



**Portland General Electric Company**  
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March 30, 2004

VPN-026-2004

Trojan Nuclear Plant  
License NPF-1  
Docket 50-344

ATTN: Document Control Desk  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

**Trojan Nuclear Plant Final Survey Report for the Main Steam  
Support Structure, Electrical Penetration Area and Steam Generator Blowdown Building**

The enclosure to this letter provides Portland General Electric Company's Final Survey Report for the Trojan Nuclear Plant Main Steam Support Structure, Electrical Penetration Area and Steam Generator Blowdown Building. The report is presented in two volumes. The first volume is the main report documenting the results and conclusions of the final survey of the Main Steam Support Structure, Electrical Penetration Area and Steam Generator Blowdown Building. The second volume is a supplement to the main report that provides scan measurement data and survey maps documenting where scan surveys were performed in each survey unit.

Data collection for the final survey of these areas began in June 2003 and was completed in September 2003. The report documents the results and conclusions of the survey, and was prepared in accordance with guidance and requirements contained in the following:

- Portland General Electric Topical Report PGE 1061, *Trojan Nuclear Plant Defueled Safety Analysis Report and License Termination Plan (PGE-1078)*,
- NUREG 1727, *NMSS Decommissioning Standard Review Plan*, Section 14.5 [Superseded by NUREG 1757 in September 2003],
- NUREG 1575, *Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)*, Section 8.6, and
- NUREG 1757, Volume 2, *Consolidated NMSS Decommissioning Guidance – Characterization, Survey, and Determination of Radiological Criteria*, Section 4.5

The attachment to this letter indicates where each of the requirements in the documents listed above is addressed.

10M5501



The data collected during final survey demonstrate that each survey unit of the Main Steam Support Structure, Electrical Penetration Area and Steam Generator Blowdown Building meets the radiological criteria for unrestricted use specified in 10 CFR 20.1402. On that basis, Portland General Electric Company has concluded that each of these areas meets regulatory requirements for release to unrestricted use.

To support Portland General Electric Company's plans to have its Trojan Nuclear Plant license terminated in 2005 per 10 CFR 50.82(a)(11), it is requested that the Nuclear Regulatory Commission review this data package for acceptance of this portion of the site final radiological survey.

Should you have any questions concerning this matter, please contact Mr. Jerry D. Reid of my staff at (503) 556-6474.

Sincerely,



Stephen M. Quennoz  
Vice President, Generation

Attachment  
Enclosure

c: Director, NRC Region IV/DNMS  
J. T. Buckley, NMSS/DWM/DCB (3 Copies)  
R. J. Evans, NRC Region IV/DNMS/FCDB  
D. Stewart-Smith, ODOE  
A. Bless, ODOE

Guidance/Requirement	Source	Where Addressed
... a final survey report will be prepared which summarizes the data and documents the conclusion that the TNP facility and site meet the 10 CFR 20.1402 release criteria and can be released for unrestricted use.	PGE 1061 – Trojan License Termination Plan – Section 4.1.3	Final Survey Report – Section 1.1, Section 5
... and in the final survey report. The final survey report is prepared which summarizes the data and states the conclusions.	PGE 1061 – Trojan License Termination Plan – Section 4.2.5.5	Final Survey Report – Section 1.1, Section 5
The report will provide a summary of the ALARA evaluations.	PGE 1061 – Trojan License Termination Plan – Section 4.7.3	Final Survey Report – Section 4.2.4, Table 4-1
The report will provide a summary of the survey data results.	PGE 1061 – Trojan License Termination Plan – Section 4.7.3	Final Survey Report –Section 3, Table 3-1, Table 3-2
The report will provide a summary of the overall conclusions.	PGE 1061 – Trojan License Termination Plan – Section 4.7.3	Final Survey Report –Section 5, Table 4-1
Information such as the number and type of measurements...will be included in the report.	PGE 1061 – Trojan License Termination Plan – Section 4.7.3	Final Survey Report – Section 2.3.2 & 2.3.3, Table 3-1, Section 4.1.3.3, Appendices C, D & E
Information such as basic statistical quantities...will be included in the report.	PGE 1061 – Trojan License Termination Plan – Section 4.7.3	Final Survey Report – Appendices C, D & E
Information such as statistical test results...will be included in the report.	PGE 1061 – Trojan License Termination Plan – Section 4.7.3	Final Survey Report – Appendices C, D & E
The information should include: An overview of the results of the final status survey.	NUREG 1727 – NMSS Decommissioning Standard Review Plan, Rev 0, Section 14.5	Final Survey Report –Section 3, Table 3-1

Guidance/Requirement	Source	Where Addressed
The information should include: A discussion of any changes that were made in the final status survey from what was proposed in the Decommissioning Plan or other prior submittals.	NUREG 1727 – NMSS Decommissioning Standard Review Plan, Rev 0, Section 14.5	N/A. Survey performed in accordance with PGE 1061 - Trojan License Termination Plan.
The information should include: A description of the method by which the number of samples was determined for each survey unit.	NUREG 1727 – NMSS Decommissioning Standard Review Plan, Rev 0, Section 14.5	Final Survey Report –Section 2.3.2.2, Section 4.1.3.3
The information should include: A summary of the values used to determine the number of samples and a justification for these values.	NUREG 1727 – NMSS Decommissioning Standard Review Plan, Rev 0, Section 14.5	PGE 1061 - Trojan License Termination Plan – Section 4.4.3.1, Appendix 4-2
The information should include: The survey results for each survey unit including: The number of samples taken for each survey unit.	NUREG 1727 – NMSS Decommissioning Standard Review Plan, Rev 0, Section 14.5	Final Survey Report – Appendices C, D & E
The information should include: The survey results for each survey unit including: A map or drawing of the survey unit showing the reference system and random start systematic sample locations for Class 1 and Class 2 survey units, and random locations shown for Class 3 survey units and reference areas.	NUREG 1727 – NMSS Decommissioning Standard Review Plan, Rev 0, Section 14.5	Final Survey Report – Appendices C, D & E



