	n/a
				348	20	N	n/a
				310	8	N	n/a

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Final Scan Survey Number ⁽¹⁾	Scan Survey Date	Max. Result (dpm/100cm ²) ⁽²⁾	Investigation Survey Number ⁽¹⁾	SCM value >75% of EMC (dpm/100cm ²)	Electra Investigation Result (dpm/100cm ²) ⁽³⁾	Decon required (Y/N)	Final Investigation Value (dpm/100cm ²) ⁽³⁾
01501000	7/17/99	271	01501090	271	32	N	n/a
				256	28	N	n/a
01501190	8/9/99	254	01501190	254	n/a	Y	36
01501400	8/17/99	301	01501491	251	12	N	n/a
				240	28	N	n/a
				251	8	N	n/a
				251	40	N	n/a
				298	24	N	n/a
				301	24	N	n/a
				01501400	8/17/99	301	01501491
				251	8	N	n/a
01501500	8/16/99	301	01501591	301	28	N	n/a
				301	12	N	n/a
				251	8	N	n/a
				251	12	N	n/a
				251	24	N	n/a
01501630	7/15/99	231	01501690	231	20	N	n/a
01501730	8/12/99	241	01501790	241	-4	N	n/a
				241	20	N	n/a
01501832	8/12/99	229	01501890	229	16	N	n/a
01501931	8/12/99	211	n/a	N/a	n/a	N	n/a
01502031	8/12/99	519	01502090	519	0	N	n/a
01502130	8/12/99	190	n/a	N/a	n/a	N	n/a
01502230	8/12/99	205	n/a	N/a	n/a	N	n/a
01502330	8/12/99	233	01502390	228	44	N	n/a
				233	16	N	n/a
01502430	8/12/99	181	n/a	N/a	n/a	N	n/a
01502530	8/12/99	185	n/a	N/a	n/a	N	n/a
01502600	8/16/99	276	01502690	276	2	N	n/a
				243	4	N	n/a
01520100	8/17/99	270	01520190	270	-8	N	n/a
01520200	8/17/99	169	n/a	N/a	n/a	N	n/a
01520300	8/17/99	203	n/a	N/a	n/a	N	n/a
01520400	8/17/99	203	n/a	N/a	n/a	N	n/a
01520500	8/17/99	101	n/a	N/a	n/a	N	n/a
01520630	7/12/99	114	n/a	N/a	n/a	N	n/a
01520700	8/17/99	135	n/a	N/a	n/a	N	n/a
01520830	7/12/99	163	n/a	N/a	n/a	N	n/a
01520900	8/17/99	201	n/a	N/a	n/a	N	n/a
01521090	7/15/99	<225	n/a	N/a	n/a	N	n/a
01521100	8/17/99	150	n/a	n/a	n/a	N	n/a
01521190	7/15/99	<225	n/a	n/a	n/a	N	n/a
01521200	8/17/99	251	01521290	251	24	N	n/a
01521300	8/17/99	169	n/a	n/a	n/a	N	n/a
01521400	8/17/99	135	n/a	n/a	n/a	N	n/a
01521500	8/17/99	169	n/a	n/a	n/a	N	n/a
01521600	8/17/99	169	n/a	n/a	n/a	N	n/a
01521700	8/17/99	135	n/a	n/a	n/a	N	n/a

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Final Scan Survey Number ⁽¹⁾	Scan Survey Date	Max. Result (dpm/100cm ²) ⁽²⁾	Investigation Survey Number ⁽¹⁾	SCM value >75% of EMC (dpm/100cm ²)	Electra Investigation Result (dpm/100cm ²) ⁽³⁾	Decon required (Y/N)	Final Investigation Value (dpm/100cm ²) ⁽³⁾
01521800	8/17/99	135	n/a	n/a	n/a	N	n/a
01521900	8/17/99	169	n/a	n/a	n/a	N	n/a
01522000	8/17/99	169	n/a	n/a	n/a	N	n/a
01522591	8/20/99	<225	n/a	n/a	n/a	N	n/a
01522690	8/20/99	<225	n/a	n/a	n/a	N	n/a
01522891	8/20/99	<225	n/a	n/a	n/a	N	n/a
01523000	7/14/99	154	n/a	n/a	n/a	N	n/a
01523200	7/14/99	154	n/a	n/a	n/a	N	n/a
01523330	7/16/99	150	n/a	n/a	n/a	N	n/a
01523491	8/20/99	<225	n/a	n/a	n/a	N	n/a
01523591	8/18/99	<225	n/a	n/a	n/a	N	n/a
01523691	8/20/99	<225	n/a	n/a	n/a	N	n/a
01523930	7/16/99	96	n/a	n/a	n/a	N	n/a
01524030	7/16/99	93	n/a	n/a	n/a	N	n/a
01524200	7/15/99	270	01524290	270	4	N	n/a
				240	8	N	n/a
01524400	7/15/99	193	n/a	n/a	n/a	N	n/a
01524501	8/17/99	203	n/a	n/a	n/a	N	n/a
01524630	7/23/99	536	01524690	308	12	N	n/a
				233	12	N	n/a
				536	12	N	n/a
01524800	7/27/99	193	n/a	N/a	n/a	N	n/a
01524830	7/23/99	372	01524890	372	-4	N	n/a
01524901	8/25/99	169	n/a	n/a	n/a	N	n/a
01524930	7/23/99	211	n/a	n/a	n/a	N	n/a
01525030	7/23/99	284	01525090	284	0	N	n/a
				243	-8	N	n/a
01525130	7/23/99	245	01525190	245	8	N	n/a
01525230	7/23/99	276	01525290	230	12	N	n/a
				276	20	N	n/a
				271	0	N	n/a
				227	4	N	n/a
				228	4	N	n/a
				255	15	N	n/a
01525300	8/17/99	201	n/a	n/a	n/a	N	n/a
01525400	8/17/99	176	n/a	n/a	n/a	N	n/a
01525500	8/17/99	176	n/a	n/a	n/a	N	n/a
01525600	8/17/99	201	n/a	n/a	n/a	N	n/a
01525630	7/16/99	97	n/a	n/a	n/a	N	n/a
01525730	7/16/99	104	n/a	n/a	n/a	N	n/a
01525800	8/17/99	201	n/a	n/a	n/a	N	n/a
01525900	8/17/99	201	n/a	n/a	n/a	N	n/a
01526000	8/17/99	151	n/a	n/a	n/a	N	n/a
01526100	7/17/99	116	n/a	n/a	n/a	N	n/a
01526200	7/17/99	116	n/a	n/a	n/a	N	n/a
01526300	7/17/99	154	n/a	n/a	n/a	N	n/a
01526400	7/17/99	154	n/a	n/a	n/a	N	n/a
01526501	8/16/99	304	01526591	304	8	N	n/a

Final Scan Survey Number ⁽¹⁾	Scan Survey Date	Max. Result (dpm/100cm ²) ⁽²⁾	Investigation Survey Number ⁽¹⁾	SCM value >75% of EMC (dpm/100cm ²)	Electra Investigation Result (dpm/100cm ²) ⁽³⁾	Decon required (Y/N)	Final Investigation Value (dpm/100cm ²) ⁽³⁾
01526601	8/16/99	135	n/a	n/a	n/a	N	n/a
01526701	8/16/99	203	n/a	n/a	n/a	N	n/a
01526801	8/16/99	135	n/a	n/a	n/a	N	n/a
01526901	8/16/99	135	n/a	n/a	n/a	N	n/a
01527001	8/16/99	135	n/a	n/a	n/a	N	n/a
01527101	8/16/99	135	n/a	n/a	n/a	N	n/a
01527201	8/16/99	135	n/a	n/a	n/a	N	n/a
01527301	8/17/99	135	n/a	n/a	n/a	N	n/a
01527401	8/17/99	135	n/a	n/a	n/a	N	n/a
01527501	8/17/99	135	n/a	n/a	n/a	N	n/a
01527601	8/17/99	135	n/a	n/a	n/a	N	n/a
01527700	8/17/99	201	n/a	n/a	n/a	N	n/a
01527800	8/17/99	150	n/a	n/a	n/a	N	n/a
01528100	8/17/99	201	n/a	n/a	n/a	N	n/a
01528190	7/14/99	<225	n/a	n/a	n/a	N	n/a
01528290	7/14/99	<225	n/a	n/a	n/a	N	n/a
01528300	8/17/99	150	n/a	n/a	n/a	N	n/a
01528390	7/14/99	<225	n/a	n/a	n/a	N	n/a
01528490	7/14/99	<225	n/a	n/a	n/a	N	n/a
01565400	7/13/99	232	01565490	232	20	N	n/a
01565700	7/13/99	77	n/a	n/a	n/a	N	n/a
01565900	7/12/99	227	01565990	227	40	N	n/a
01566300	7/13/99	193	n/a	n/a	n/a	N	n/a
01566900	7/13/99	193	n/a	n/a	n/a	N	n/a
01567300	7/14/99	193	n/a	n/a	n/a	N	n/a
01567500	7/17/99	889	01567590	889	16	N	n/a
01568000	7/14/99	116	n/a	n/a	n/a	N	n/a
01570300	7/17/99	116	n/a	n/a	n/a	N	n/a
01570700	7/18/99	154	n/a	n/a	n/a	N	n/a
01585100	7/27/99	193	n/a	n/a	n/a	N	n/a

- (1) The first six characters represent the survey subunit number. The last two numbers represent the detector type.
 (2) NE Electra scan results are reported as < 225 dpm/100 cm² when no areas are flagged.
 (3) One-square meter averages are verified as less than 75 dpm/100 cm² when individual measurements in excess of 100 dpm/100 cm² are present.

Detailed scan survey instructions and results are on file in the Building 779 project files.

7.4.3 Survey Unit 77916 Scan and Investigation Data Summary

Table 7.7 summarizes the SCM/SIMS and NE Electra scans and follow-up investigations conducted in survey unit 77916:

Table 7.7
Survey Unit 77916 Scan Data Summary

Final Scan Survey Number ⁽¹⁾	Scan Survey Date	Max. Result (dpm/100cm ²) ⁽²⁾	Investigation Survey Number ⁽¹⁾	SCM value >75% of EMC (dpm/100cm ²)	Electra Investigation Result (dpm/100cm ²) ⁽³⁾	Decon required (Y/N)	Final Investigation Value (dpm/100cm ²) ⁽³⁾
01602600	7/27/99	193	n/a	n/a	n/a	N	n/a
01602601	8/27/99	348	01602691	348	48	N	n/a
01602690	8/24/99	<225	n/a	n/a	n/a	N	n/a
01602700	7/27/99	193	n/a	n/a	n/a	N	n/a
01602701	8/27/99	193	n/a	n/a	n/a	N	n/a
01602790	8/24/99	<225	n/a	n/a	n/a	N	n/a

- (1) The first six characters represent the survey subunit number. The last two numbers represent the detector type.
 (2) NE Electra scan results are reported as < 225 dpm/100 cm² when no areas are flagged.
 (3) One-square meter averages are verified as less than 75 dpm/100 cm² when individual measurements in excess of 100 dpm/100 cm² are present.

Detailed scan survey instructions and results are on file in the Building 779 project files.

7.4.4 Survey Unit 77917 Scan and Investigation Data Summary

Table 7.8 summarizes the SCM/SIMS and NE Electra scans and follow-up investigations conducted in survey unit 77917:

Table 7.8
Survey Unit 77917 Scan Data Summary

Final Scan Survey Number ⁽¹⁾	Scan Survey Date	Max. Result (dpm/100cm ²) ⁽²⁾	Investigation Survey Number ⁽¹⁾	SCM value >75% of EMC (dpm/100cm ²)	Electra Investigation Result (dpm/100cm ²) ⁽³⁾	Decon required (Y/N)	Final Investigation Value (dpm/100cm ²) ⁽³⁾
01700134	8/11/99	291	01700193	244	16	N	n/a
				264	36	N	n/a
				226	20	N	n/a
				240	52	N	n/a
				239	28	N	n/a
				226	0	N	n/a
				291	18	N	n/a
				226	16	N	n/a
				225	24	N	n/a
01700232	8/11/99	341	01700291	249	-4	N	n/a
				236	0	N	n/a
				235	-4	N	n/a
				264	0	N	n/a
				230	6	N	n/a

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Final Scan Survey Number ⁽¹⁾	Scan Survey Date	Max. Result (dpm/100cm ²) ⁽²⁾	Investigation Survey Number ⁽¹⁾	SCM value >75% of EMC (dpm/100cm ²)	Electra Investigation Result (dpm/100cm ²) ⁽³⁾	Decon required (Y/N)	Final Investigation Value (dpm/100cm ²) ⁽³⁾
01700232	8/11/99	341	01700291	304	-10	N	n/a
				258	-12	N	n/a
				229	4	N	n/a
				252	4	N	n/a
				247	-4	N	n/a
				225	-4	N	n/a
				341	-4	N	n/a
				269	16	N	n/a
				259	12	N	n/a
01700300	8/23/99	503	01700392	503	24	N	n/a
				251	12	N	n/a
				251	0	N	n/a
				251	36	N	n/a
				251	16	N	n/a
				251	16	N	n/a
				226	-4	N	n/a
				251	12	N	n/a
				251	64	N	n/a
				245	16	N	n/a
				226	20	N	n/a
				301	32	N	n/a
				226	80	N	n/a
				251	0	N	n/a
				276	16	N	n/a
228	28	N	n/a				
01700400	8/2/99	309	01700490	270	28	N	n/a
				309	24	N	n/a
				270	52	N	n/a
				227	20	N	n/a
01700500	7/27/99	192	n/a	n/a	n/a	N	n/a
01700533	8/11/99	287	01700592	239	28	N	n/a
				227	32	N	n/a
				287	40	N	n/a
				247	24	N	n/a
				231	16	N	n/a
				283	36	N	n/a
				228	52	N	n/a
				244	28	N	n/a
279	12	N	n/a				

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Final Scan Survey Number ⁽¹⁾	Scan Survey Date	Max. Result (dpm/100cm ²) ⁽²⁾	Investigation Survey Number ⁽¹⁾	SCM value >75% of EMC (dpm/100cm ²)	Electra Investigation Result (dpm/100cm ²) ⁽³⁾	Decon required (Y/N)	Final Investigation Value (dpm/100cm ²) ⁽³⁾
01700600	7/27/99	223	n/a	n/a	n/a	N	n/a
01700632	8/11/99	286	01700692	241	40	N	n/a
				227	24	N	n/a
				286	12	N	n/a
				235	36	N	n/a
				286	32	N	n/a
				241	44	N	n/a
01700700	7/27/99	193	n/a	n/a	n/a	N	n/a
01700732	8/11/99	351	01700791	352	12	N	n/a
				322	24	N	n/a
				250	42	N	n/a
				244	24	N	n/a
				244	34	N	n/a
				317	30	N	n/a
				232	6	N	n/a
				346	38	N	n/a
				243	26	N	n/a
				231	50	N	n/a
01700830	8/11/99	289	01700890	227	-6	N	n/a
				290	30	N	n/a
				229	18	N	n/a
				231	12	N	n/a
				247	6	N	n/a
				284	14	N	n/a
				234	-6	N	n/a
				251	30	N	n/a
				227	6	N	n/a
				254	24	N	n/a
				282	36	N	n/a
				271	12	N	n/a
				257	20	N	n/a
244	12	N	n/a				
01700930	8/11/99	267	01700990	237	8	N	n/a
				267	36	N	n/a
				230	24	N	n/a
				225	40	N	n/a
				231	20	N	n/a
01701030	8/11/99	444	01701090	444	32	N	n/a
				236	56	N	n/a

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Final Scan Survey Number ⁽¹⁾	Scan Survey Date	Max. Result (dpm/100cm ²) ⁽²⁾	Investigation Survey Number ⁽¹⁾	SCM value >75% of EMC (dpm/100cm ²)	Electra Investigation Result (dpm/100cm ²) ⁽³⁾	Decon required (Y/N)	Final Investigation Value (dpm/100cm ²) ⁽³⁾
01701030	8/11/99	444	01701090	247	32	N	n/a
				335	24	N	n/a
				288	12	N	n/a
				243	40	N	n/a
				265	28	N	n/a
				230	52	N	n/a
01701130	8/11/99	314	01701190	314	-8	N	n/a
				228	12	N	n/a
				239	-4	N	n/a
				238	-24	N	n/a
				228	4	N	n/a
				237	12	N	n/a
01720230	7/26/99	157	n/a	n/a	n/a	N	n/a
01720430	7/26/99	270	01720490	270	28	N	n/a
				245	20	N	n/a
				243	100	N	n/a
				242	28	N	n/a
				249	8	N	n/a
01720530	7/26/99	337	01720590	337	16	N	n/a
				292	32	N	n/a
				279	16	N	n/a
				285	8	N	n/a
01720630	7/26/99	408	01720690	288	-8	N	n/a
				280	4	N	n/a
				260	0	N	n/a
				256	-8	N	n/a
				236	0	N	n/a
				263	4	N	n/a
				242	0	N	n/a
				334	24	N	n/a
				251	4	N	n/a
				236	12	N	n/a
				408	4	N	n/a
				241	-4	N	n/a
				259	16	N	n/a
				264	-4	N	n/a
258	-8	N	n/a				
01720730	7/26/99	284	01720791	225	0	N	n/a
				230	12	N	n/a
				226	-4	N	n/a

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Final Scan Survey Number ⁽¹⁾	Scan Survey Date	Max. Result (dpm/100cm ²) ⁽²⁾	Investigation Survey Number ⁽¹⁾	SCM value >75% of EMC (dpm/100cm ²)	Electra Investigation Result (dpm/100cm ²) ⁽³⁾	Decon required (Y/N)	Final Investigation Value (dpm/100cm ²) ⁽³⁾
01720730	7/26/99	284	01720791	284	4	N	n/a
01720830	7/26/99	322	01720890	266	20	N	n/a
				322	28	N	n/a
				317	16	N	n/a
				254	16	N	n/a
				273	-8	N	n/a
				241	32	N	n/a
				322	24	N	n/a
				306	24	N	n/a
				273	28	N	n/a
				315	4	N	n/a
				254	4	N	n/a
				310	16	N	n/a
249	4	N	n/a				
01720902	8/12/99	169	n/a	n/a	n/a	N	n/a
01721001	8/12/99	304	01721090	304	-4	N	n/a
01721101	8/12/99	304	01721191	304	12	N	n/a
01721201	8/12/99	169	n/a	n/a	n/a	N	n/a
01721400	8/2/99	309	01721490	290	4	N	n/a
				232	-16	N	n/a
				230	4	N	n/a
				309	8	N	n/a
				232	16	N	n/a
				232	0	N	n/a
01721600	8/2/99	270	01721690	270	12	N	n/a
				232	8	N	n/a
				232	0	N	n/a
				232	8	N	n/a
				253	4	N	n/a
				270	0	N	n/a
01721700	8/16/99	169	n/a	n/a	n/a	N	n/a
01721800	8/16/99	169	n/a	n/a	n/a	N	n/a
01721900	8/16/99	169	n/a	n/a	n/a	N	n/a
01722000	8/16/99	135	n/a	n/a	n/a	N	n/a
01722101	8/16/99	135	n/a	n/a	n/a	N	n/a
01722201	8/16/99	169	n/a	n/a	n/a	N	n/a
01722301	8/16/99	135	n/a	n/a	n/a	N	n/a
01722401	8/16/99	169	n/a	n/a	n/a	N	n/a
01722530	8/10/99	191	n/a	n/a	n/a	N	n/a
01722630	8/10/99	361	01722690	361	12	N	n/a
				267	-4	N	n/a
01722730	8/10/99	205	n/a	n/a	n/a	N	n/a

Final Scan Survey Number ⁽¹⁾	Scan Survey Date	Max. Result (dpm/100cm ²) ⁽²⁾	Investigation Survey Number ⁽¹⁾	SCM value >75% of EMC (dpm/100cm ²)	Electra Investigation Result (dpm/100cm ²) ⁽³⁾	Decon required (Y/N)	Final Investigation Value (dpm/100cm ²) ⁽³⁾
01722830	8/10/99	260	01722890	229	28	N	n/a
				260	4	N	n/a
				246	0	N	n/a
01722930	8/10/99	244	01722990	244	18	N	n/a
01723030	8/10/99	361	01723090	361	16	N	n/a
				231	16	N	n/a
				273	24	N	n/a
01723130	8/10/99	445	01723190	258	20	N	n/a
				270	28	N	n/a
				232	40	N	n/a
				282	68	N	n/a
				445	28	N	n/a
01723230	8/10/99	376	01723290	376	40	N	n/a
				295	0	N	n/a
				258	36	N	n/a
				245	4	N	n/a
				273	12	N	n/a
				238	8	N	n/a
				249	28	N	n/a
01723330	8/10/99	282	01723390	263	12	N	n/a
				282	0	N	n/a
				225	4	N	n/a
01723430	8/10/99	231	01723490	231	12	N	n/a
01765900	8/2/99	387	01765990	387	36	N	n/a
				267	24	N	n/a
				227	32	N	n/a
				260	48	N	n/a
				271	28	N	n/a
01766100	8/2/99	271	01766190	232	48	N	n/a
				232	16	N	n/a
				232	12	N	n/a
				271	36	N	n/a
				232	28	N	n/a
				271	24	N	n/a
01766500	8/2/99	232	01766590	232	-12	N	n/a
				232	24	N	n/a
				232	32	N	n/a

- (1) The first six characters represent the survey subunit number. The last two numbers represent the detector type.
 (2) NE Electra scan results are reported as < 225 dpm/100 cm² when no areas are flagged.
 (3) One-square meter averages are verified as less than 75 dpm/100 cm² when individual measurements in excess of 100 dpm/100 cm² are present.

Detailed scan survey instructions and results are on file in the Building 779 project files.

7.4.5 Survey Unit 77918 Scan and Investigation Data Summary

Table 7.9 summarizes the SCM/SIMS and NE Electra scans and follow-up investigations conducted in survey unit 77918:

**Table 7.9
 Survey Unit 77918 Scan Data Summary**

Final Scan Survey Number ⁽¹⁾	Scan Survey Date	Max. Result (dpm/100cm ²) ⁽²⁾	Investigation Survey Number ⁽¹⁾	SCM value >75% of EMC (dpm/100cm ²)	Electra Investigation Result (dpm/100cm ²) ⁽³⁾	Decon required (Y/N)	Final Investigation Value (dpm/100cm ²) ⁽³⁾
01800100	8/4/99	309	01800190	264	16	N	n/a
				232	8	N	n/a
				271	28	N	n/a
				309	12	N	n/a
01800200	8/4/99	348	01800290	348	20	N	n/a
01800400	9/9/99	194	n/a	n/a	n/a	N	n/a
01800790	9/11/99	<225	n/a	n/a	n/a	N	n/a
01800890	9/13/99	<225	n/a	n/a	n/a	N	n/a
01800990	9/11/99	<225	n/a	n/a	n/a	N	n/a
01801090	9/11/99	<225	n/a	n/a	n/a	N	n/a
01801190	9/13/99	<225	n/a	n/a	n/a	N	n/a
01820100	8/4/99	194	n/a	n/a	n/a	N	n/a
01820200	8/4/99	194	n/a	n/a	n/a	N	n/a
01820300	8/4/99	232	01820390	232	-12	N	n/a
01820400	8/4/99	270	01820490	270	4	N	n/a
01820700	9/7/99	154	n/a	n/a	n/a	N	n/a
01820701	9/10/99	201	n/a	n/a	n/a	N	n/a
01820800	9/7/99	153	n/a	n/a	n/a	N	n/a
01820801	9/9/99	213	n/a	n/a	n/a	N	n/a
01820802	9/10/99	201	n/a	n/a	n/a	N	n/a
01820901	9/9/99	116	n/a	n/a	n/a	N	n/a
01821100	9/8/99	152	n/a	n/a	n/a	N	n/a
01821200	9/8/99	155	n/a	n/a	n/a	N	n/a
01821300	9/8/99	188	n/a	n/a	n/a	N	n/a
01821400	9/8/99	116	n/a	n/a	n/a	N	n/a
01821500	9/8/99	116	n/a	n/a	n/a	N	n/a
01821600	9/8/99	116	n/a	n/a	n/a	N	n/a
01821700	9/8/99	174	n/a	n/a	n/a	N	n/a
01821800	9/8/99	116	n/a	n/a	n/a	N	n/a
01821900	9/8/99	116	n/a	n/a	n/a	N	n/a
01822000	9/8/99	116	n/a	n/a	n/a	N	n/a

Final Scan Survey Number ⁽¹⁾	Scan Survey Date	Max. Result (dpm/100cm ²) ⁽²⁾	Investigation Survey Number ⁽¹⁾	SCM value >75% of EMC (dpm/100cm ²)	Electra Investigation Result (dpm/100cm ²) ⁽³⁾	Decon required (Y/N)	Final Investigation Value (dpm/100cm ²) ⁽³⁾
01822100	9/8/99	97	n/a	n/a	n/a	N	n/a
01822400	9/10/99	201	n/a	n/a	n/a	N	n/a
01822500	9/10/99	150	n/a	n/a	n/a	N	n/a
01865100	8/4/99	194	n/a	n/a	n/a	N	n/a
01865400	9/8/99	77	n/a	n/a	n/a	N	n/a
01865500	9/8/99	116	n/a	n/a	n/a	N	n/a
01865600	9/8/99	116	n/a	n/a	n/a	N	n/a
01865800	9/8/99	116	n/a	n/a	n/a	N	n/a
01865900	9/8/99	112	n/a	n/a	n/a	N	n/a
01866000	9/8/99	77	n/a	n/a	n/a	N	n/a
01866100	9/9/99	154	n/a	n/a	n/a	N	n/a
01866400	9/9/99	154	n/a	n/a	n/a	N	n/a
01885100	8/4/99	232	01885190	232	56	N	n/a
01885500	9/9/99	193	n/a	n/a	n/a	N	n/a

- (1) The first six characters represent the survey subunit number. The last two numbers represent the detector type.
 (2) NE Electra scan results are reported as < 225 dpm/100 cm² when no areas are flagged.
 (3) One-square meter averages are verified as less than 75 dpm/100 cm² when individual measurements in excess of 100 dpm/100 cm² are present.

Detailed scan survey instructions and results are on file in the Building 779 project files.

7.4.6 Survey Unit 77920 Scan and Investigation Data Summary

Table 7.10 summarizes the SCM/SIMS and NE Electra scans and follow-up investigations conducted in survey unit 77920:

Table 7.10
Survey Unit 77920 Scan Data Summary

Final Scan Survey Number ⁽¹⁾	Scan Survey Date	Max. Result (dpm/100cm ²) ⁽²⁾	Investigation Survey Number ⁽¹⁾	SCM value >75% of EMC (dpm/100cm ²)	Electra Investigation Result (dpm/100cm ²) ⁽³⁾	Decon required (Y/N)	Final Investigation Value (dpm/100cm ²) ⁽³⁾
02000101	7/27/99	301	02000190	251	20	N	n/a
				301	4	N	n/a
02000103	8/16/99	264	02000192	264	40	N	n/a
				264	12	N	n/a
02000202	8/16/99	264	02000292	264	48	N	n/a
				264	24	N	n/a
02000293	8/26/99	<225	n/a	n/a	n/a	N	n/a
02000302	8/16/99	257	02000391	251	40	N	n/a
				248	48	N	n/a
				257	20	N	n/a
02000401	8/16/99	201	n/a	n/a	n/a	N	n/a

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Final Scan Survey Number ⁽¹⁾	Scan Survey Date	Max. Result (dpm/100cm ²) ⁽²⁾	Investigation Survey Number ⁽¹⁾	SCM value >75% of EMC (dpm/100cm ²)	Electra Investigation Result (dpm/100cm ²) ⁽³⁾	Decon required (Y/N)	Final Investigation Value (dpm/100cm ²) ⁽³⁾
02000500	7/27/99	301	02000591	301	16	N	n/a
02000532	8/12/99	539	02000590	539	24	N	n/a
				260	24	N	n/a
				294	28	N	n/a
02000600	7/27/99	201	n/a	n/a	n/a	N	n/a
02000632	8/12/99	301	02000690	301	20	N	n/a
				242	24	N	n/a
02000700	7/27/99	234	02000790	234	20	N	n/a
02000702	8/24/99	402	02000791	226	44	N	n/a
				402	72	N	n/a
				301	8	N	n/a
				251	20	N	n/a
				301	28	N	n/a
				226	12	N	n/a
				251	28	N	n/a
				246	52	N	n/a
				226	12	N	n/a
				226	32	N	n/a
				251	28	N	n/a
				299	28	N	n/a
				251	40	N	n/a
				251	44	N	n/a
				251	48	N	n/a
				247	28	N	n/a
				251	24	N	n/a
				251	16	N	n/a
				251	48	N	n/a
				251	32	N	n/a
251	16	N	n/a				
251	4	N	n/a				
251	16	N	n/a				
247	40	N	n/a				
02020100	7/26/99	553	02020190	268	96	N	n/a
				251	180	N	n/a
				553	170	N	n/a
				251	52	N	n/a
02020130	7/26/99	278	02020191	278	12	N	n/a
				225	0	N	n/a
				225	20	N	n/a
				278	4	N	n/a
02020192	8/25/99	<225	n/a	n/a	n/a	N	n/a
02020200	7/26/99	452	02020290	452	336	Y	40
				301	24	N	n/a
				251	12	N	n/a

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Final Scan Survey Number ⁽¹⁾	Scan Survey Date	Max. Result (dpm/100cm ²) ⁽²⁾	Investigation Survey Number ⁽¹⁾	SCM value >75% of EMC (dpm/100cm ²)	Electra Investigation Result (dpm/100cm ²) ⁽³⁾	Decon required (Y/N)	Final Investigation Value (dpm/100cm ²) ⁽³⁾
02020230	7/26/99	652	02020292	302	n/a	Y	wall removed
				364	n/a	Y	wall removed
02020230	7/26/99	652	02020292	257	20	N	n/a
				252	-4	N	n/a
				243	16	N	n/a
				273	0	N	n/a
				250	16	N	n/a
				244	20	N	n/a
				244	12	N	n/a
				259	12	N	n/a
				652	n/a	Y	wall removed
02020300	7/26/99	301	02020390	301	28	N	n/a
				301	8	N	n/a
				231	16	N	n/a
				251	16	N	n/a
02020330	7/26/99	253	02020391	253	12	N	n/a
				230	12	N	n/a
				247	12	N	n/a
				245	4	N	n/a
				248	0	N	n/a
02020392	8/26/99	<225	n/a	n/a	n/a	N	n/a
02020400	7/26/99	402	02020490	402	92	N	n/a
				281	16	N	n/a
				251	4	N	n/a
02020430	7/26/99	280	02020491	280	0	N	n/a
				238	8	N	n/a
				237	20	N	n/a
				280	0	N	n/a
				238	24	N	n/a
				237	0	N	n/a
				260	0	N	n/a
				249	20	N	n/a
02020493	8/25/99	<225	n/a	n/a	n/a	N	n/a
02020500	7/26/99	347	02020590	347	24	N	n/a
				301	44	N	n/a
				239	-4	N	n/a
02020530	7/26/99	350	02020591	284	8	N	n/a
				242	20	N	n/a
				298	36	N	n/a
				294	20	N	n/a
				345	32	N	n/a

DRAFT CLOSEOUT RADIOLOGICAL
SURVEY REPORT FOR BUILDING 779, ADMINISTRATION BUILDING

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Final Scan Survey Number ⁽¹⁾	Scan Survey Date	Max. Result (dpm/100cm ²) ⁽²⁾	Investigation Survey Number ⁽¹⁾	SCM value >75% of EMC (dpm/100cm ²)	Electra Investigation Result (dpm/100cm ²) ⁽³⁾	Decon required (Y/N)	Final Investigation Value (dpm/100cm ²) ⁽³⁾
02020530	7/26/99	350	02020591	288	12	N	n/a
				269	20	N	n/a
				260	12	N	n/a
				315	20	N	n/a
				350	32	N	n/a
				293	8	N	n/a
02020530	7/26/99	350	02020591	245	12	N	n/a
				260	32	N	n/a
02020600	7/26/99	352	02020690	251	36	N	n/a
				275	36	N	n/a
				352	276	Y	176
				301	0	N	n/a
				251	20	N	n/a
02020630	7/26/99	244	02020691	227	8	N	n/a
				244	8	N	n/a
				236	24	N	n/a
				234	28	N	n/a
				231	8	N	n/a
02020692	8/23/99	<225	n/a	n/a	n/a	N	n/a
02020700	7/26/99	201	n/a	n/a	n/a	N	n/a
02020730	7/26/99	294	02020791	261	8	N	n/a
				226	12	N	n/a
				227	8	N	n/a
				233	12	N	n/a
				243	20	N	n/a
				294	32	N	n/a
				242	20	N	n/a
				239	20	N	n/a
				270	20	N	n/a
				234	12	N	n/a
				268	16	N	n/a
02020800	7/26/99	236	02020890	236	16	N	n/a
02020830	7/26/99	363	02020891	279	0	N	n/a
				263	12	N	n/a
				363	4	N	n/a
				352	20	N	n/a
				263	16	N	n/a
				266	8	N	n/a
				288	12	N	n/a
				244	4	N	n/a

DRAFT CLOSEOUT RADIOLOGICAL
SURVEY REPORT FOR BUILDING 779, ADMINISTRATION BUILDING

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Final Scan Survey Number ⁽¹⁾	Scan Survey Date	Max. Result (dpm/100cm ²) ⁽²⁾	Investigation Survey Number ⁽¹⁾	SCM value >75% of EMC (dpm/100cm ²)	Electra Investigation Result (dpm/100cm ²) ⁽³⁾	Decon required (Y/N)	Final Investigation Value (dpm/100cm ²) ⁽³⁾
02020830	7/26/99	363	02020891	290	12	N	n/a
				237	12	N	n/a
02020892	8/26/99	<225	n/a	n/a	n/a	N	n/a
02020900	7/26/99	594	02020991	325	16	N	n/a
				594	60	N	n/a
				251	76	N	n/a
				238	24	N	n/a
				427	32	N	n/a
02020930	7/26/99	377	02020990	257	20	N	n/a
				242	16	N	n/a
02020930	7/26/99	377	02020990	267	8	N	n/a
				255	20	N	n/a
				255	24	N	n/a
				241	24	N	n/a
				229	20	N	n/a
				317	10	N	n/a
				233	0	N	n/a
				232	36	N	n/a
				240	12	N	n/a
				228	0	N	n/a
				377	16	N	n/a
				272	8	N	n/a
				264	20	N	n/a
				272	12	N	n/a
248	24	N	n/a				
02021000	7/26/99	339	02021090	247	20	N	n/a
				301	12	N	n/a
				232	20	N	n/a
				251	20	N	n/a
				339	12	N	n/a
02021030	7/26/99	288	02021091	251	4	N	n/a
				230	4	N	n/a
				288	20	N	n/a
				275	12	N	n/a
				237	4	N	n/a
02021100	7/26/99	352	02021190	247	8	N	n/a
				251	12	N	n/a
				352	4	N	n/a
02021130	7/26/99	424	02021191	301	20	N	n/a
				236	24	N	n/a

DRAFT CLOSEOUT RADIOLOGICAL
SURVEY REPORT FOR BUILDING 779, ADMINISTRATION BUILDING

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Final Scan Survey Number ⁽¹⁾	Scan Survey Date	Max. Result (dpm/100cm ²) ⁽²⁾	Investigation Survey Number ⁽¹⁾	SCM value >75% of EMC (dpm/100cm ²)	Electra Investigation Result (dpm/100cm ²) ⁽³⁾	Decon required (Y/N)	Final Investigation Value (dpm/100cm ²) ⁽³⁾
02021130	7/26/99	424	02021191	230	12	N	n/a
				424	12	N	n/a
				231	20	N	n/a
				274	40	N	n/a
				286	32	N	n/a
				274	156	N	n/a
				235	28	N	n/a
				255	8	N	n/a
02021192	8/25/99	<225	n/a	n/a	n/a	N	n/a
02021200	7/26/99	402	02021290	402	332	Y	68
				251	6	N	n/a
				251	24	N	n/a
				251	22	N	n/a
02021230	7/26/99	385	02021391	346	44	N	n/a
				234	4	N	n/a
02021230	7/26/99	385	02021391	385	28	N	n/a
				235	28	N	n/a
				272	8	N	n/a
				267	16	N	n/a
02065100	7/26/99	151	n/a	n/a	n/a	N	n/a
02065101	8/24/99	101	n/a	n/a	n/a	N	n/a
02065200	7/26/99	704	02065290	704	n/a	Y	wall removed
02065201	8/24/99	338	02065291	338	0	N	n/a
02065300	7/26/99	251	02065390	251	-4	N	n/a
				251	8	N	n/a
02065301	8/24/99	135	n/a	n/a	n/a	N	n/a
02065400	7/26/99	201	n/a	n/a	n/a	N	n/a
02065401	8/24/99	101	n/a	n/a	n/a	N	n/a
02065500	7/26/99	287	02065590	251	0	N	n/a
				287	4	N	n/a
02065600	7/26/99	251	02065690	251	16	N	n/a
02065800	7/26/99	201	n/a	n/a	n/a	N	n/a
02065900	7/26/99	201	n/a	n/a	n/a	N	n/a
02066200	7/26/99	251	02066290	251	40	N	n/a
				251	28	N	n/a
02085200	8/23/99	169	n/a	n/a	n/a	N	n/a

(1) The first six characters represent the survey subunit number. The last two numbers represent the detector type.