Guidance/Requirement	Source	Where Addressed
The information should include: The survey results for each survey unit including: The measured sample concentrations.	NUREG 1727 – NMSS Decommissioning Standard Review Plan, Rev 0, Section 14.5	Final Survey Report – Appendices C, D & E
The information should include: The survey results for each survey unit including: The statistical evaluation of the measured concentrations.	NUREG 1727 – NMSS Decommissioning Standard Review Plan, Rev 0, Section 14.5	Final Survey Report – Appendices C, D & E
The information should include: The survey results for each survey unit including: Judgmental and miscellaneous sample data sets reported separately from those samples collected for performing the statistical evaluation.	NUREG 1727 – NMSS Decommissioning Standard Review Plan, Rev 0, Section 14.5	Final Survey Report – Appendices C, D & E; Supplement
The information should include: The survey results for each survey unit including: A discussion of anomalous data including any areas of elevated direct radiation detected during scanning that exceeded the investigation level or measurement locations in excess of the DCGL <sub>w</sub> .	NUREG 1727 – NMSS Decommissioning Standard Review Plan, Rev 0, Section 14.5	Final Survey Report – Appendix C

Guidance/Requirement	Source	Where Addressed
The information should include: The survey results for each survey unit including: A statement that a given survey unit satisfied the DCGL <sub>w</sub> and the elevated measurement comparison if any sample points exceeded the DCGL <sub>w</sub> .	NUREG 1727 – NMSS Decommissioning Standard Review Plan, Rev 0, Section 14.5	Final Survey Report – Section 5, Table 4-1
The information should include: A description of any changes in initial survey unit assumptions relative to the extent of residual radioactivity.	NUREG 1727 – NMSS Decommissioning Standard Review Plan, Rev 0, Section 14.5	Final Survey Report – Table 3-2
The information should include: If a survey unit fails, a description of the investigation conducted to ascertain the reason for the failure and a discussion of the impact that the failure has on the conclusion that the facility is ready for final radiological surveys.	NUREG 1727 – NMSS Decommissioning Standard Review Plan, Rev 0, Section 14.5	N/A
The information should include: If a survey unit fails, a discussion of the impact that the reason for the failure has on other survey unit information.	NUREG 1727 – NMSS Decommissioning Standard Review Plan, Rev 0, Section 14.5	N/A
Documentation of the final status survey should provide a complete and unambiguous record of the radiological status of the survey unit relative to the established DCGLs.	NUREG 1575 MARSSIM – Section 8.6	Final Survey Report – Table 4-1

Guidance/Requirement	Source	Where Addressed
Sufficient data and information should be provided to enable an independent evaluation of the results of the survey including repeating measurements at some future time.	NUREG 1575 MARSSIM – Section 8.6	Final Survey Report – Appendices C, D & E; Supplement
The document should describe the instrumentation or analytical methods used.	NUREG 1575 MARSSIM – Section 8.6	Final Survey Report – Section 2.2
The document should describe how the data were converted into DCGL units.	NUREG 1575 MARSSIM – Section 8.6	Final Survey Report – Section 2.4.3
The document should describe the process of comparing the results to the DCGLs.	NUREG 1575 MARSSIM – Section 8.6	Final Survey Report – Section 4.2
The document should describe the process of determining that the data quality objectives were met.	NUREG 1575 MARSSIM – Section 8.6	Final Survey Report – Section 4.1
The results of actions taken as a consequence of individual measurements or sample concentrations in excess of the investigation levels should be reported together with any additional data, remediation, or re-surveys performed to demonstrate that issues concerning potential areas of elevated activity were resolved.	NUREG 1575 MARSSIM – Section 8.6	Final Survey Report – Table 3-2, Appendix C

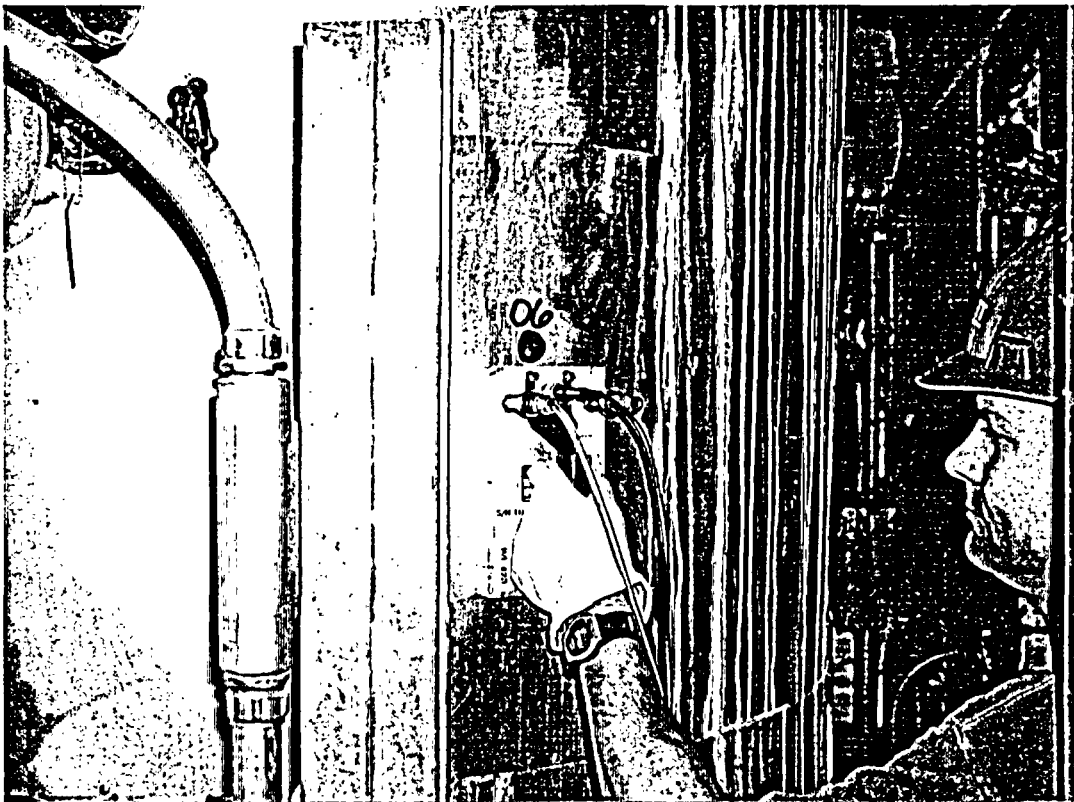
Guidance/Requirement	Source	Where Addressed
The results of the data evaluation using statistical methods to determine if release criteria were satisfied should be described.	NUREG 1575 MARSSIM – Section 8.6	Final Survey Report – Section 4.1.3
The information should include: An overview of the results of the FSS.	NUREG 1757 Volume 2 Consolidated NMSS Decommissioning Guidance – Section 4.5	Final Survey Report – Section 3, Table 3-1
The information should include: A summary of the DCGLs for the facility (if DCGLs are used).	NUREG 1757 Volume 2 Consolidated NMSS Decommissioning Guidance – Section 4.5	Final Survey Report – Section 1.3.2, Appendix B. (Appendices C, D & E also list the DCGL for each survey unit.)
The information should include: A discussion of any changes that were made in the FSS from what was proposed in the DP or other prior submittals.	NUREG 1757 Volume 2 Consolidated NMSS Decommissioning Guidance – Section 4.5	N/A. Survey performed in accordance with PGE 1061 - Trojan License Termination Plan.
The information should include: A description of the method by which the number of samples was determined for each survey unit.	NUREG 1757 Volume 2 Consolidated NMSS Decommissioning Guidance – Section 4.5	Final Survey Report – Section 2.3.2.2, Section 4.1.3.3
The information should include: A summary of the values used to determine the number of samples and a justification for these values.	NUREG 1757 Volume 2 Consolidated NMSS Decommissioning Guidance – Section 4.5	PGE 1061 – Trojan License Termination Plan – Section 4.4.3.1, Appendix 4-2
The information should include: The survey results for each survey unit including the following: The number of samples taken for each survey unit.	NUREG 1757 Volume 2 Consolidated NMSS Decommissioning Guidance – Section 4.5	Final Survey Report – Appendices C, D & E

Guidance/Requirement	Source	Where Addressed
<p>The information should include:  The survey results for each survey unit including the following: a description of the survey unit, including (a) a map or drawing of the survey unit showing the reference system and random start systematic sample locations for Class 1 and Class 2 survey units, and random locations shown for Class 3 survey units and reference areas, (b) discussion of remedial actions and unique features, and (c) areas scanned for Class 2 and 3 survey units.</p>	<p>NUREG 1757 Volume 2 Consolidated NMSS Decommissioning Guidance – Section 4.5</p>	<p>Final Survey Report – Section 3.1, 3.2, 3.3, Appendices C, D &amp; E; Supplement</p>
<p>The information should include: The survey results for each survey unit including the following: the measured sample concentrations, in units that are comparable to the DCGLs.</p>	<p>NUREG 1757 Volume 2 Consolidated NMSS Decommissioning Guidance – Section 4.5</p>	<p>Final Survey Report – Appendices C, D &amp; E</p>
<p>The information should include: The survey results for each survey unit including the following: the statistical evaluation of the measured concentrations.</p>	<p>NUREG 1757 Volume 2 Consolidated NMSS Decommissioning Guidance – Section 4.5</p>	<p>Final Survey Report – Appendices C, D &amp; E</p>
<p>The information should include: The survey results for each survey unit including the following: judgmental and miscellaneous sample data sets reported separately from those samples collected for performing the statistical evaluation.</p>	<p>NUREG 1757 Volume 2 Consolidated NMSS Decommissioning Guidance – Section 4.5</p>	<p>Final Survey Report – Appendices C, D &amp; E; Supplement</p>