(2) NE Electra scan results are reported as < 225 dpm/100 cm² when no areas are flagged.

(3) One-square meter averages are verified as less than 75 dpm/100 cm² when individual measurements in excess of 100 dpm/100 cm² are present.

Detailed scan survey instructions and results are on file in the Building 779 project files.

8.0 Conclusion

All survey/sample data collected from the B779 Administration Building interior and exterior surfaces were collected in accordance with the Closeout Radiological Survey Plan for the 779 Cluster and approved survey instructions. All data was verified and validated as described in Attachment I) and therefore is considered acceptable to demonstrate compliance with release criteria.

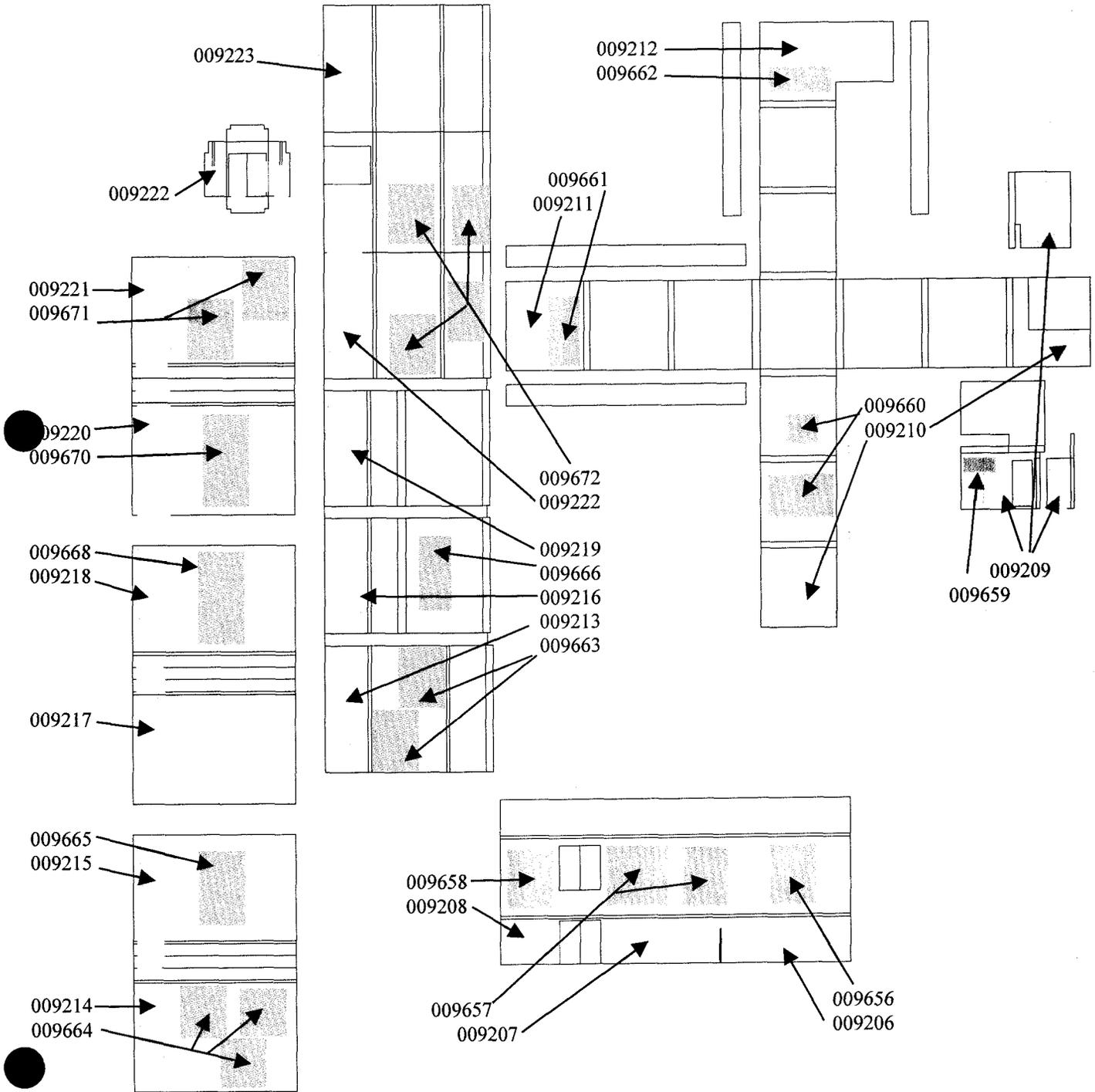
All survey/sample results presented in this report meet the DCGLs as defined by the Closeout Radiological Survey Plan for the 779 Cluster. However, the building will not be suitable for unrestricted release until the completion of the roof and roof containment surveys, the survey of the elevator (77918), the survey of the Exhaust Duct Tower interior (77920), the removal of miscellaneous systems and equipment (e.g. conduit, fire protection system, etc.), and the approval of the associated Property Release Evaluations (PREs).

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ATTACHMENT A
Survey Unit Overlay Maps

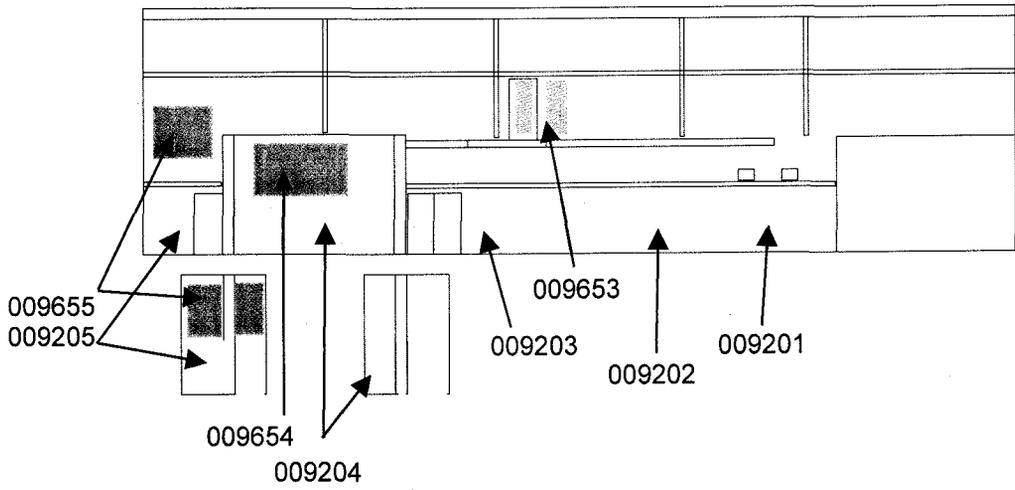
Best Available Copy

Survey Unit: 77909
B779 Exterior Walls & Exhaust Duct Tower (Exterior)
Map 1 Of 2



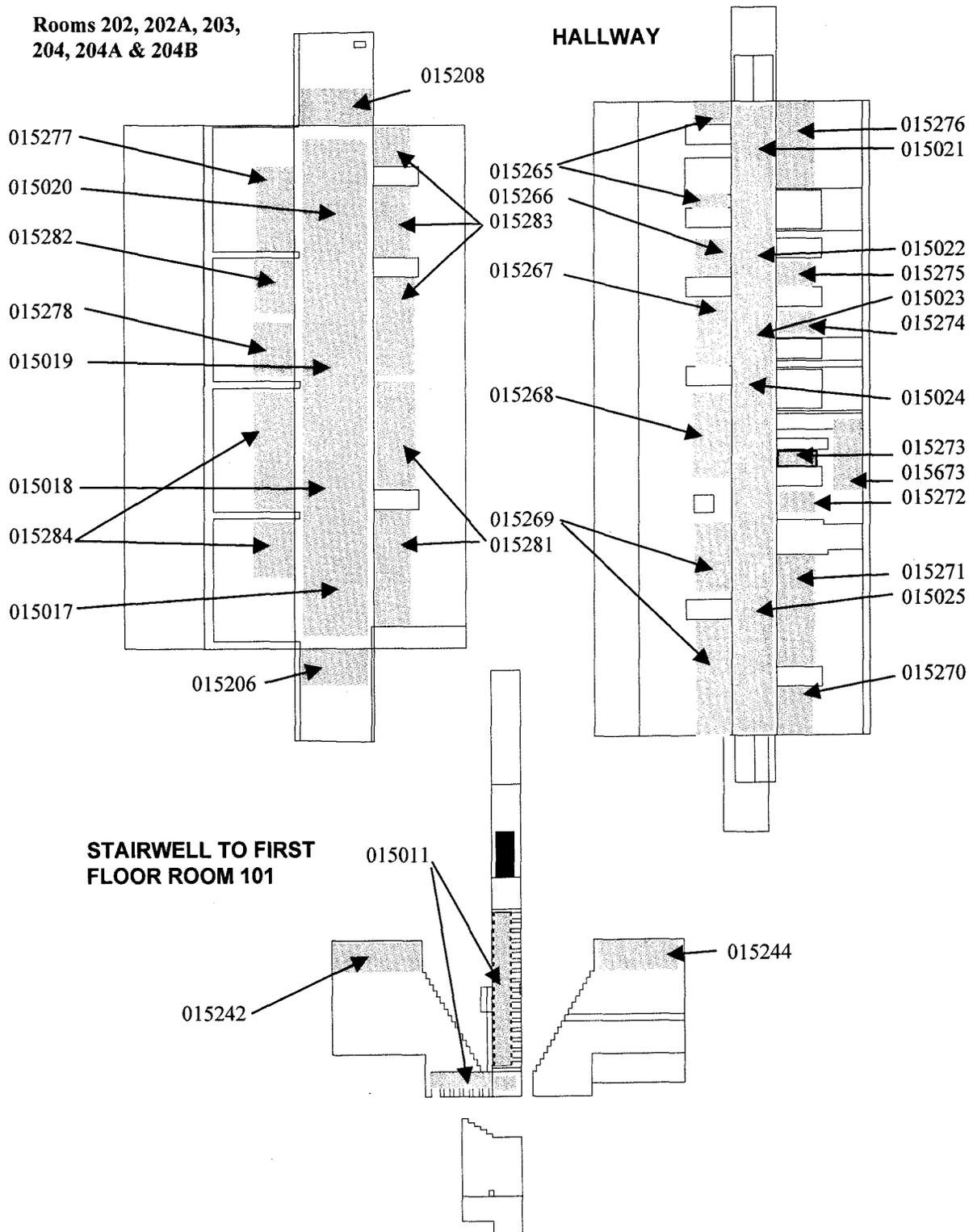
41

Survey Unit: 77909
B779 Exterior Walls
Map 2 Of 2

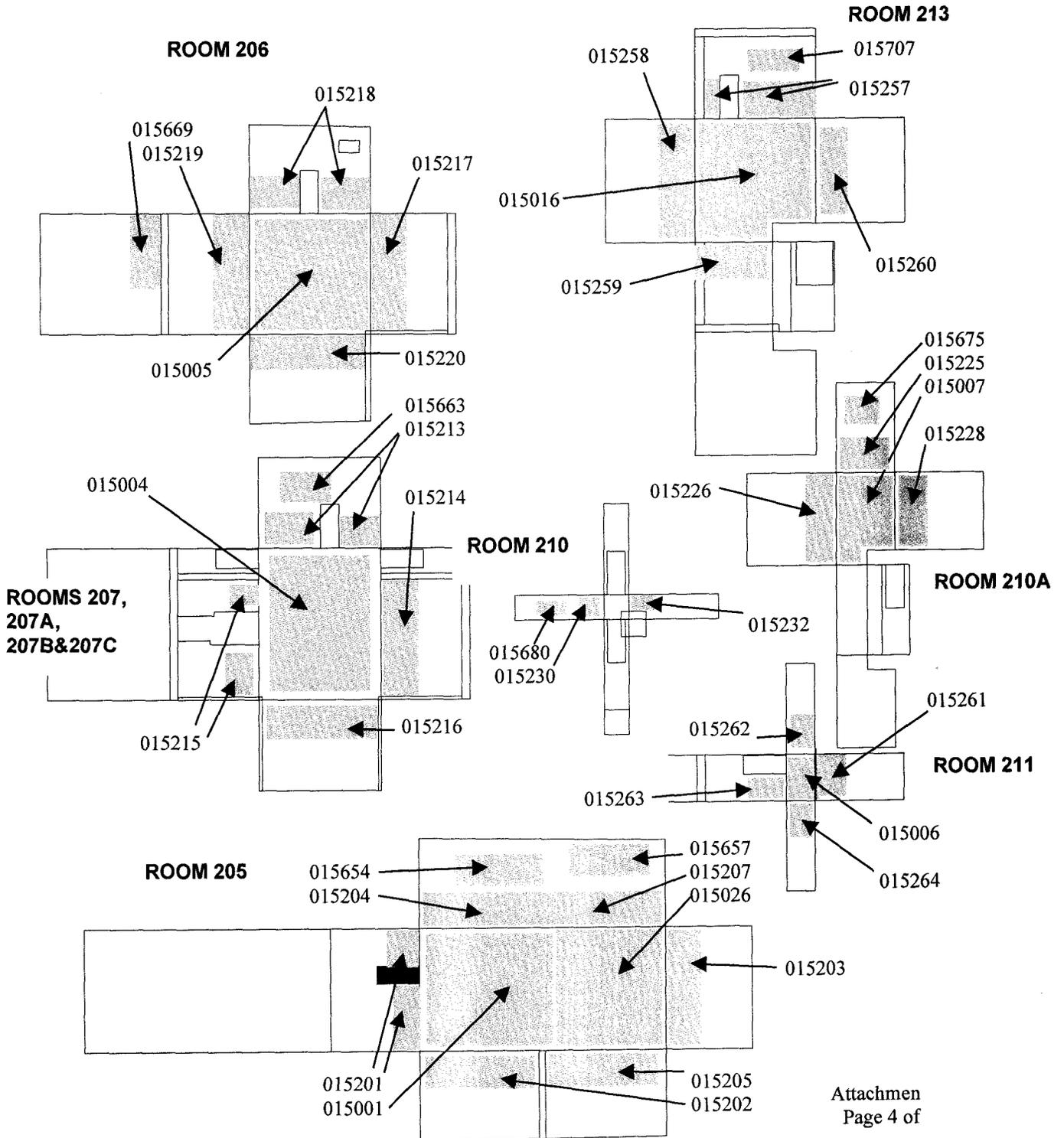


42

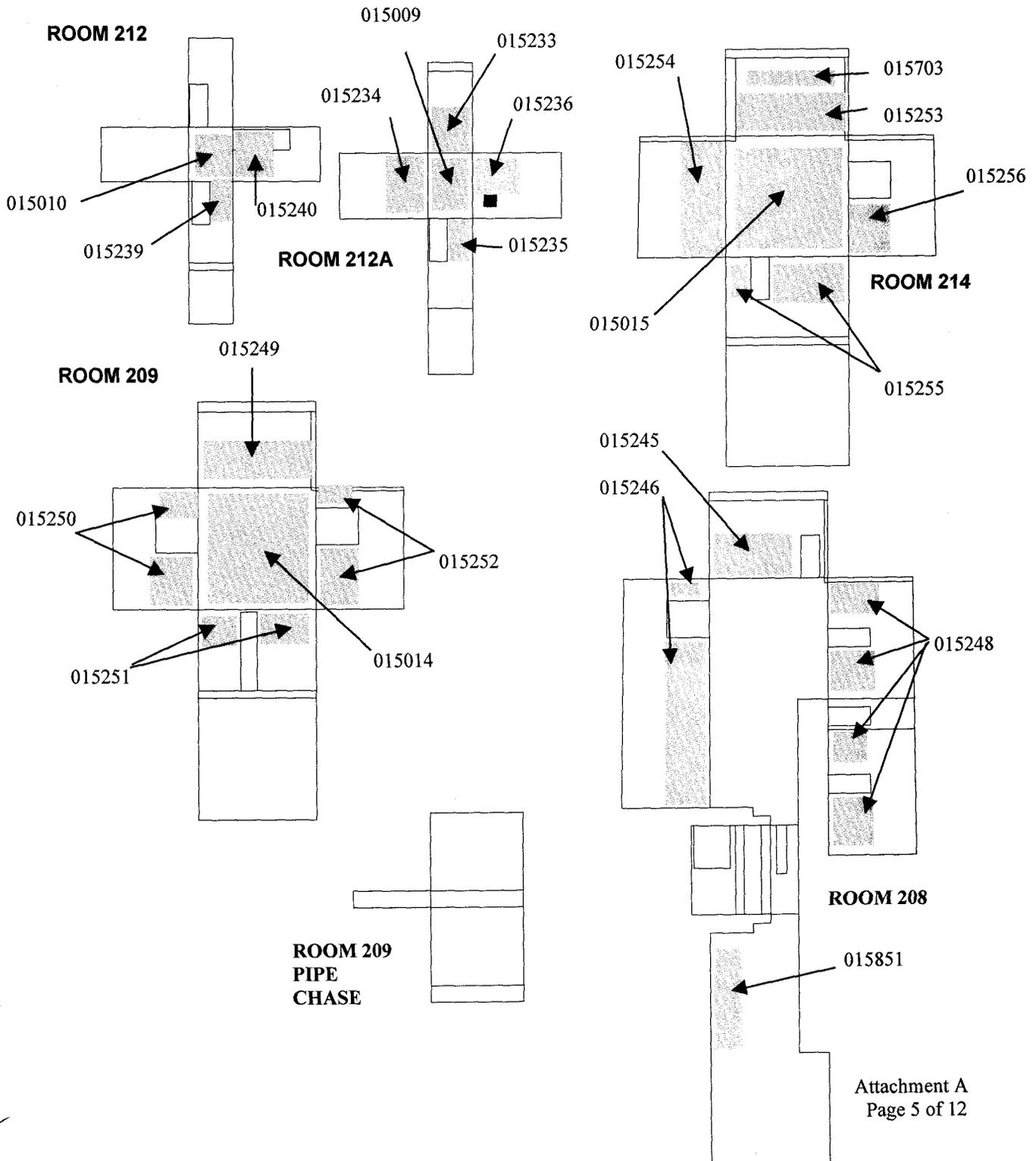
Survey Unit: 77915
B779 Second Floor Admin Area
Map 1 of 4



Survey Unit: 77915
B779 Second Floor Admin Area
Map 2 of 4



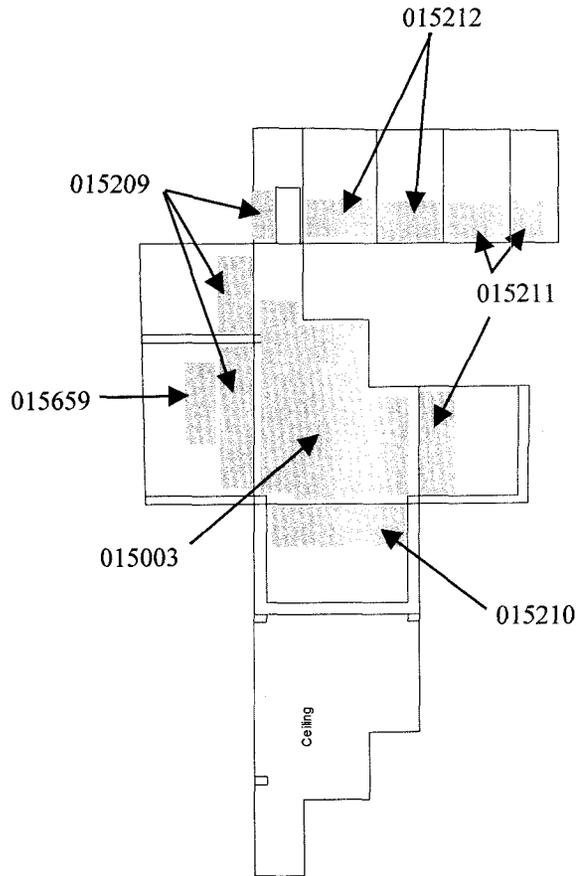
Survey Unit: 77915
B779 Second Floor Admin Area
Map 3 of 4



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Survey Unit: 77915
B779 Second Floor Admin Area
Map 4 of 4

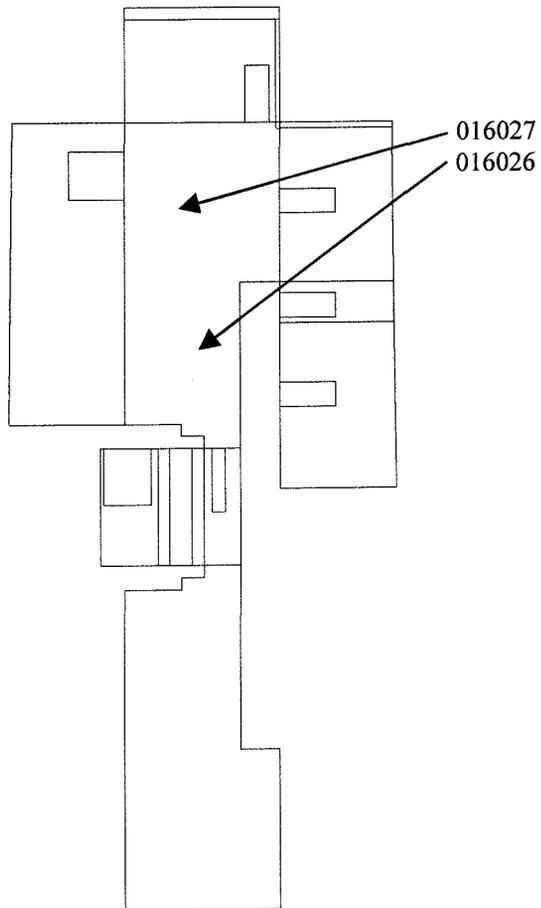
ROOMS 201, 201A & 201B



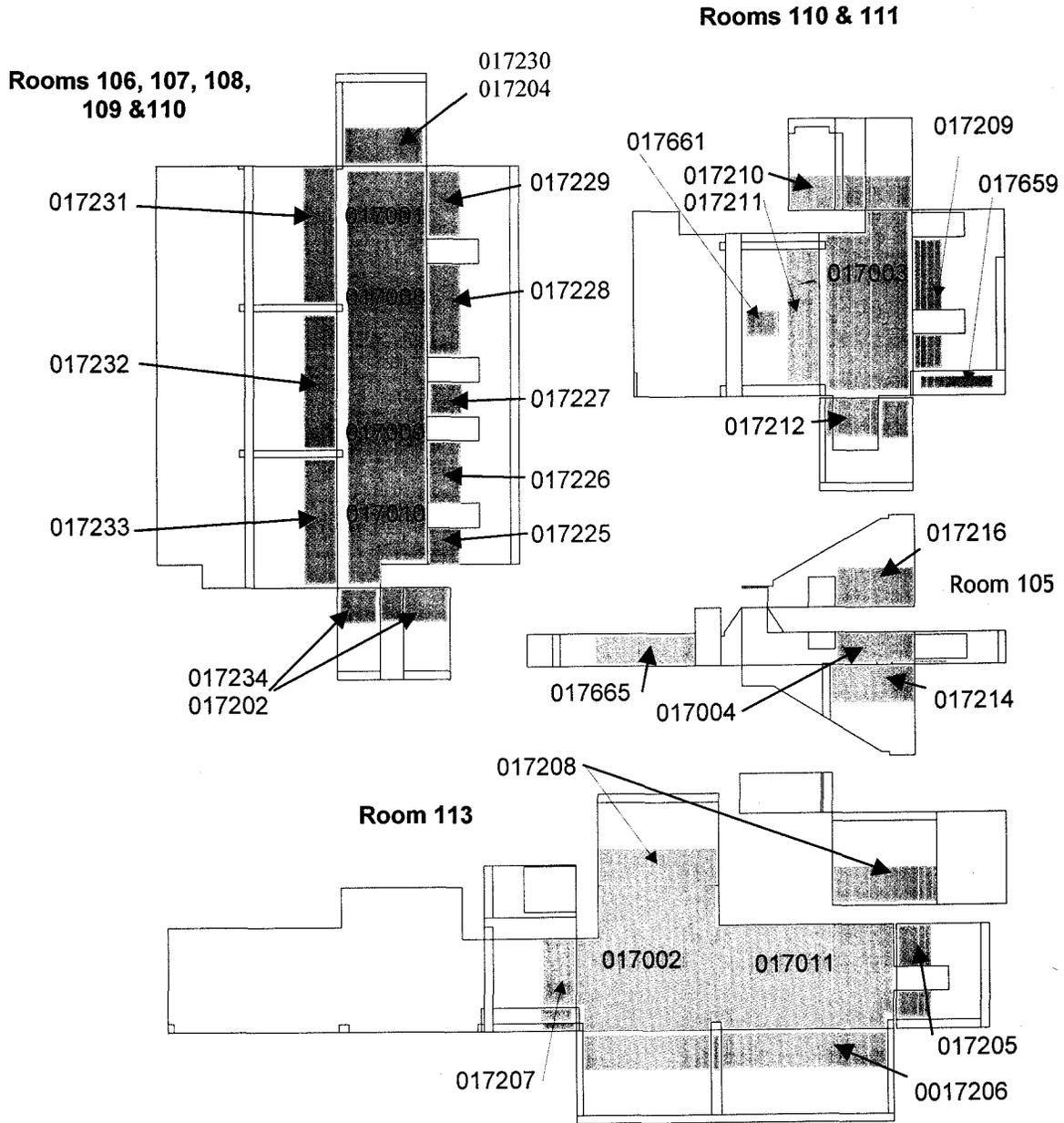
46

Survey Unit: 77916
B779 Second Floor Admin Area Room 208

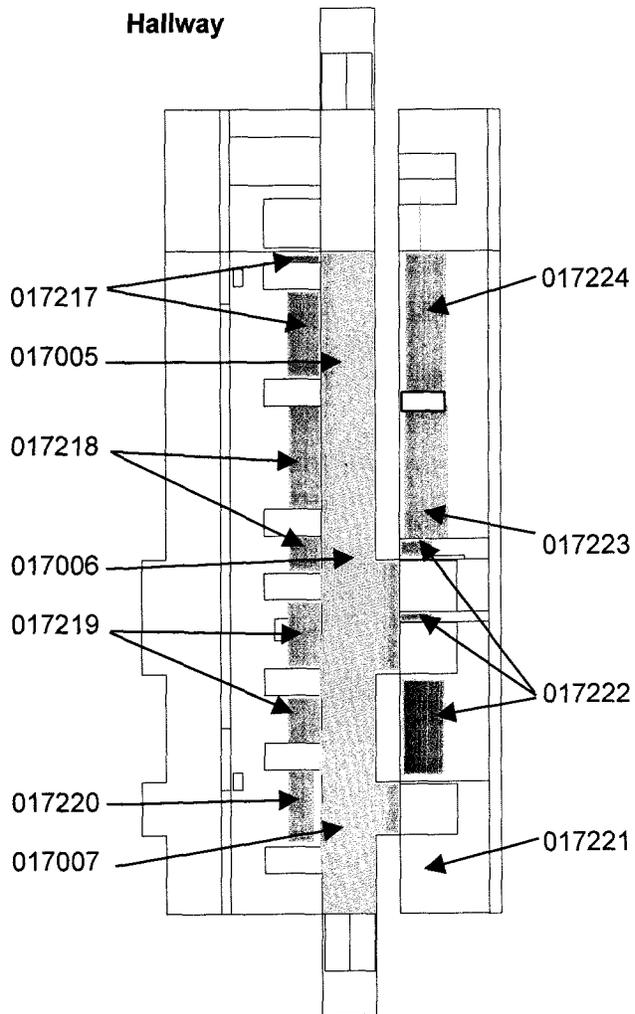
ROOM 208



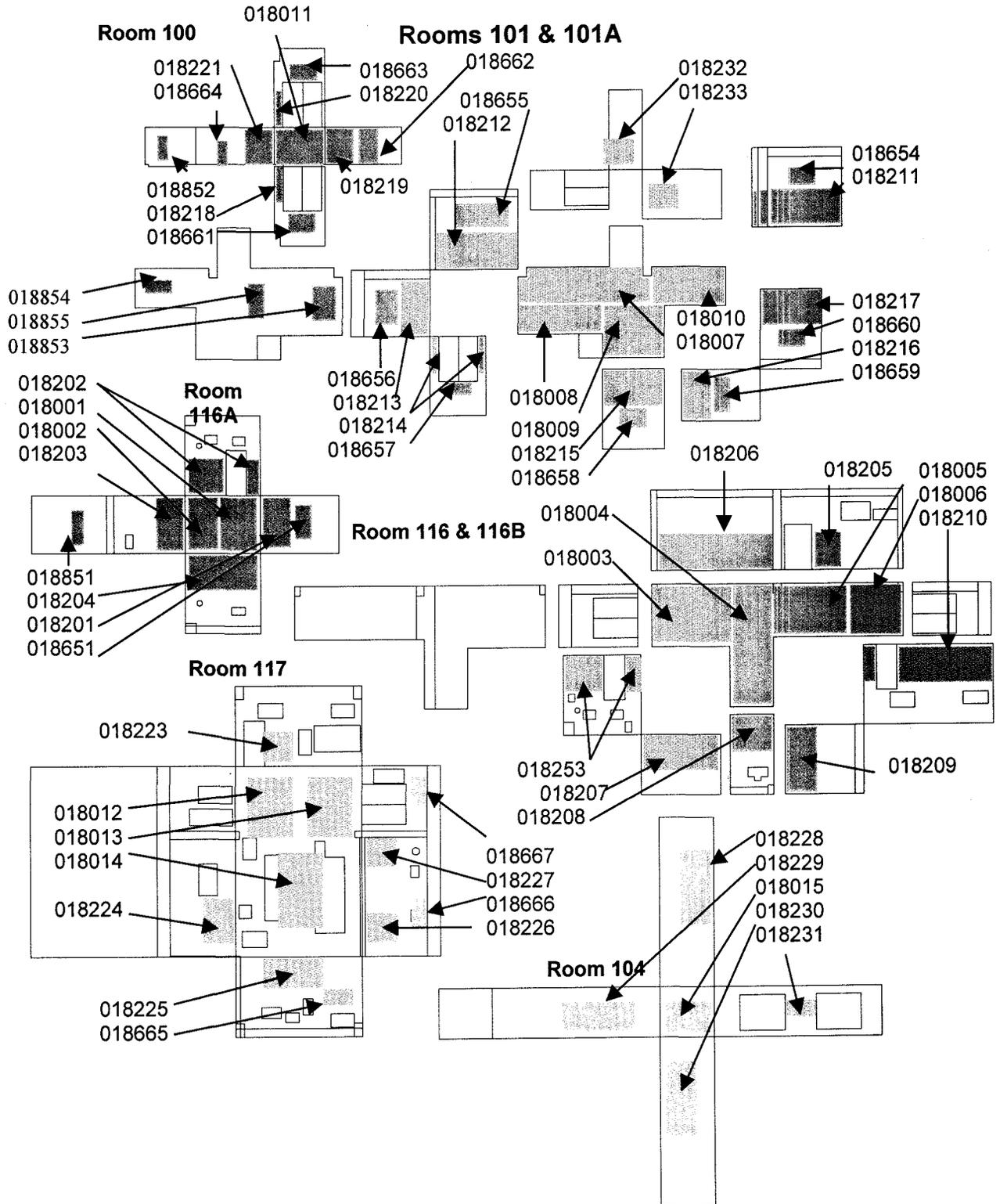
Survey Unit: 77917
B779 First Floor Office Areas (Rooms & Hallway)
Map 1 Of 2