Guidance/Requirement	Source	Where Addressed
The information should include: The survey results for each survey unit including the following: a discussion of anomalous data including any areas of elevated direct radiation detected during scanning that exceeded the investigation level or any measurement locations in excess of DCGL <sub>w</sub> .	NUREG 1757 Volume 2 Consolidated NMSS Decommissioning Guidance – Section 4.5	Final Survey Report – Appendix C
The information should include: The survey results for each survey unit including the following: a statement that a given survey unit satisfied the DCGL <sub>w</sub> and the elevated measurement comparison if any sample points exceeded the DCGL <sub>w</sub> .	NUREG 1757 Volume 2 Consolidated NMSS Decommissioning Guidance – Section 4.5	Final Survey Report – Table 4-1
The information should include: A description of any changes in initial survey unit assumptions relative to the extent of residual radioactivity (e.g., material not accounted for during site characterization).	NUREG 1757 Volume 2 Consolidated NMSS Decommissioning Guidance – Section 4.5	Final Survey Report – Table 3-2
The information should include: A description of how ALARA practices were employed to achieve final activity levels.	NUREG 1757 Volume 2 Consolidated NMSS Decommissioning Guidance – Section 4.5	Final Survey Report – Section 4.2.4, Table 4-1

# **Trojan Nuclear Plant**

## **Final Survey Report MSSS/EPA/SGBB Volume 1 of 2**

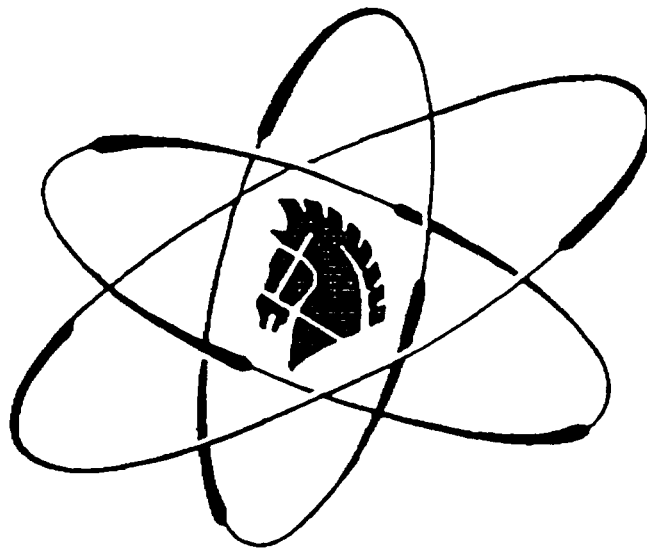


Enclosure to VPN-026-2004  
March 30, 2004



# **Final Survey Report**

**Main Steam Support Structure  
Electrical Penetration Area  
Steam Generator Blowdown Building**



**Portland General Electric**

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## **EXECUTIVE SUMMARY**

This report presents the results and conclusions of the final survey conducted by Portland General Electric Company of the Main Steam Support Structure, Electrical Penetration Area, and Steam Generator Blowdown Building (MSSS/EPA/SGBB), which are located immediately adjacent to the Trojan Nuclear Plant Containment Building. Plant systems and components were removed and contaminated structural surfaces remediated as part of the decommissioning process. A final survey of the equipment and structural surfaces remaining in the MSSS/EPA/SGBB was performed. Final survey data collection began in June 2003 and was completed in September 2003.

The final survey was performed in accordance with the final survey process described in PGE-1061, "Trojan Nuclear Plant Defueled Safety Analysis Report and License Termination Plan (PGE-1078)," referred to as the LTP. The equipment and structural surfaces in the MSSS/EPA/SGBB were divided into 20 survey units, encompassing 5,443 square meters of surface area, and classified according to their potential for containing residual radioactivity. Eleven survey units were classified as Class 1, five survey units as Class 2, and four survey units as Class 3. Survey data were collected from each survey unit according to data collection patterns and frequencies established for each classification. Scan measurements were performed over approximately one-third of the entire surface area and a total of 640 static measurements were collected as final survey data. In addition, 640 supplemental removable surface radioactivity measurements were collected.

The final survey data demonstrate that each survey unit meets the radiological criteria for unrestricted use specified in 10 CFR 20.1402. Based on the results of the final survey, Portland General Electric Company concludes the MSSS/EPA/SGBB meet the regulatory requirements for release to unrestricted use.

The MSSS/EPA/SGBB were some of the first areas on the plant site to undergo remediation. Early remediation activities preceded the LTP by several years and were performed under the assumption that, for ALARA purposes, detectable levels of radioactivity had to be removed. As a result, areas with low levels of detectable radioactivity were remediated. Later, these areas, classified as Class 2 under the LTP, would not have been remediated since pre-remediation levels of radioactivity were below the radiological criteria for unrestricted use. Due to the low levels of radioactivity, these areas would not have been remediated for ALARA purposes, either.

## 1. INTRODUCTION

### 1.1 PURPOSE AND SCOPE

This report presents the results and conclusions of the final survey of the Main Steam Support Structure, Electrical Penetration Area, and Steam Generator Blowdown Building (MSSS/EPA/SGBB). It provides the information required by 10 CFR 50.82(a)(11), which demonstrates that the MSSS/EPA/SGBB meet the radiological criteria for unrestricted use specified in 10 CFR 20.1402. This report also documents the final survey was performed in accordance with the final survey process described in PGE-1061, "Trojan Nuclear Plant Defueled Safety Analysis Report and License Termination Plan (PGE-1078)," hereinafter referred to as the LTP.

### 1.2 DESCRIPTION

The MSSS/EPA/SGBB, shown in Figure 1-1, are found near the center of the industrial portion of the plant site, adjacent to the Trojan Nuclear Plant Containment Building, and are surrounded by the Auxiliary, Control, and Turbine Buildings. Their respective surface areas are shown in the following table.

**Surface Area**

Surfaces	Area (m <sup>2</sup> )
Main Steam Support Structure	2,127
Electrical Penetration Area	3,031
Steam Generator Blowdown Building	285
<b>Total Surface Area:</b>	<b>5,443</b>

The Main Steam Support Structure (MSSS) is located between the Containment Building and the Turbine Building and provided protection and support for the main steam isolation, power-operated relief and safety valves, as well as main steam and feedwater piping. The structure is constructed of reinforced concrete and structural steel.

The Electrical Penetration Area (EPA) is located north of the MSSS between the Containment, Control, and Auxiliary Buildings and housed Containment electrical penetrations. The EPA is constructed of reinforced masonry block and concrete.

The Steam Generator Blowdown Building is located south of the MSSS between the Containment Building and the Turbine Building and housed steam generator blowdown system components such as the blowdown tank, pump, and heat exchanger. The building is constructed of reinforced masonry block and concrete.

The MSSS/EPA/SGBB were prepared for final survey by a series of decommissioning activities, including radiological characterization, dismantlement and demolition, remediation, and turnover to final survey. A general description of these activities is given in Appendix A. Detailed decommissioning information as well as a brief radiological history is contained in the LTP,

Section 3. Radiological characterization data were gathered and analyzed. The results guided decisions regarding the need for, extent of, and most effective means of remediation. Contaminated structures, equipment, and components were dismantled or demolished and removed for disposal. Remaining structural surfaces were remediated, as needed, and then systematically turned over for final survey. An assessment of the operating and radiological history established the initial classification of MSSS/EPA/SGBB areas. In their post-final survey configuration, the MSSS/EPA/SGBB exist primarily as bare concrete, masonry block, and steel structural surfaces.

### 1.3 SITE RELEASE CRITERIA

The site release criteria applied to the final survey of the MSSS/EPA/SGBB correspond to the radiological criteria for unrestricted use given in 10 CFR 20.1402, which are:

1. Dose Criterion: The residual radioactivity that is distinguishable from background radiation results in a Total Effective Dose Equivalent (TEDE) to an average member of the critical group that does not exceed 25 mrem/yr, including that from groundwater sources of drinking water; and
2. ALARA Criterion: The residual radioactivity has been reduced to levels that are as low as reasonably achievable (ALARA).

#### 1.3.1 APPLICATION OF THE SITE RELEASE CRITERIA

Levels of residual radioactivity that correspond to the allowable radiation dose and ALARA levels of the site release criteria were derived by analysis of various scenarios and pathways (e.g., direct radiation, inhalation, ingestion) through which exposures could occur. These derived levels, referred to as Derived Concentration Guideline Levels (DCGLs), form the basis for the following four conditions which, when met, satisfy the site release criteria:

1. The average residual radioactivity above background is equal to or below the DCGL;
2. Individual measurements, representing small areas of residual radioactivity which exceed the DCGL, do not exceed the elevated measurement comparison DCGL;
3. Where one or more individual measurements exceed the DCGL, the average residual radioactivity passes the Sign statistical test; and
4. Remediation is performed where it is ALARA to reduce the levels of residual radioactivity to below the concentrations necessary to meet the DCGLs.

The manner in which these conditions were met is described in Section 4.2.



### 1.3.2 DERIVED CONCENTRATION GUIDELINE LEVEL

The residual radioactivity concentration levels on equipment and structural surfaces remaining in the MSSS/EPA/SGBB were compared to a gross activity DCGL of 21,000 dpm/100 cm<sup>2</sup>, with the exception of a relatively small area in the EPA. This exception is addressed in Appendix B. The gross activity DCGL was derived for surface residual radioactivity and developed using the methodology described in the LTP, Section 4.2.3, based on the radionuclide-specific screening DCGLs given in the LTP, Table 4-1.

Samples were collected from representative systems, structures, or components associated with the secondary system where the radioactivity detected would be due to primary system leakage into the secondary system. The samples were used to establish the radionuclide distribution of surface residual radioactivity. The samples were sent to an offsite laboratory for analysis and the laboratory results were used to calculate a gross activity DCGL value for each sample.

Several radionuclides of interest were detected in each of the samples. The single radionuclide detected in all the samples was <sup>137</sup>Cs. It accounted for the highest activity concentration, ranging from 83 to 99% of the total activity, in all but one of the samples. In that one sample, <sup>63</sup>Ni had the highest activity concentration and <sup>137</sup>Cs accounted for only 31% of the total activity. For all samples, alpha emitters were either not detected by sample analysis or were detected at activity concentrations that are insignificant in terms of dose contribution.

For purposes of calculating the DCGL, radionuclides of interest that were not detected were assumed present at their minimum detectable concentration (MDC). They were included in the DCGL calculation where their MDC exceeded 10% of their respective screening DCGLs. There was some variability in relative radionuclide fractions when one sample was compared to another. Therefore, the most conservative calculated value, 21,000 dpm/100 cm<sup>2</sup>, was selected as the gross activity DCGL. The radionuclide distribution assumed for this DCGL is shown in the following table.