Survey Unit: 77917
B779 First Floor Office Areas (Rooms & Hallway)
Map 2 Of 2

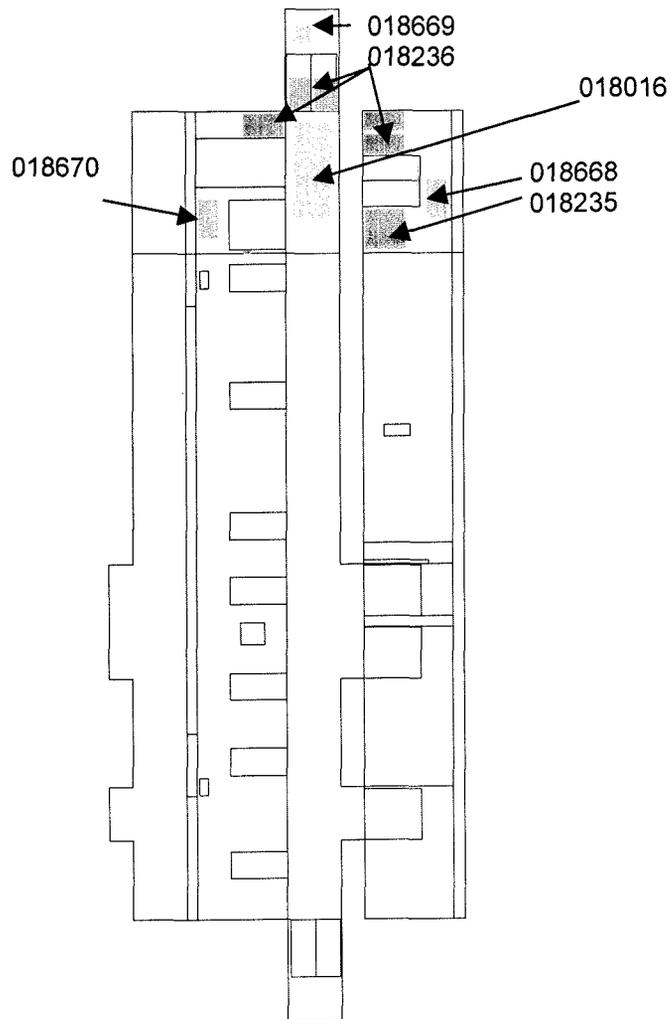


Survey Unit 77918
B779 First Floor Admin Areas
Map 1 of 2



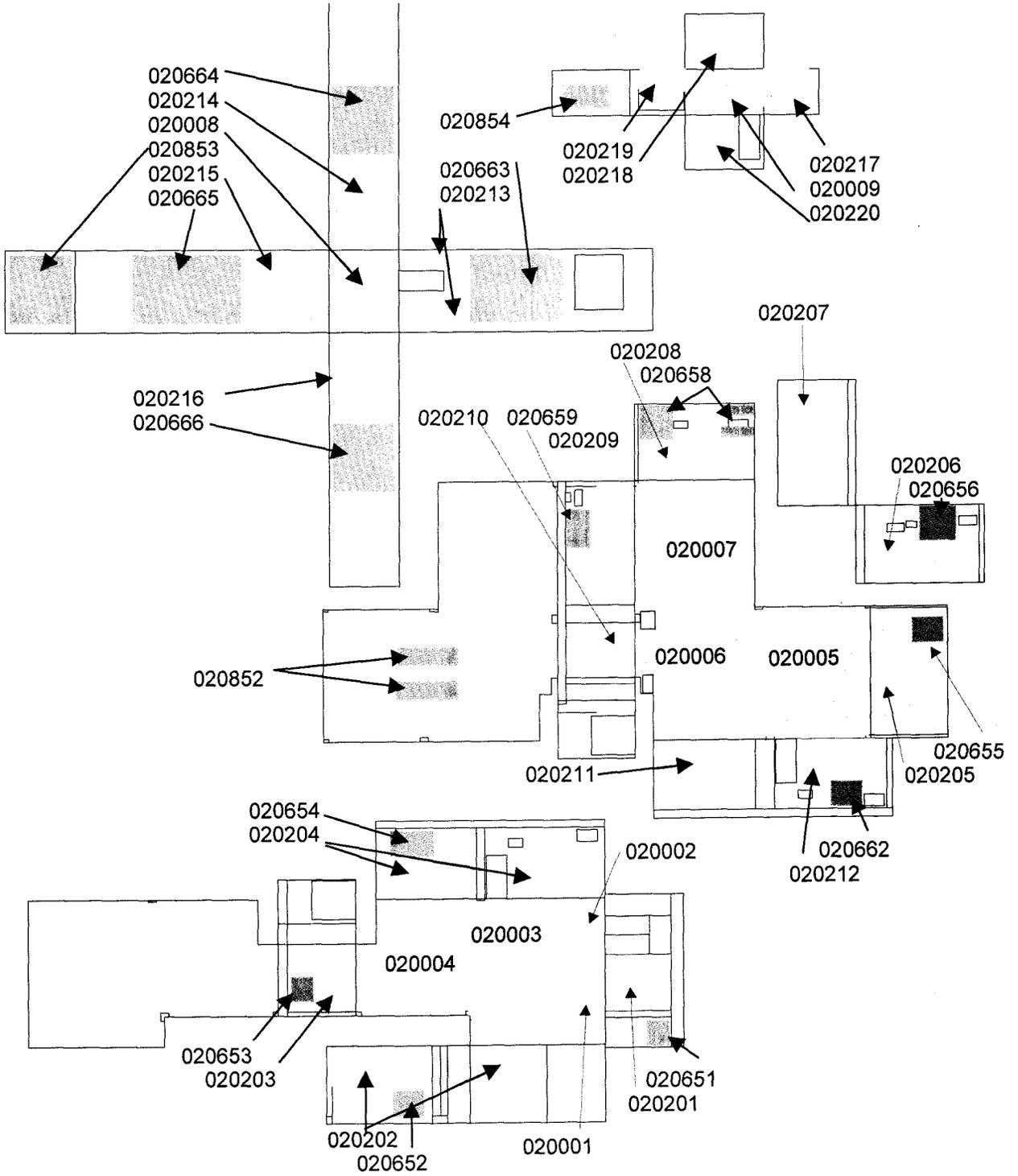
50

**Survey Unit 77918
B779 First Floor Areas
Map 2 of 2**



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Survey Unit 77920
B779 Second Floor Areas
Map 1 of 1



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ATTACHMENT B
Survey Unit 77909 Data Summary

SURVEY UNIT 77909 DATA

COLOR CODES:

Less Than or Equal to 75% of DCGL_w =



>75% and <100% of DCGL_w =



Greater Than or Equal to DCGL_w =



Survey Unit 77909 Data Summary and Approval Sheet

Total Surface Activity Measurements

15	26
Number Required	Number Obtained

MIN	-0.9	dpm/100 cm ²
MAX	56.6	dpm/100 cm ²
MEAN	22.5	dpm/100 cm ²
STD DEV	15.5	dpm/100 cm ²

TRANSURANIC DCGL _w	100	dpm/100 cm ²
----------------------------------	-----	-------------------------

Removable Activity Measurements

15	26
Number Required	Number Obtained

MIN	-2	dpm/100 cm ²
MAX	10	dpm/100 cm ²
MEAN	2	dpm/100 cm ²
STD DEV	3	dpm/100 cm ²

TRANSURANIC DCGL _w	20	dpm/100 cm ²
----------------------------------	----	-------------------------

Media Sample Activity

15	18
Number Required	Number Obtained

Media Samples

Total Uranium Results

MIN	4.5	dpm/100 cm ²
MAX	88.3	dpm/100 cm ²
MEAN	43.1	dpm/100 cm ²
STD DEV	28.0	dpm/100 cm ²

DCGL _w	5000	dpm/100 cm ²
-------------------	------	-------------------------

Total Transuranic Results

MIN	5.5	dpm/100 cm ²
MAX	56.7	dpm/100 cm ²
MEAN	13.3	dpm/100 cm ²
STD DEV	12.4	dpm/100 cm ²

DCGL _w	100	dpm/100 cm ²
-------------------	-----	-------------------------

Survey Unit 77909 Building 779 Total Surface Contamination Results

Total Surface Activity Survey				Quality Control Survey						
Meter Model:	NE Electra w/ DP6 Probe	Local Area Bkgd (cpm)	2.9	NE Electra w/ DP6 Probe	Local Area Bkgd (cpm)	2.7				
Instrument #:	1375	2372	2358	1194	N/A	N/A				
Cal. Due Date:	12/8/99	1/19/00	1/19/00	10/27/99	N/A	N/A				
Efficiency (cid):	0.219	0.203	0.203	0.221	N/A	N/A				
Total Surface Activity Measurements				Quality Control Measurements						
Sample Location Number	Serial #	Date	(cpm)	MDA (dpm/100 cm ²)	(dpm/100 cm ²)	Serial #	Date	(cpm)	MDA (dpm/100 cm ²)	(dpm/100 cm ²)
1	1375	07/23/99	4.0	38	5.0					
2	2372	07/24/99	15.3	38	56.6					
3	1375	07/23/99	6.0	38	14.1					
4	1375	07/23/99	4.0	38	5.0					
5	2358	07/26/99	5.3	38	10.9					
6	1375	07/23/99	10.0	38	32.4					
7	2358	07/26/99	6.0	38	14.1					
8	2358	07/26/99	6.7	38	17.3	1194	07/27/99	9.3	36	29.8
9	2358	07/26/99	2.7	38	-0.9					
10	2372	07/24/99	8.0	38	23.3					
11	1375	07/23/99	6.0	38	14.1					
12	2372	07/24/99	13.3	38	47.4					
13	2358	07/26/99	8.0	38	23.3					
14	2372	07/24/99	13.3	38	47.4					
15	2358	07/26/99	4.0	38	5.0					
16	1375	07/23/99	6.0	38	14.1					
17	2372	07/24/99	7.3	38	20.1					
18	2358	07/26/99	9.3	38	29.2					
19	2358	07/26/99	7.3	38	20.1	1194	07/27/99	8.0	36	23.9
20	2358	07/26/99	15.3	38	56.6					
21	2358	07/26/99	5.3	38	10.9					
22	2358	07/26/99	10.7	38	35.5					
23	2358	07/26/99	6.7	38	17.3					
24	2358	07/26/99	7.3	38	20.1					
25	2358	07/26/99	6.7	38	17.3					
26	2358	07/26/99	9.3	38	29.2					
				MIN	-1					
				MAX	57					
				MEAN	23					
				SD	16					
				Transuranic DCCGLw	100					

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Survey Unit 77909 Building 779 Smear Results

Smear Location Number	Smear Results					MDA
	Serial Number	Date Counted	Gross (cpm)	(dpm/100 cm ²)		
1	888	7/26/99	0	-2	10	
2	1354	7/26/99	2	5	8	
3	888	7/26/99	1	1	10	
4	1354	7/26/99	0	-1	8	
5	888	7/26/99	4	10	10	
6	1354	7/26/99	1	2	8	
7	888	7/26/99	0	-2	10	
8	1354	7/26/99	1	2	8	
9	888	7/26/99	2	4	10	
10	1354	7/26/99	1	2	8	
11	888	7/26/99	1	1	10	
12	1354	7/26/99	0	-1	8	
13	888	7/26/99	0	-2	10	
14	1354	7/26/99	0	-1	8	
15	888	7/26/99	2	4	10	
16	1354	7/26/99	1	2	8	
17	888	7/26/99	2	4	10	
18	1354	7/26/99	0	-1	8	
19	888	7/26/99	0	-2	10	
20	1354	7/26/99	1	2	8	
21	888	7/26/99	1	1	10	
22	1354	7/26/99	2	5	8	
23	888	7/26/99	1	1	10	
24	1354	7/26/99	0	-1	8	
25	888	7/26/99	2	4	10	
26	1354	7/26/99	1	2	8	
			MIN	-1.8		
			MAX	10.3		
			MEAN	1.8		
			SD	2.9		
			Transuranic DCGL _w	20		

Survey Unit 77909 Building 779 Paint/Solid Media Sample Results

LOCATION DESCRIPTION	SAMPLE LOCATION NUMBER	SITE SAMPLE ID	NUCLIDE	pCi/g	MDA (pCi/g)	WEIGHT (g)	SURFACE AREA (in ²)	INDIVIDUAL NUCLIDE (dpm/100cm ²)	ESTIMATED MDA (dpm/100cm ²)	URANIUM TOTAL (dpm/100cm ²) DCGL _w =5000	TRANSURANIC TOTAL (dpm/100cm ²) DCGL _w =100
Admin. Bldg. Roof	1	001.002	U-233/234				40	0.0	0.0		
			U-235					0.0	0.0		
			U-238					0.0	0.0		
			Pu-239/240					0.0	0.0		
			Am-241					0.0	0.0		
Admin. Bldg. Roof	2	002.002	U-233/234	0.599	0.245	67.18	40	34.6	14.2		
			U-235	0.000	0.100			0.0	5.8		
			U-238	0.719	0.219			41.6	12.7	76.2	
			Pu-239/240	0.030	0.194			1.7	11.2		
			Am-241	0.072	0.098			4.2	5.7		5.9
Admin. Bldg. Roof	3	003.002	U-233/234				40				
			U-235								
			U-238								
			Pu-239/240								
			Am-241								
Admin. Bldg. Roof	4	004.002	U-233/234	0.228	0.250	245.62	40	48.2	52.8		
			U-235	0.016	0.179			3.3	37.8		
			U-238	0.174	0.150			36.8	31.7	88.3	
			Pu-239/240	0.026	0.170			5.5	35.9		
			Am-241	0.035	0.094			7.3	19.8		12.8
Admin. Bldg. Roof	5	005.002	U-233/234	0.060	0.260	32.36	40	1.7	7.2		
			U-235	-0.032	0.242			-0.9	6.7		
			U-238	0.133	0.090			3.7	2.5	4.5	
			Pu-239/240	0.182	0.239			5.1	6.7		
			Am-241	0.150	0.101			4.2	2.8		9.2
Admin. Bldg. Roof	6	006.002	U-233/234	0.147	0.177	299.88	40	37.9	45.7		
			U-235	0.013	0.145			3.3	37.4		
			U-238	0.159	0.145			41.0	37.4	82.2	
			Pu-239/240	0.021	0.141			5.5	36.4		
			Am-241	0.000	0.063			0.0	16.2		5.5
Admin. Bldg. Roof	7	007.002	U-233/234	0.176	0.177	324.41	40	49.1	49.4		
			U-235	-0.011	0.134			-3.0	37.4		
			U-238	0.097	0.151			27.0	42.1	73.1	
			Pu-239/240	0.139	0.075			38.8	21.0		
			Am-241	0.064	0.154			17.9	43.0		56.7

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Survey Unit 77909 Building 779 Paint/Solid Media Sample Results

LOCATION DESCRIPTION	SAMPLE LOCATION NUMBER	SITE SAMPLE ID	NUCLIDE	pCi/g	MDA (pCi/g)	WEIGHT (g)	SURFACE AREA (in ²)	INDIVIDUAL NUCLIDE (dpm/100cm ²)	ESTIMATED MDA (dpm/100cm ²)	URANIUM TOTAL (dpm/100cm ²) DCGL _w =5000	TRANSURANIC TOTAL (dpm/100cm ²) DCGL _w =100
Admin. Bldg., East Wall	8	008.002	U-233/234	0.245	0.342	70.65	40	14.9	20.8	23.7	6.0
			U-235	-0.026	0.239			-1.6	14.5		
			U-238	0.170	0.179			10.3	10.9		
			Pu-239/240	-0.010	0.207			-0.6	12.6		
			Am-241	0.109	0.183			6.6	11.1		
Admin. Bldg., South Wall	9	009.002	U-233/234	0.293	0.173	49.55	40	12.5	7.4	36.6	11.9
			U-235	0.000	0.071			0.0	3.0		
			U-238	0.566	0.130			24.1	5.5		
			Pu-239/240	0.224	0.101			9.5	4.3		
			Am-241	0.056	0.212			2.4	9.0		
Exhaust Duct Tower Exterior	10	010.002	U-233/234	0.258	0.204	43.43	40	9.6	7.6	20.6	18.6
			U-235	-0.008	0.171			-0.3	6.4		
			U-238	0.301	0.171			11.2	6.4		
			Pu-239/240	0.044	0.118			1.6	4.4		
			Am-241	0.453	0.153			16.9	5.7		
Admin. Bldg., South Wall	11	011.002	U-233/234	0.429	0.263	52.89	40	19.5	12.0	38.7	11.9
			U-235	-0.015	0.188			-0.7	8.6		
			U-238	0.436	0.158			19.8	7.2		
			Pu-239/240	0.176	0.119			8.0	5.4		
			Am-241	0.086	0.155			3.9	7.1		
Exhaust Duct Tower	12	012.002	U-233/234	0.488	0.257	80.11	40	33.6	17.7	51.8	13.7
			U-235	-0.032	0.240			-2.2	16.5		
			U-238	0.296	0.089			20.4	6.2		
			Pu-239/240	0.076	0.216			5.2	14.9		
			Am-241	0.123	0.208			8.5	14.3		
Exhaust Duct Tower Exterior	13	013.002	U-233/234	0.314	0.190	66.06	40	17.8	10.8	44.6	7.3
			U-235	0.014	0.155			0.8	8.8		
			U-238	0.457	0.155			26.0	8.8		
			Pu-239/240	0.111	0.188			6.3	10.7		
			Am-241	0.018	0.117			1.0	6.6		
Exhaust Duct Tower Exterior	14	014.002	U-233/234	0.510	0.252	96.47	40	42.3	20.9	73.9	13.3
			U-235	0.017	0.192			1.4	15.9		
			U-238	0.364	0.215			30.2	17.8		
			Pu-239/240	0.136	0.229			11.3	19.0		
			Am-241	0.024	0.159			2.0	13.2		

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Survey Unit 77909 Building 779 Paint/Solid Media Sample Results

LOCATION DESCRIPTION	SAMPLE LOCATION NUMBER	SITE SAMPLE ID	NUCLIDE	pCi/g	MDA (pCi/g)	WEIGHT (g)	SURFACE AREA (in ²)	INDIVIDUAL NUCLIDE (dpm/100cm ²)	ESTIMATED MDA (dpm/100cm ²)	URANIUM TOTAL (dpm/100cm ²) DCGL _w =5000	TRANSURANIC TOTAL (dpm/100cm ²) DCGL _w =100
Exhaust Duct Tower Exterior	15	015.002	U-233/234	0.162	0.320	43.99	40	6.1	12.1	17.6	20.2
			U-235	0.043	0.223			1.6	8.4		
			U-238	0.260	0.167			9.8	6.3		
			Pu-239/240	0.020	0.227			0.8	8.6		
			Am-241	0.515	0.153			19.5	5.8		
Admin. Bldg., South Wall	16	016.002	U-233/234	0.335	0.202	50.63	40	14.6	8.8	22.8	8.4
			U-235	0.084	0.075			3.6	3.3		
			U-238	0.104	0.139			4.5	6.1		
			Pu-239/240	0.129	0.171			5.6	7.4		
			Am-241	0.064	0.087			2.8	3.8		
Exhaust Duct Tower Exterior	17	017.002	U-233/234	0.288	0.163	74.27	40	18.4	10.4	29.9	5.9
			U-235	0.076	0.137			4.8	8.8		
			U-238	0.103	0.137			6.6	8.8		
			Pu-239/240	0.008	0.200			0.5	12.8		
			Am-241	0.084	0.222			5.4	14.2		
Exhaust Duct Tower Exterior	18	018.002	U-233/234	0.074	0.265	34.45	40	2.2	7.9	4.9	5.9
			U-235	0.000	0.099			0.0	2.9		
			U-238	0.092	0.216			2.7	6.4		
			Pu-239/240	0.131	0.266			3.9	7.9		
			Am-241	0.069	0.245			2.0	7.3		

MIN	4.5	5.5
MAX	88.3	56.7
MEAN	43.1	13.3
SD	28.0	12.4
DCGL _w =		100

ATTACHMENT C
Survey Unit 77915 Data Summary

SURVEY UNIT 77915 DATA

COLOR CODES:

Less Than or Equal to 75% of DCGL_W =



>75% and <100% of DCGL_W =



Greater Than or Equal to DCGL_W =



Best Available Copy

Survey Unit 77915 Data Summary and Approval Sheet

Total Surface Activity Measurements

15	17
Number Required	Number Obtained
MIN -6.3	dpm/100 cm ²
MAX 60.2	dpm/100 cm ²
MEAN 19.0	dpm/100 cm ²
STD DEV 17.6	dpm/100 cm ²
TRANSURANIC DCGL _w	100 dpm/100 cm ²

Removable Activity Measurements

15	17
Number Required	Number Obtained
MIN -0.6	dpm/100 cm ²
MAX 2.4	dpm/100 cm ²
MEAN 0.7	dpm/100 cm ²
STD DEV 1.0	dpm/100 cm ²
TRANSURANIC DCGL _w	20 dpm/100 cm ²

Media Sample Activity

Media Samples	N/A
Number Required	Number Obtained

Total Uranium Results

MIN N/A	dpm/100 cm ²
MAX N/A	dpm/100 cm ²
MEAN N/A	dpm/100 cm ²
STD DEV N/A	dpm/100 cm ²
DCGL _w	N/A dpm/100 cm ²

Total Transuranic Results

MIN N/A	dpm/100 cm ²
MAX N/A	dpm/100 cm ²
MEAN N/A	dpm/100 cm ²
STD DEV N/A	dpm/100 cm ²
DCGL _w	N/A dpm/100 cm ²

Survey Unit 77915 Building 779 Total Surface Contamination Results

Total Surface Activity Survey				Quality Control Survey					
Meter Model:	NE Electra w/ DP6 Probe	Local Area Bkgd (cpm)	2.8	NE Electra w/ DP6 Probe	Local Area Bkgd (cpm)	3.8			
Instrument #:	1375	N/A		1194	N/A	N/A			
Cal. Due Date:	12/24/99	N/A		10/22/99	N/A	N/A			
Efficiency (cid):	0.221	N/A		0.221	N/A	N/A			
Total Surface Activity Measurements				Quality Control Measurements					
Sample Location Number	Serial #	Date	(cpm)	MDA (dpm/100 cm ²)	(dpm/100 cm ²)	Serial #	Date	(cpm)	MDA (dpm/100 cm ²)
1	2349	07/15/99	1.4	37	-6.3	1194	07/27/99	12.0	41
2	2349	07/15/99	4.0	37	5.4				
3	2349	07/15/99	11.0	37	37.2				
4	2349	07/15/99	3.3	37	2.3				
5	2349	07/15/99	5.3	37	11.3				
6	1375	07/27/99	6.0	37	14.6				
7	1375	07/27/99	12.0	37	42.0				
8	2349	07/15/99	5.3	37	11.3				
9	2349	07/15/99	4.1	37	5.9				
10	1375	07/27/99	16.0	37	60.2				
11	1375	07/27/99	6.0	37	14.6				
12	1375	07/27/99	13.0	37	46.5				
13	2349	07/19/99	6.0	37	14.5				
14	2349	07/19/99	4.7	37	8.6				
15	2349	07/19/99	7.2	37	20.0				
16	2349	07/19/99	5.3	37	11.3				
17	1375	07/27/99	8.0	37	23.7				
				MIN	-6.3				
				MAX	60.2				
				MEAN	19.0				
				SD	17.6				
				Transuranic DCC _{LW}	100				

ATTACHMENT D
Survey Unit 77916 Data Summary

SURVEY UNIT 77916 DATA

COLOR CODES:

Less Than or Equal to 75% of DCGL_w =



>75% and <100% of DCGL_w =



Greater Than or Equal to DCGL_w =



Survey Unit 77916 Data Summary and Approval Sheet

Total Surface Activity Measurements

15	17
Number Required	Number Obtained
MIN	dpm/100 cm ²
MAX	dpm/100 cm ²
MEAN	dpm/100 cm ²
STD DEV	dpm/100 cm ²
TRANSURANIC DCGL _w	dpm/100 cm ²

Removable Activity Measurements

15	17
Number Required	Number Obtained
MIN	dpm/100 cm ²
MAX	dpm/100 cm ²
MEAN	dpm/100 cm ²
STD DEV	dpm/100 cm ²
TRANSURANIC DCGL _w	dpm/100 cm ²

Media Sample Activity

Media Samples	N/A
Number Required	Number Obtained

Total Uranium Results

MIN	N/A	dpm/100 cm ²
MAX	N/A	dpm/100 cm ²
MEAN	N/A	dpm/100 cm ²
STD DEV	N/A	dpm/100 cm ²
DCGL _w	N/A	dpm/100 cm ²

Total Transuranic Results

MIN	N/A	dpm/100 cm ²
MAX	N/A	dpm/100 cm ²
MEAN	N/A	dpm/100 cm ²
STD DEV	N/A	dpm/100 cm ²
DCGL _w	N/A	dpm/100 cm ²

ATTACHMENT E
Survey Unit 77917 Data Summary

SURVEY UNIT 77917 DATA

COLOR CODES:

Less Than or Equal to 75% of DCGL_w =



>75% and <100% of DCGL_w =



Greater Than or Equal to DCGL_w =



Survey Unit 77917 Data Summary and Approval Sheet

Total Surface Activity Measurements

15	17
Number Required	Number Obtained
MIN	dpm/100 cm ²
MAX	dpm/100 cm ²
MEAN	dpm/100 cm ²
STD DEV	dpm/100 cm ²
TRANSURANIC DCGL _w	dpm/100 cm ²

Removable Activity Measurements

15	17
Number Required	Number Obtained
MIN	dpm/100 cm ²
MAX	dpm/100 cm ²
MEAN	dpm/100 cm ²
STD DEV	dpm/100 cm ²
TRANSURANIC DCGL _w	dpm/100 cm ²

Media Sample Activity

Media Samples	N/A
Number Required	Number Obtained

Total Uranium Results

MIN	N/A	dpm/100 cm ²
MAX	N/A	dpm/100 cm ²
MEAN	N/A	dpm/100 cm ²
STD DEV	N/A	dpm/100 cm ²
DCGL _w	N/A	dpm/100 cm ²

Total Transuranic Results

MIN	N/A	dpm/100 cm ²
MAX	N/A	dpm/100 cm ²
MEAN	N/A	dpm/100 cm ²
STD DEV	N/A	dpm/100 cm ²
DCGL _w	N/A	dpm/100 cm ²

Survey Unit 77917 Building 779 Total Surface Contamination Results

Total Surface Activity Survey				Quality Control Survey			
Meter Model:	NE Electra w/ DP6 Probe	Local Area Blkgd (cpm)	NE Electra w/ DP6 Probe	Local Area Blkgd (cpm)	Local Area Blkgd (cpm)		
Instrument #:	1370	N/A	1375	N/A	N/A	4	
Cal. Due Date:	10/8/99	N/A	12/8/99	N/A	N/A		
Efficiency (c/d):	0.222	N/A	0.219	N/A	N/A		
Total Surface Activity Measurements							
Sample Location Number	Serial #	Date	(cpm)	MDA (dpm/100 cm ²)	(dpm/100 cm ²)	Serial #	Date
1	1370	08/12/99	5.3	38	10.4		
2	1370	08/11/99	4.0	38	4.5		
3	1370	08/11/99	4.0	38	4.5		
4	1370	08/11/99	4.0	38	4.5		
5	1370	08/11/99	6.7	38	15.7		
6	1370	08/11/99	5.3	38	10.4		
7	1370	08/11/99	2.0	38	-4.5		
8	1370	08/11/99	2.0	38	-4.5		
9	1370	08/11/99	2.0	38	-4.5		
10	1370	08/11/99	5.3	38	10.4		
11	1370	08/12/99	6.7	38	25.7		
12	1370	08/12/99	6.0	38	13.5		
13	1370	08/11/99	8.7	38	25.7	1375	08/16/99
14	1370	08/11/99	2.7	38	-1.4		
15	1370	08/12/99	7.3	38	19.4		
16	1370	08/11/99	12.7	38	43.7	1375	08/16/99
17	1370	08/11/99	1.3	38	-7.7		
				MIN	-7.7		
				MAX	43.7		
				MEAN	9.8		
				SD	13.6		
				Transuranic DCG _{LW}	100		
				MDA (dpm/100 cm ²)		(cpm)	MDA (dpm/100 cm ²)

ATTACHMENT F
Survey Unit 77918 Data Summary

SURVEY UNIT 77918 DATA

COLOR CODES:

Less Than or Equal to 75% of DCGL_w = 

>75% and <100% of DCGL_w = 

Greater Than or Equal to DCGL_w = 

Survey Unit 77918 Data Summary and Approval Sheet

Surface Activity Measurements

15	15
Number Required	Number Obtained

MIN -4.5 dpm/100 cm²
 MAX 29.1 dpm/100 cm²
 MEAN 8.5 dpm/100 cm²
 STD DEV 8.8 dpm/100 cm²

TRANSURANIC
 DCGL_w 100 dpm/100 cm²

Removable Activity Measurements

15	15
Number Required	Number Obtained

MIN -0.9 dpm/100 cm²
 MAX 3.6 dpm/100 cm²
 MEAN 0.5 dpm/100 cm²
 STD DEV 1.5 dpm/100 cm²

TRANSURANIC
 DCGL_w 20 dpm/100 cm²

Media Sample Activity

N/A	N/A
Number Required	Number Obtained

Media Samples

Total Uranium Results

MIN N/A dpm/100 cm²
 MAX N/A dpm/100 cm²
 MEAN N/A dpm/100 cm²
 STD DEV N/A dpm/100 cm²

DCGL_w N/A dpm/100 cm²

Total Transuranic Results

MIN N/A dpm/100 cm²
 MAX N/A dpm/100 cm²
 MEAN N/A dpm/100 cm²
 STD DEV N/A dpm/100 cm²

DCGL_w N/A dpm/100 cm²

Survey Unit 77918 Building 779 Total Surface Contamination Results

Total Surface Activity Survey				Quality Control Survey					
Meter Model:	NE Electra w/ DP6 Probe	Local Area Bkgd (cpm)	NE Electra w/ DP6 Probe	Local Area Bkgd (cpm)	Serial #	Date	MDA (dpm/100 cm ²)		
Instrument #:	N/A	2.3	N/A	1.4	1370	11/94	28		
Cal. Due Date:	N/A		N/A		10/8/99	10/22/99	2.7		
Efficiency (cid):	0.220		N/A		0.222	0.221	2.7		
Total Surface Activity Measurements				Quality Control Measurements					
Sample Location Number	Serial #	Date	(cpm)	MDA (dpm/100 cm ²)	(dpm/100 cm ²)	Serial #	Date	(cpm)	MDA (dpm/100 cm ²)
1	2378	09/13/99	4.7	34	10.9	1370	09/13/99	2.7	28
2	2378	09/13/99	3.3	34	4.5				
3	2378	09/13/99	4.0	34	7.7				
4	2378	09/13/99	4.7	34	10.9				
5	2378	09/13/99	4.0	34	7.7				
6	2378	09/13/99	2.7	34	1.8				
7	2378	09/13/99	5.3	34	13.6	1194	09/13/99	2.7	28
8	2378	09/13/99	7.3	34	22.7				
9	2378	09/13/99	2.7	34	1.8				
10	2378	09/13/99	1.3	34	-4.5				
11	2378	09/13/99	2.7	34	1.8	1370	09/13/99	2.0	28
12	2378	09/13/99	3.3	34	4.5	1194	09/13/99	4.0	28
13	2378	09/13/99	2.7	34	1.8				
14	2378	09/13/99	8.7	34	29.1				
15	2378	09/13/99	5.3	34	13.6				
16	N/A	N/A	N/A	N/A	N/A				
17	N/A	N/A	N/A	N/A	N/A				
18	N/A	N/A	N/A	N/A	N/A				
19	N/A	N/A	N/A	N/A	N/A				
20	N/A	N/A	N/A	N/A	N/A				
21	N/A	N/A	N/A	N/A	N/A				
22	N/A	N/A	N/A	N/A	N/A				
23	N/A	N/A	N/A	N/A	N/A				
24	N/A	N/A	N/A	N/A	N/A				
25	N/A	N/A	N/A	N/A	N/A				
				MIN	-5				
				MAX	29				
				MEAN	9				
				SD	9				
				Transuranic DCGI	100				

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ATTACHMENT G
Survey Unit 77920 Data Summary

SURVEY UNIT 77920 DATA

COLOR CODES:

Less Than or Equal to 75% of DCGL_w = 

>75% and <100% of DCGL_w = 

Greater Than or Equal to DCGL_w = 

Survey Unit 77920 Data Summary and Approval Sheet

Surface Activity Measurements

15	14
Number Required	Number Obtained

MIN 0.0 dpm/100 cm²
 MAX 30.5 dpm/100 cm²
 MEAN 12.1 dpm/100 cm²
 STD DEV 9.9 dpm/100 cm²

TRANSURANIC
 DCGL_w 100 dpm/100 cm²

Removable Activity Measurements

15	14
Number Required	Number Obtained

MIN -0.6 dpm/100 cm²
 MAX 3.9 dpm/100 cm²
 MEAN 1.7 dpm/100 cm²
 STD DEV 1.3 dpm/100 cm²

TRANSURANIC
 DCGL_w 20 dpm/100 cm²

Media Sample Activity

15	18
Number Required	Number Obtained

Media Samples

Total Uranium Results

MIN 21.3 dpm/100 cm²
 MAX 169.0 dpm/100 cm²
 MEAN 69.8 dpm/100 cm²
 STD DEV 37.7 dpm/100 cm²

DCGL_w 5000 dpm/100 cm²

Total Transuranic Results

MIN 0.0 dpm/100 cm²
 MAX 5.7 dpm/100 cm²
 MEAN 1.9 dpm/100 cm²
 STD DEV 1.7 dpm/100 cm²

DCGL_w 100 dpm/100 cm²

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Survey Unit 77920 Building 779 Paint/Solid Media Sample Results

LOCATION DESCRIPTION	SAMPLE LOCATION NUMBER	SITE SAMPLE ID	NUCLIDE	pc/g	MDA (pCi/g)	WEIGHT (g)	SURFACE AREA (in ²)	INDIVIDUAL NUCLIDE (dpm/100cm ²)	ESTIMATED MDA (dpm/100cm ²)	URANIUM TOTAL (dpm/100cm ²) DCGL _w =5000	TRANSURANIC TOTAL (dpm/100cm ²) DCGL _w =100
Room 114, Wall 7/Wall 8 Beam	1	001.002	U-233/234	0.583	0.067	30.95	40	15.5	1.8	34.9	
			U-235	0.121	0.047			3.2	1.3		
			U-238	0.608	0.067			16.2	1.8		
			Pu-	0.051	0.046			1.4	1.2		
			Am-241	0.020	0.055			0.5	1.5		
Room 114, Ceiling	2	002.002	U-233/234	0.558	0.071	17.23	40	8.3	1.1	21.3	
			U-235	0.128	0.050			1.9	0.7		
			U-238	0.748	0.071			11.1	1.1		
			Pu-	0.017	0.047			0.3	0.7		
			Am-241	0.000	0.047			0.0	0.7		
Room 114, Wall 1	3	003.002	U-233/234	1.180	0.072	60.93	40	61.8	3.8	121.0	
			U-235	0.068	0.050			3.6	2.6		
			U-238	1.060	0.041			55.6	2.1		
			Pu-	0.017	0.047			0.9	2.5		
			Am-241	0.016	0.044			0.8	2.3		
Room 114, Floor	4	004.002	U-233/234	0.725	0.038	41.20	40	25.7	1.3	57.0	
			U-235	0.140	0.048			5.0	1.7		
			U-238	0.744	0.068			26.4	2.4		
			Pu-	0.000	0.046			0.0	1.6		
			Am-241	0.015	0.039			0.5	1.4		
Room 114, Floor	5	005.002	U-233/234	0.846	0.041	28.60	40	20.8	1.0	43.6	
			U-235	0.056	0.050			1.4	1.2		
			U-238	0.872	0.041			21.5	1.0		
			Pu-	0.070	0.047			1.7	1.2		
			Am-241	0.061	0.041			1.5	1.0		
Room 114, Wall 4	6	006.002	U-233/234	1.010	0.041	56.55	40	49.1	2.0	95.0	
			U-235	0.149	0.051			7.2	2.5		
			U-238	0.793	0.072			38.6	3.5		
			Pu-	0.000	0.043			0.0	2.1		
			Am-241	0.035	0.047			1.7	2.3		
Room 115/115A, Ceiling	7	007.002	U-233/234	0.768	0.046	34.84	40	23.0	1.4	49.8	
			U-235	0.168	0.057			5.0	1.7		
			U-238	0.724	0.081			21.7	2.4		
			Pu-	0.110	0.043			3.3	1.3		
			Am-241	0.079	0.076			2.4	2.3		

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Survey Unit 77920 Building 779 Paint/Solid Media Sample Results

LOCATION DESCRIPTION	SAMPLE LOCATION NUMBER	SITE SAMPLE ID	NUCLIDE	pCi/g	MDA (pCi/g)	WEIGHT (g)	SURFACE AREA (in ²)	INDIVIDUAL NUCLIDE (dpm/100cm ²)	ESTIMATED MDA (dpm/100cm ²)	URANIUM TOTAL (dpm/100cm ²) DCGL _w =5000	TRANSURANIC TOTAL (dpm/100cm ²) DCGL _w =100
Room 115/115A, Wall 5	8	008.002	U-233/234	0.901	0.068	66.90	40	51.9	3.9		
			U-235	0.157	0.047			9.0	2.7		
			U-238	1.020	0.068			58.7	3.9	119.6	
			Pu-	0.016	0.042			0.9	2.4		
			Am-241	#####	0.079			-0.4	4.5		0.5
Room 115/115A, Floor	9	009.002	U-233/234	0.628	0.039	29.42	40	15.9	1.0		
			U-235	0.088	0.046			2.2	1.2		
			U-238	1.000	0.068			25.3	1.7	43.4	
			Pu-	0.095	0.037			2.4	0.9		
			Am-241	0.126	0.146			3.2	3.7		5.6
Room 115/115A, Floor	10	010.002	U-233/234	0.891	0.087	23.22	40	17.8	1.7		
			U-235	0.208	0.051			4.2	1.0		
			U-238	0.960	0.041			19.2	0.8	41.1	
			Pu-	0.074	0.081			1.5	1.6		
			Am-241	0.059	0.040			1.2	0.8		2.7
Room 115/115A, Wall 5	11	011.002	U-233/234	1.220	0.081	82.29	40	86.4	5.7		
			U-235	0.270	0.056			19.1	4.0		
			U-238	0.898	0.080			63.6	5.7	169.0	
			Pu-	0.000	0.061			0.0	4.3		
			Am-241	0.035	0.048			2.5	3.4		2.5
Room 115/115A, Floor	12	012.002	U-233/234	0.732	0.068	21.52	40	13.6	1.3		
			U-235	0.105	0.047			1.9	0.9		
			U-238	0.804	0.038			14.9	0.7	30.4	
			Pu-	0.064	0.043			1.2	0.8		
			Am-241	0.035	0.048			0.6	0.9		1.8
Room 115/115A, Wall 8	13	013.002	U-233/234	0.589	0.041	45.54	40	23.1	1.6		
			U-235	0.242	0.051			9.5	2.0		
			U-238	0.686	0.072			26.9	2.8	59.4	
			Pu-	0.054	0.049			2.1	1.9		
			Am-241	0.034	0.047			1.3	1.8		3.4
Room 115/115A, Wall 6	14	014.002	U-233/234	0.714	0.039	48.23	40	29.6	1.6		
			U-235	0.141	0.048			5.9	2.0		
			U-238	0.697	0.039			28.9	1.6	64.4	
			Pu-	#####	0.084			-0.3	3.5		
			Am-241	0.016	0.045			0.7	1.9		0.4