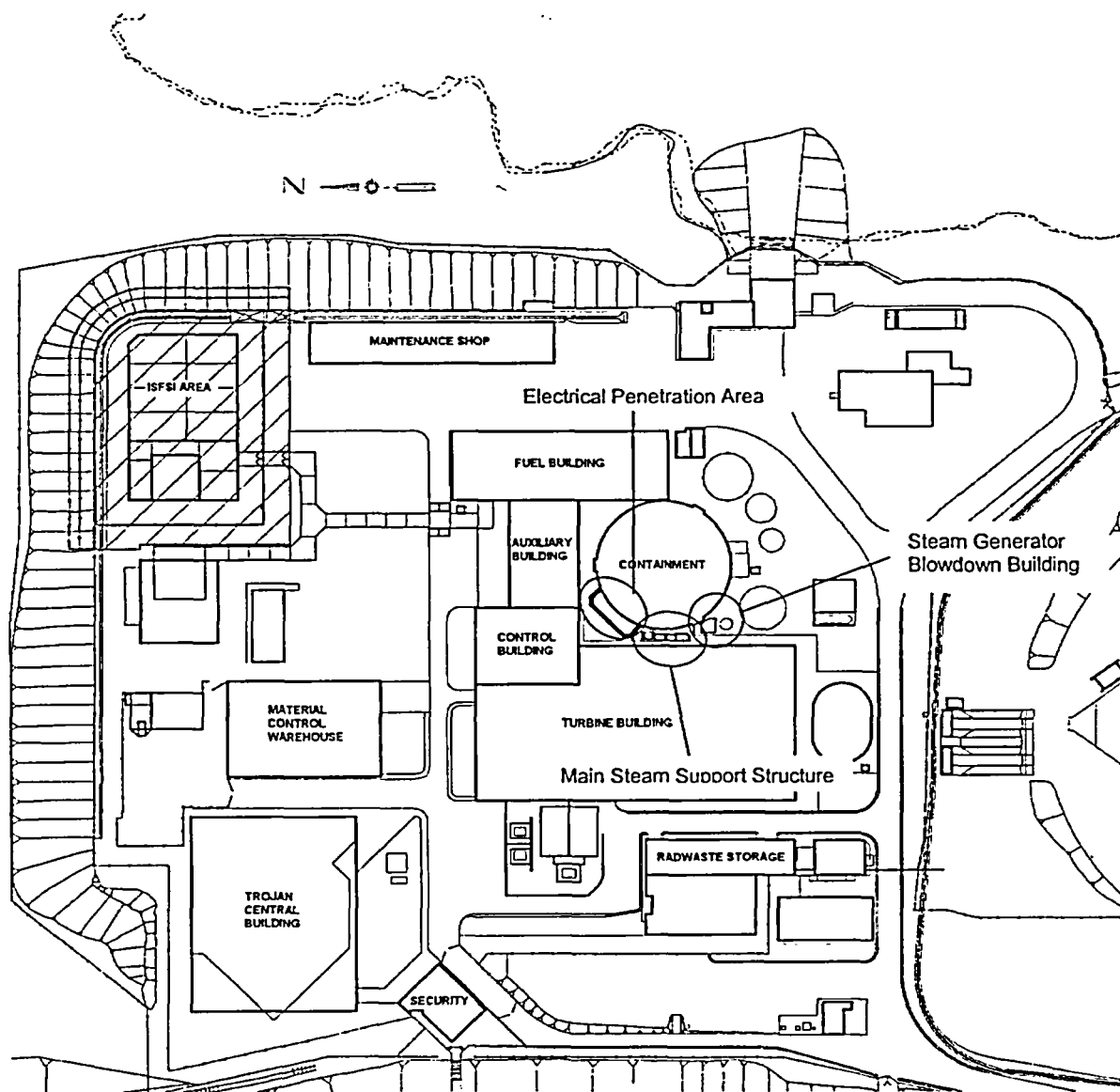
**Gross Activity DCGL Radionuclide Distribution**

Radionuclide	Activity Fraction	Surface Screening DCGL (dpm/100 cm <sup>2</sup> )	Activity Fraction/DCGL	Fraction of DCGL <sup>a</sup>	DCGL Dose Contribution (mrem/yr)
<sup>60</sup> Co	1.14E-01	7.1E+03	1.60E-05	0.335	8.4
<sup>137</sup> Cs	8.86E-01	2.8E+04	3.17E-05	0.665	16.6
<b>Totals:</b>	1.00E+00	---	4.77E-05	1.000	25.0

**Notes**

<sup>a</sup> This value is calculated by dividing the Activity Fraction/DCGL value for the radionuclide by the sum of the Activity Fraction/DCGL values for all the radionuclides.

Figure 1-1  
Trojan Plant Layout



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## **2. FINAL SURVEY DESIGN**

The final survey was designed and performed as described in the LTP, Section 4. The Data Quality Objectives (DQO) process was used to ensure that the final survey results were of sufficient quality to support the final decision. The MSSS/EPA/SGBB were divided into survey units of proper size, which were categorized and classified according to the type and potential of residual radioactivity. Instrumentation and survey methods, appropriate to the type of radiation being measured, were used to collect scan, static, and supplemental measurements. The measurements were collected in accordance with administrative and quality controls instituted to provide assurance of accurate results.

### **2.1 SURVEY UNITS**

The MSSS/EPA/SGBB were divided into 20 survey units based on the physical characteristics, the potential for elevated residual radioactivity, and the size of the area with similar potential for residual radioactivity. The survey units were categorized as structures with surface residual radioactivity, where the building occupancy dose model is applied.

#### **2.1.1 CLASSIFICATION**

Survey units were classified as Class 1, Class 2, or Class 3 based on the potential for residual radioactivity. Areas with residual radioactivity that exceeded the DCGL prior to remediation were divided into 11 Class 1 survey units. Areas with residual radioactivity detectable above background levels, but that did not exceed the DCGL prior to remediation, were divided into five Class 2 survey units. Areas with residual radioactivity not expected to be detectable above background levels were divided into four Class 3 survey units.

The classification process incorporated the working hypothesis that all areas had a potential for residual radioactivity above the DCGL. This initial assumption meant that a survey unit was initially considered Class 1 unless a basis for classification as Class 2 or Class 3 was identified. Early in the final survey planning process, little or no characterization data were available. Elevated radiation levels from contaminated surfaces, components, and equipment prevented the collection of meaningful radiological data. Some surfaces were physically inaccessible. During the course of decommissioning, the contaminated components and equipment were removed, surfaces were made accessible and remediated, and a substantial amount of characterization data was collected. The data, summarized in Table 2-1, showed that these areas could be properly classified as Class 2 or Class 3. This approach was consistent with that described in the LTP, in which areas are initially considered Class 1 areas unless a basis for classification as Class 2 or Class 3 is identified. Both scan and static measurement data collected during final survey confirmed the classification decisions made.

#### **2.1.2 SURVEY UNIT SIZE**

The MSSS/EPA/SGBB were divided into survey units ranging in size from 45 to 970 m<sup>2</sup>. Survey units were sized to ensure that survey data points were relatively uniformly distributed among areas of similar potential for residual radioactivity. Survey units were designed to have

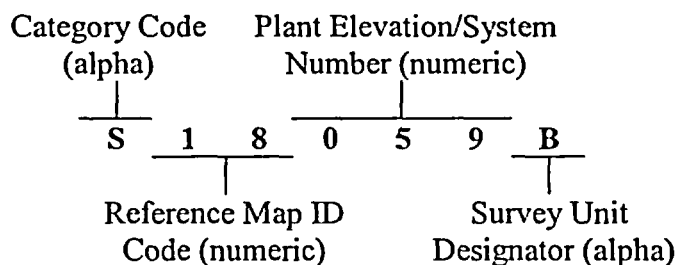
relatively simple shapes unless an unusual shape was appropriate for the operational history of the area. Where possible, existing building characteristics such as horizontal and vertical structural supports, walls, and rooms were used to define the boundaries of the survey units.

Class 1 survey units were limited to no more than 100 m<sup>2</sup> floor area; Class 2 survey units to no more than 1,000 m<sup>2</sup> floor area. Class 3 survey units were limited by practical considerations.

### 2.1.3 IDENTIFICATION NOMENCLATURE

Each survey unit was identified by a seven-digit identification code. The first digit represents the survey unit category. A single category code, S, for structure with surface residual radioactivity, was used. The next two digits represent the reference map identification code. For the MSSS/EPA/SGBB, "18" was used. The next three digits represent the plant elevation. Where the survey unit was other than a floor surface, this number represents the plant elevation from which the survey unit was accessed. The last digit is an alpha sequential survey unit designator that was assigned in sequential order of the survey unit being created. The following figure illustrates the survey unit identification code for the 2<sup>nd</sup> survey unit beginning at Elevation 59' of the MSSS/EPA/SGBB.

#### Survey Unit Identification Nomenclature



## 2.2 INSTRUMENTATION

Portable and laboratory instrumentation capable of detecting the radiation types and energies of interest were selected, calibrated, and maintained for final survey data collection. Commercially available radiation detection and measurement instrumentation was selected based on reliable operation, detection sensitivity, operating characteristics, and expected performance in the field. Radioactive sources used for calibration purposes are traceable to the National Institute of Standards and Technology (NIST) for both Trojan and vendor operations.

### 2.2.1 PORTABLE INSTRUMENTATION

Scan and static surface radioactivity measurements were performed using the Ludlum Model 2350-1 data logging survey meter with one of two types of Ludlum detectors: gas-flow proportional (GFP) or Geiger-Mueller (G-M). The following table gives the model number and a description of the detectors used.

### Portable Instrumentation Radiation Detectors

Ludlum Detector Model	43-68	43-68(S) <sup>a</sup>	44-9
Detector Type	GFP		G-M
Radiation of Interest	beta, gamma		beta, gamma
Measurement Type	scan, static		scan, static
Detector Area	126 cm <sup>2</sup>		15 cm <sup>2</sup>
Window Density	0.8 mg/cm <sup>2</sup> aluminized mylar		1.7 mg/cm <sup>2</sup> mica
Background (cpm) <sup>b,c</sup>	230 to 280		30 to 40
Instrument Efficiency (cnts/dis) <sup>c</sup>	0.39 to 0.43		0.15 to 0.17
Source Efficiency (cnts/dis)	0.50	0.30	0.50
Total Efficiency (cnts/dis) <sup>c</sup>	0.20 to 0.22	0.12 to 0.13	0.07 to 0.08
Count Time (min)	1	1	1
Static MDC (dpm/100 cm <sup>2</sup> ) <sup>c</sup>	310 to 340	520 to 560	2,750 to 3,080
Scan MDC (dpm/100 cm <sup>2</sup> ) <sup>c,d</sup>	710 to 790	1,220 to 1,310	8,610 to 9,810

#### Notes

<sup>a</sup> (S) denotes detector used with concrete scabbled surface source efficiency.