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Survey Unit 77920 Building 779 Paint/Solid Media Sample Results

LOCATION DESCRIPTION	SAMPLE LOCATION NUMBER	SITE SAMPLE ID	NUCLIDE	pCi/g	MDA (pCi/g)	WEIGHT (g)	SURFACE AREA (in ²)	INDIVIDUAL NUCLIDE (dpm/100cm ²)	ESTIMATED MDA (dpm/100cm ²)	URANIUM TOTAL (dpm/100cm ²) DCGL _w =5000	TRANSURANIC TOTAL (dpm/100cm ²) DCGL _w =100
Airlock, Wall 4	15	015.002	U-233/234	0.692	0.040	68.28	40	40.6	2.3	87.3	1.0
			U-235	0.184	0.049			10.8	2.9		
			U-238	0.610	0.070			35.8	4.1		
			Pu-	0.000	0.050			0.0	2.9		
			Am-241	0.017	0.046			1.0	2.7		
Exhaust Duct Tower, Wall 3	16	016.002	U-233/234	0.554	0.042	66.39	40	31.6	2.4	76.9	0.0
			U-235	0.171	0.051			9.8	2.9		
			U-238	0.622	0.073			35.5	4.2		
			Pu-	0.000	0.042			0.0	2.4		
			Am-241	0.000	0.043			0.0	2.5		
Exhaust Duct Tower, Wall 1	17	017.002	U-233/234	0.528	0.073	62.43	40	28.4	3.9	63.3	0.0
			U-235	0.094	0.051			5.0	2.7		
			U-238	0.556	0.073			29.9	3.9		
			Pu-	0.000	0.052			0.0	2.8		
			Am-241	0.000	0.044			0.0	2.4		
Exhaust Duct Tower, Wall 1	18	018.002	U-233/234	0.774	0.040	48.13	40	32.0	1.7	79.7	1.4
			U-235	0.198	0.049			8.2	2.0		
			U-238	0.953	0.070			39.5	2.9		
			Pu-	0.033	0.044			1.4	1.8		
			Am-241	0.000	0.045			0.0	1.9		

MIN	21.3	0.0
MAX	169.0	5.7
MEAN	69.8	1.9
SD	37.7	1.7
DCGL _w =	5000	100

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ATTACHMENT H
SCM/SIMS Quality Control Charts

SCM/SIMS Quality Control Charts

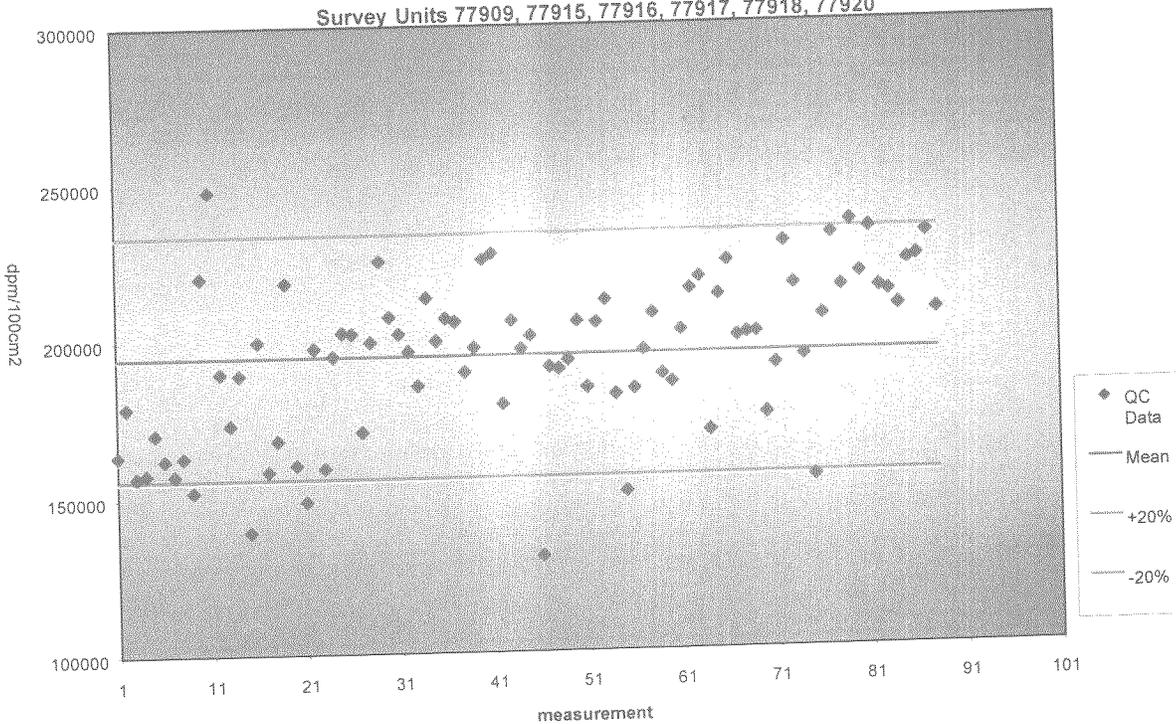
The QC control charts follow. The QC survey is to be distinguished from the daily source check. The daily source check allows the survey technician to determine that the instrument is responding within acceptable values for total background subtracted counts using a radioactive source. The QC survey is used to continuously update the control charts. The control charts are used to determine the efficiency of each detector assembly, verify adequate system performance, and to observe trends that may indicate monitoring system problems.

The control chart plots a mean of the Pu-238 source measurements (source strength = 194,400 dpm). It also shows the range of plus and minus 20% from the mean value. A typical QC survey contains at least six measurements (or twelve, if a recount assembly is used), which consist of at least three before and three after the radiological survey. Additionally, every three hours, three (or six) more measurements are obtained during the survey.

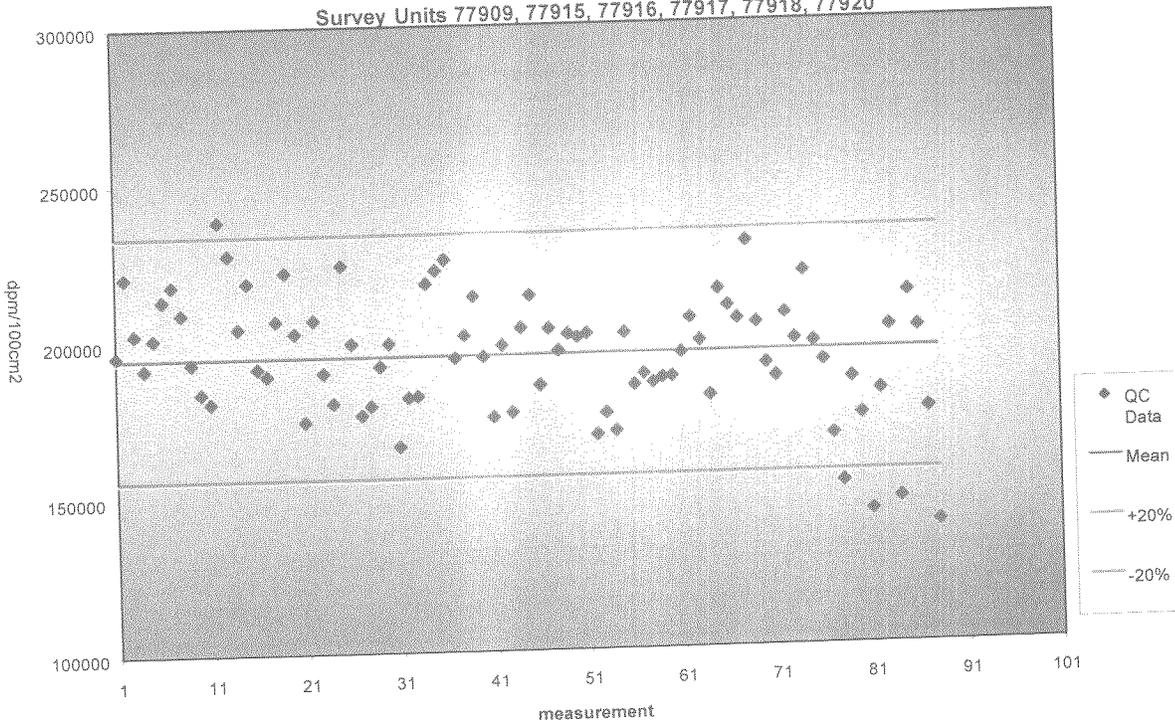
In a few cases, values have fallen outside of 20% from the mean. Singular events outside the range are not considered failures in the measurement process provided that the other values are within the acceptable range. Single events outside the range are treated as normal statistical occurrences.

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B779 Admin Bldg. Alpha Final Status Survey Quality Control Chart
 SCM1 180corner mode, 7.14.99 - 9.10.99
 Survey Units 77909, 77915, 77916, 77917, 77918, 77920

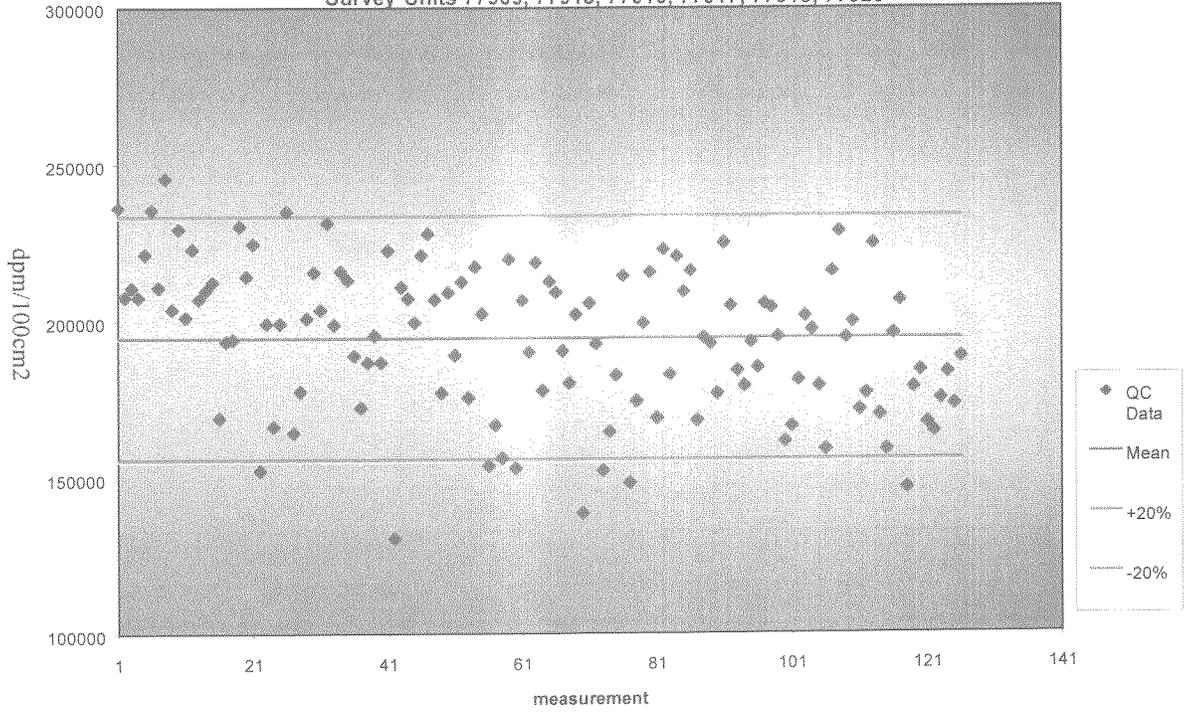


B779 Admin Bldg. Alpha Final Status Survey Quality Control Chart
 SCM2 180corner mode, 7.14.99 - 9.10.99
 Survey Units 77909, 77915, 77916, 77917, 77918, 77920

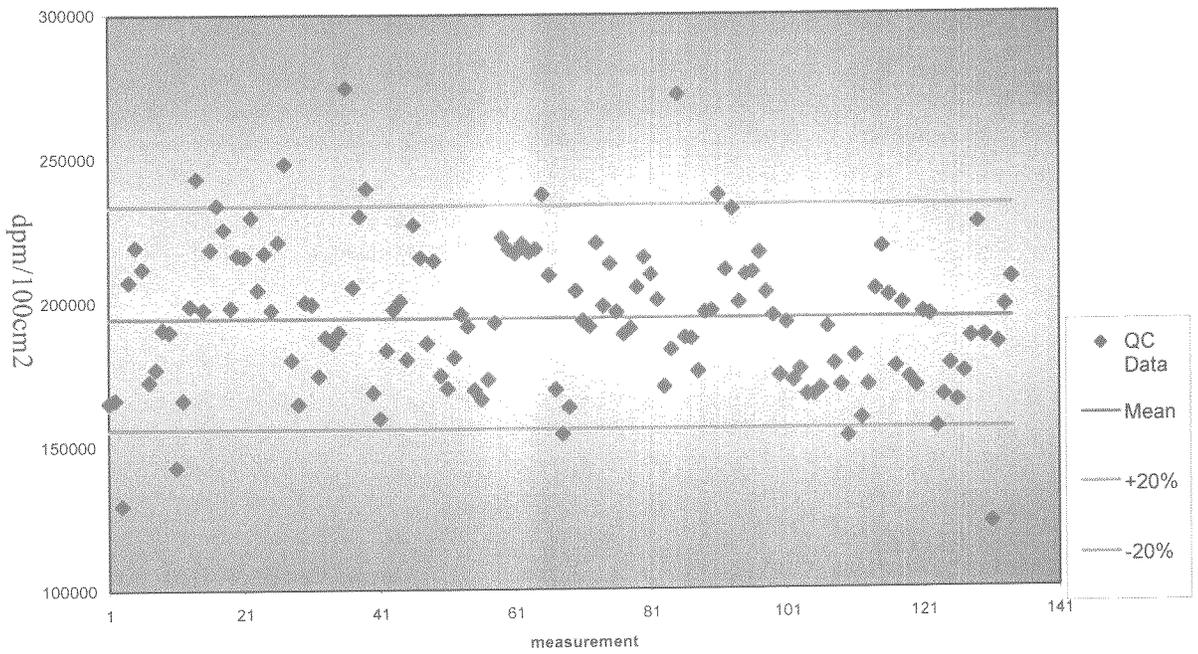


Rest Available Copy

B779 Admin Bldg. Alpha Final Status Survey Quality Control Chart
 SCM3 180corner mode, 7.14.99 - 9.10.99
 Survey Units 77909, 77915, 77916, 77917, 77918, 77920

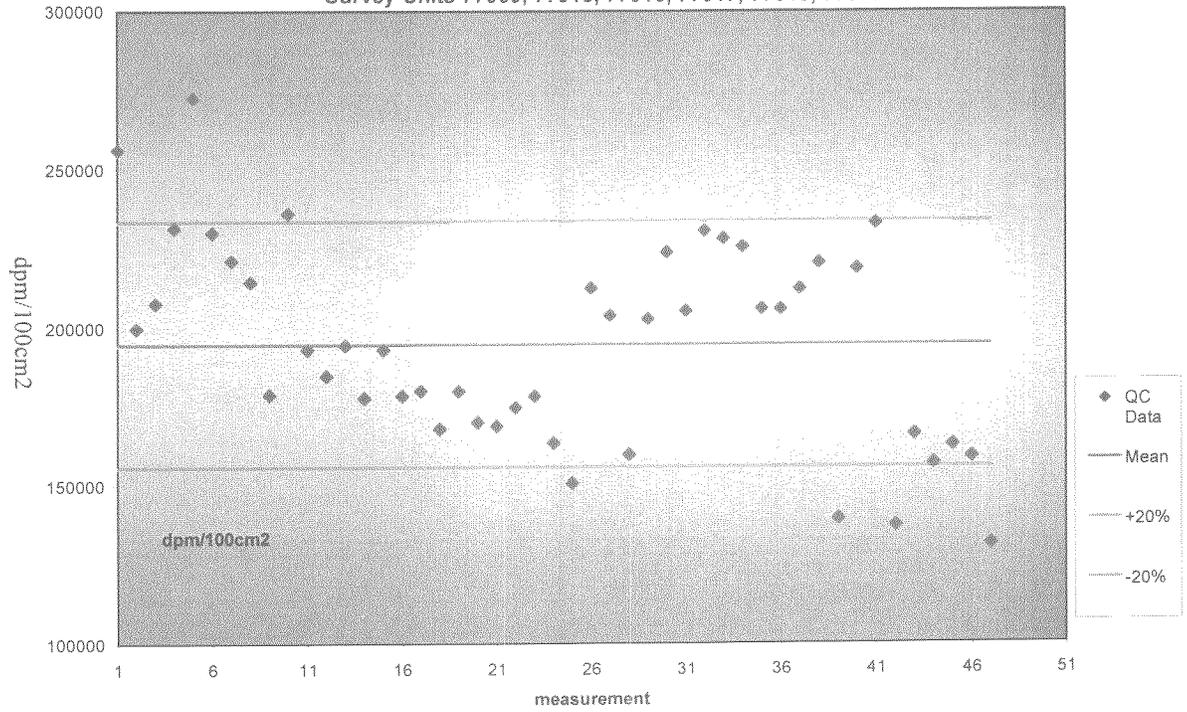


B779 Admin Bldg. Alpha Final Status Survey Quality Control Chart
 SCM1 180recount mode, 7.14.99 - 9.10.99
 Survey Units 77909, 77915, 77916, 77917, 77918, 77920



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B779 Admin Bldg. Alpha Final Status Survey Quality Control Chart
SCM2 180recount mode, 7.14.99 - 9.10.99
Survey Units 77909, 77915, 77916, 77917, 77918, 77920



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ATTACHMENT I
Data Quality Assessment

DATA QUALITY ASSESSMENT

1.0 INTRODUCTION

Data used in making management decisions for waste management remedial actions must be of adequate quality to support the decisions. Adequate data quality for decision-making is required by applicable RMRS and K-H corporate policies (RMRS, 1998, §6.4 and K-H, 1997, §7.1.4 and 7.2.2), as well as by the customer (DOE, RFFO; Order O 414.1, Quality Assurance, §4.b.(2)(b)). Regulators and the public also expect decisions and data that are technically and legally defensible. Verification and validation of the data ensure that data used in decisions resulting from the FSS are usable and defensible.

Verification and validation (V&V) of this Closeout Radiological Survey Report (CRSR) are the primary components of the DQA. V&V constitutes the cornerstone of the DQA because statistical tests and background determinations relative to decision-making for radiological survey units were not implemented nor required per the approved CRSP for the 779 Cluster. Instead, measurement results were compared, on a one-to-one basis, with free-release criteria given in DOE Order 5400.5. The FSS results could, theoretically, be used to conduct Sign Tests for decisions, but because all individual measurements were less than the DCGL_w, the survey units meet release criteria without further data reduction. The DQA presented in this Attachment supports conclusions in the report through implementation of the guidelines taken from the following MARSSIM sections:

- §4.9, Quality Control
- §8.2, Data Quality Assessment
- §9.0, Quality Assurance & Quality Control
- Appendix E, Assessment Phase of the Data Life Cycle
- Appendix N, Data Validation using Data Descriptors

The MARSSIM-recommended criteria for V&V of final status survey data, listed above, are concisely summarized in Table G-1 (in progress, pending completion of Survey Unit data acquisition and reduction). The MARSSIM criteria are listed across the top of the table whereas the project's proof of implementation is listed along the left-hand side of the page. Note that 1 or more "checks" *per column* exhibit compliance with the MARSSIM criteria, which are listed per column.

2.0 VERIFICATION OF RESULTS

Verification ensures that data produced and used by the project are documented and traceable per quality requirements. Verification consisted of reviewing the project's data relative to three subsets: 1) radiological scans with the SCM/SIMS, 2) static surveys for removable and total contamination, and 3) radiochemical data resulting from samples taken and subsequently analyzed via alpha spectrometry. Verification of data for this report as a whole will not be completed until data acquisition and reduction is completed for all 6 Survey Units that constitute the Administrative Area. Consistent with previous reports, verification will confirm that

- Chain-of-Custody was intact from initial sampling through transport and final analysis;
- preservation and hold-times were within tolerance

- format and content of the data are clearly presented relative to goals of the project, i.e., to determine, with at least 95% confidence, that the survey units of interest (Administrative Area) are adequate for radiological free release.

Verification of the Administrative Area FSS data will also address quality records representing implementation of the following quality controls:

- calibrations (radiochemistry & surveys), for accuracy
- laboratory control samples (LCS -- radiochemistry), for accuracy
- blanks (radiochemistry), for accuracy
- duplicate measurements (radiochemistry & surveys), for precision
- chemical yield (radiochemistry), for accuracy
- count times (radiochemistry & surveys), for sensitivity
- sample preparations (radiochemistry), for accuracy, representativeness

SCM data were systematically managed and verified as follows:

- A Survey Summary Sheet was generated for each survey unit, which lists all Final Survey subunits, including the associated investigation surveys.
- The Survey Summary Sheet was compared to the electronic (computer) directory structure, the Project File (handwritten survey data) and SIMS-generated survey data for a "3-way" verification.
- The Survey Summary Sheet, ordered by survey unit, is maintained at the front of the electronic database file structure as well as in the file cabinet.

Areas requiring 100% survey coverage were verified as follows:

- An overview map was developed for each survey unit.
- The overview map served as an index of the subunits, and defined the subunit boundaries.
- Every survey map used to document Electra as well as SCM scan surveys was reviewed against the overview map for coverage.
- Because every survey map was correlated to a survey form, and all survey forms were inventoried via the survey summary sheet, 100% coverage of every subunit was assured.

Areas requiring 10% survey coverage were verified as follows:

- The area covered by the survey was summed for each subunit that required 10% coverage.
- The subunit size was electronically calculated in Turbocad using scaled maps.
- The sum of all subunits in the survey unit that require 10% coverage was summed.
- The area surveyed was divided by the sum of the 10% subunit size to determine the percent surveyed.

Upon completion of the data management activities listed above, an independent peer review was performed on each surveys package.

All relevant Quality records associated with the Administrative Area D&D final status survey decisions will be submitted to the RMRS Records Center for permanent storage within 30 days of the conclusion of the 779 project.

3.0 VALIDATION OF RESULTS

Validation consists of a technical review of all data that directly support the FSS decisions, so that any limitations of the data relative to project goals are delineated, and the associated data are qualified (caveated) accordingly. Data were validated relative to

- 1) the DQOs of the project as defined in the CRSP for the 779 Cluster (i.e., did the final data achieve the initial DQOs of the project?), and
- 2) quality criteria discussed throughout various sections in the MARSSIM (sections noted previously).

MARSSIM criteria for the broad topic of "data quality assessment" used in final status surveys generally falls within the generic categories of quality assurance, quality control, data validation, and data assessment (including verification and validation). Table G-1 (pending) provides a "crosswalk" that lists the primary MARSSIM sections and generic data quality criteria (at top) and their corresponding implementation via the CRSP, CRSR, and project files.

All of the significant MARSSIM criteria listed in Table G-1 are summarily discussed within the "PARCC Parameters" section. PARCC parameters are congruent with "data descriptors" in the MARSSIM parlance and address characteristics of the data that must be defined for scientific integrity and defensibility. Recall that at least one "X" in each column of the table constitutes achievement of the MARSSIM quality objective (vs. one "X" in each row). The next section, which addresses the PARCC parameters -- Precision, Accuracy, Representativeness, Comparability, and Completeness, will also include discussion on bias and sensitivity, two more data descriptors emphasized in MARSSIM.

Validation of data to K-H contractual requirements (K-H Statements of Work is currently performed on a site-wide basis at ~25% frequency by the K-H Analytical Services Division. Satisfactory validation at this frequency indicates that subcontracted labs are operating competently relative to industry-wide standards, and more specifically, that sample custody and analytical procedures are implemented under defined quality controls on a sitewide programmatic basis. Sitewide data validation coupled with annual lab audits provides the inference that all analytical and radiochemical results not *specifically* validated, are represented by the percentage that is validated. Radiochemistry performed for this FSS were verified as meeting K-H contractual requirements -- Module RC01-B.3 for alpha spectrometry (4/24/98 and Module 9, 7/6/98).

PARCC PARAMETERS

PRECISION

Fundamental reproducibility of measurements, at levels near MDA and between different types/brands of instruments, are discussed at length in the "B779 Final Status Survey Meeting Resolution of CDPHE/EPA/IVC Comments, 6/30/99", which is included as Appendix 5 to the *Closeout Radiological Survey Report for Building 729*.

1) Radiological Surveys

Precision of the radiological instrumentation was satisfactory based on tolerance charting of daily source measurements for each individual sensor used on the project, which includes all measurement types (scans and static measures for total contamination, swipes for removable). Adequate precision was established through instrument performance within a $\pm 20\%$ range as

defined by measurement results compared to a standard source value. Based on standard protocol (*Radiological Safety Practices*) any measurement exceeding the defined tolerance limits required corrective action (repair or replacement) prior to the instrument's use in final survey.

For the SCM, three (3) measurements were taken for each QC check "episode", i.e., before and after each set of measurements per work shift (Millennium QAP, 3/99). Of the 3 measurements, 2 consecutive measurements had to pass specifications. This criterion has a probabilistic basis to accommodate occurrence of false positives and negatives inherent with all SIMS measurements, including the QC checks. Specifically, 2 consecutive measurements within tolerance significantly increase confidence (over just 1 measurement) that instrument output is truly within tolerance (and not within tolerance due to random chance). Performance checks performed on the SCM are shown in the respective control charts (Attachment H). Two consecutive measurements not within the $\pm 20\%$ tolerance envelope required corrective action prior to the instrument's use.

Duplicate total surface activity measurements were also periodically acquired ($\geq 5\%$ frequency of original final survey measurements) on the MARSSIM survey grids. All duplicate measurements were within tolerance based on the acceptance criterion that both results be below $DCGL_w$ (note that, even if populations were "significantly" different between real and duplicate results, if both duplicate and real population statistics are less than action levels, the difference between duplicate and real values is, ultimately, insignificant relative to free-release decisions).

2) Radiochemistry

Results from laboratory duplicates indicate adequate reproducibility based on duplicate results within statistical tolerance values ($>90\%$ confidence of equivalency between the original sample and the duplicate). Although blind duplicate samples were not acquired for determination of overall project precision, agreement between the multiple samples to within a range less than the $DCGL_w$ indicate that reproducibility is adequate for project decisions (i.e., relative to free-release of materials).

ACCURACY (and Bias)

1) Radiological Surveys

Accuracy of radiological surveys is satisfactory based on RFETS-programmatic annual calibrations that establish instrument efficiencies and sensitivities for all instrumentation used on this project. Daily source checks also provided periodic checks to ensure that all sensors are within tolerance during daily operations. Calibration and calibration check results were within the RFETS and industry-standard requirement of 20% of the applicable reference standard values. Full-scale multi-point calibrations provided accuracies of $\pm 10\%$ prior to implementation of survey instruments in the field, consistent with guidelines put forth in ANSI-N323.d.

Distance measurements recorded by the SCM/SIMS are within 3% of actual distances for mapping and location purposes, as documented in the "Incremental Encoder Calibration Verification Data Sheet."

Some bias may be indicated within control charts of the SCM (Attachment H), with runs of data below or above the reference standard value. However, given the overall low values of the data sets relative to the free-release criteria and the low probability of false negatives, the potential biases do not impact the ultimate project decisions of compliance with free-release criteria for the 6 survey units of interest for Administrative Area. Potential low biases in recount results – where recounts were performed with a hand-held instrument (Electra) following elevated counts (above action- or investigative-levels) by the SCM – have been concluded as insignificant, primarily based on the higher sensitivities of the hand-held instrumentation, where lower values would be expected if contamination was, in fact, absent. Comparability of these instruments, their results, and the role of measurement uncertainties in evaluating bias were have been addressed in related documentation (Appendix 5 of the Building 729 Closeout Report).

2) Radiochemistry

Accuracies of radiochemical results were within tolerance and acceptable based on the associated results of LCS and calibrations at the lab. Preparation blanks also confirmed that no significant cross-contamination occurred in the analysis process. Uncertainties of the radiochemical results are quantified for each sample by both 2-sigma error (probabilistic) and Total error (systematic + probabilistic). Uncertainties associated with the alpha-spec analyses were within standard industry magnitudes and did not adversely impact project decisions.

REPRESENTATIVENESS

Samples and surveys are representative based on the following criteria:

- familiarity with facilities -- multiple walk-downs and collaborations by management and technical staff;
- implementation of industry-standard Chain-of-Custody protocols;
- compliance with sample preservation and hold times;
- documented and (site) approved methods:
 - radiochemistry - alpha spectrometry via K-H Module RC01-B.3 (4/24/98)
 - radiological surveys - K-H RSP 7.02
- compliance with the CRSP (RMRS, March 1999) -- reviewed & approved by technical and management consensus prior to implementation

COMPLETENESS

Data packages for Survey Units 77915, 77916, and 77917 are generally complete with respect to Survey Package contents; construction of SCM/SIMS data sets remains in progress. Additional survey data is required for Survey Units 77918, 77920, and 77909. Consequently, this section of the report will be revised following data acquisition and reduction within the survey units in question.

The following table summarizes the minimum required number of samples or surveys, the actual quantity of samples or surveys to date, and the outstanding samples and/or surveys required for successful completion of the final status survey effort.

Rad Measurement Type	Required # of Samples/ Surveys ⁽¹⁾	Actual # of Samples/ Surveys	Comments
Survey Unit 77915			
Shonka: SCM/SIMS (total)	>10% areal coverage	>>10% areal coverage	DQO achieved
NE Electra (total) ²	13	17	DQO achieved
Eberline SAC-4 (removable) ²	13	17	DQO achieved
Radiochemical	NA	NA	NA
Survey Unit 77916			
Shonka: SCM/SIMS (total)	100% areal coverage	100% areal coverage	DQO achieved
NE Electra (total) ²	13	17	DQO achieved
Eberline SAC-4 (removable) ²	13	17	DQO achieved
Radiochemical	NA	NA	NA
Survey Unit 77917			
Shonka: SCM/SIMS (total)	>10% areal coverage ³	>>10% areal coverage	DQO achieved
NE Electra (total) ²	13	17	DQO achieved
Eberline SAC-4 (removable) ²	13	17	DQO achieved
Radiochemical	NA	NA	NA
Survey Unit 77918			
Shonka: SCM/SIMS (total)	>10% areal coverage ³	>>10% areal coverage ³	pending completion of elevator shaft
NE Electra (total) ²	13	15	pending completion of elevator shaft
Eberline SAC-4 (removable) ²	13	15	pending completion of elevator shaft
Radiochemical	NA	NA	NA
Survey Unit 77920			
Shonka: SCM/SIMS (total)	>10% areal coverage ³	>>10% areal coverage ³	pending completion of tower
NE Electra (total) ²	13	14	pending completion of tower
Eberline SAC-4 (removable) ²	13	14	pending completion of tower
Radiochemical	13	18	pending
Survey Unit 77909			
Shonka: SCM/SIMS (total)	>10% areal coverage ³	>>10% areal coverage ³	pending completion of exterior roof
NE Electra (total) ²	13	26	pending completion of exterior roof
Eberline SAC-4 (removable) ²	13	26	pending completion of exterior roof
Radiochemical	13	18	pending

(1) see "Summary Statistics Calculation Verification Worksheets." - refer to respective survey packages in 779 project files.

(2) see data summaries for additional "Post-media" surveys, i.e., following paint scrapes

(3) MARSSIM guidelines are 10% to 100% for Class 2 interior units; Radiological Engineering professional judgement (stated in the CRSP) yielded ~100% coverage for floors and walls to 2m height; 10% of remaining room surface areas. Class 2 exterior survey units require minimum 50% lower walls, 10% upper walls/roof.

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Consistent with EPA's G-4 DQO process, the sampling design was optimized through back-calculating actual measurement results (acquired during final status survey) and comparing model output with original estimates. Use of actual sample/survey (result) variances in MARSSIM's DQO model provided confirmation that an adequate number of samples/surveys had been acquired. Inputs required for decision-making, as stated in the original (planning) DQOs, were acquired, including coverage of originally-planned 3-dimensional boundaries of the structure. All radiological results are valid without qualification, and form data sets with adequate quantities and quality of data for free-release decisions on the four survey units of interest.

COMPARABILITY

All results presented are comparable with radiological survey and radiochemistry data on a site- and DOE-complex wide basis. This comparability is based on:

- use of standardized engineering units in the reporting of measurement results
- consistent sensitivities of measurements at $\leq 50\%$ DCGL_W ($\leq 50\%$ DCGL_{EMC} for scans)
- use of site-approved procedures (RSPs)
- systematic quality controls
- thorough documentation of the planning, sampling/analysis process, and data reduction into formats designed for making decisions posed from the project's original data quality objectives.

SENSITIVITY

Adequate sensitivities, in units of dpm/100 cm², were attained for all surveys and radiochemical methods implemented based on MDAs at 50% of the transuranic DCGL_W ($\leq 50\%$ DCGL_{EMC} for scans). The nominal MDAs for each survey and radiochemical method are summarized as follows:

- SCM/SIMS - scan surveys/total contamination: <225 dpm/100 cm² w/ $>90\%$ confidence (relative to false negative) and <275 dpm/100 cm² w/ $>95\%$ confidence (relative to false negatives)
- Surveys (Eberline SAC-4) - removable contamination: 10 dpm/100 cm²
- Surveys (NE Electra) - total contamination: 50 dpm/100 cm²
- Radiochemistry (alpha spec) - total contamination: <10 dpm/100 cm²

In summary, the data presented in this report have been verified and are qualified as valid and complete for comparison with free-release criteria (action levels) as stated in the original DQOs. All media sampled and surveyed, relative to both total and removable alpha activities, yielded results less than action levels for the associated contaminants of concern. Therefore, the Survey Units in question meet the free-release criteria with the confidences stated in this section and throughout the report.

4.0 QA ELEMENTS of DOE Order 414.1 and 10CFR830.120

Adequate implementation of many of the quality elements required by DOE orders and statutory law were corroborated through the verification and validation process described above, which is expected since DOE was a co-authoring organization to the MARSSIM. However, to clarify both overlap and distinctions, the 10 quality criteria are listed with brief descriptions of the project's implementation in each topical area.

All personnel performing quality-affecting activities within the FSS project were qualified to perform their specific tasks. Suitable training and qualification documentation for personnel performing the work, from the laborers to technical professionals to management, is documented in several ways. T&Q status for personnel is included in the *Building 779 Cluster Closure Project Health & Safety Plan* (Rev. 6, 18 August 1998) and personnel dossiers controlled by company-specific Human Resource departments.

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