<sup>b</sup> Background count time is 1 minute.

<sup>c</sup> A range of values is given where multiple detectors were used.

<sup>d</sup> Scan MDC assumes 5 cm/sec scan rate and 7.5 cm detector width, for an equivalent count time of 0.025 min.

#### 2.2.1.1 Calibration and Maintenance

Survey instruments were calibrated for the radiation types and energies of interest. The following table provides typical information on the calibration sources used.

#### Typical Portable Instrumentation Calibration Sources

Source Description	Radiation of Interest	Source Geometry	Radio-nuclide	Source Activity	2 $\pi$ Surface Emission Rate
Acrylic-backed, w/0.9 mg/cm <sup>2</sup> mylar cover	beta	10 x 15 cm plate	<sup>99</sup> Tc	23,000 dpm	6,800 $\beta$ /min/100 cm <sup>2</sup>
Stainless steel-backed electro-plated Tc metal	beta	4.1 cm dia. disk	<sup>99</sup> Tc	20,000 dpm	12,000 $\beta$ /min

Radionuclide mixture ratios and varying energies were accounted for during calibration by using a calibration source with a conservative average energy as compared to the weighted average energy of the radionuclide mixture.

A total efficiency was established for GFP and G-M detectors used to survey the smooth surfaces. The total efficiency is the product of the instrument efficiency and the source (or surface) efficiency for a specified survey geometry or measurement technique. The instrument efficiency, i.e., the ratio between the net count rate of the instrument and the 2 $\pi$  surface emission rate of a radiation source, was determined by counting the source with the detector in a fixed position from the source (reproducible geometry). A jig was used to create the reproducible

geometry and a source to detector distance of 1 cm was normally used. A value of 0.5 was used for the source efficiency for smooth surfaces; a value of 0.3 for concrete scabbled surfaces. These values were established based on beta energies of the expected radionuclide distribution and on surface geometry considerations. The source efficiency for beta particle emission is the ratio between the number of radiation particles emerging from the measurement surface of the area being surveyed (the source) and the total number of radiation particles being released within that source per unit time.

#### 2.2.1.2 Instrument Response

Instrument response was checked before and after instrument use each day. A check source was used that emitted the same type of radiation (i.e., beta and/or gamma) as the radiation being measured and that gave a similar instrument response (see the preceding table). The response check was performed using a specified source-detector alignment that could easily be repeated. If the instrument failed its response check, it was not used until the problem was resolved. Measurements made between the last acceptable response check and the failed check were evaluated and, if appropriate, discarded.

#### 2.2.1.3 Minimum Detectable Concentration

A minimum detectable concentration (MDC) was determined for each instrument and scan and static measurement method that were used for survey data collection. Instruments used for scan measurements were capable of detecting radiations of interest to an MDC of less than 50% of the DCGL at a scan rate of 5 cm/sec. Instruments used for static measurements were capable of detecting radiations of interest to an MDC of less than 15% of the DCGL with a count time of one minute.

### 2.2.2 LABORATORY INSTRUMENTATION

On-site laboratory instruments were used to perform gas proportional counting of removable surface radioactivity samples (smears). Removable surface radioactivity measurements were performed using the Tennelec Model LB5100 GFP alpha/beta counting system described in the table below.

**Tennelec Model LB5100**

Parameter	Specification
Detector Type	GFP
Radiation Detected	beta
Measurement Type	Removable surface radioactivity
Detector Description	57 mm dia. Detector with 80 $\mu\text{g}/\text{cm}^2$ mylar window
Background (cpm)	1 to 6
Efficiency (cnts/dis)	0.332 to 0.340
Count Time (min)	2
MDC	14-27 dpm/100 $\text{cm}^2$

### 2.2.2.1 Calibration and Maintenance

The Tennelec Model LB5100 was calibrated for the radiation types and energies of interest by counting a radionuclide standard and comparing the results with the actual concentration on the certificate of calibration provided by the manufacturer of the radionuclide standard. The following table provides typical information on the radionuclide standards used.

**Typical Laboratory Instrumentation Calibration Sources**

Source Material	Radiation of Interest	Source Geometry	Source Density	Radionuclides of Interest	Source Activity
Stainless steel-backed metal	beta	4.1 cm dia. Disk	N/A	$^{137}\text{Cs}$	45,900 dpm
Stainless steel-backed metal	beta	4.1 cm dia. Disk	N/A	$^{137}\text{Cs}$	15,500 dpm

### 2.2.2.2 Daily Quality Control Standardization

Quality Control (QC) standardization was performed on the Tennelec Model 5100 prior to use each day. A QC standard was used that emitted the same type of beta radiation in the same type of counting geometry as the radiation being measured. Count results were graphed and reviewed for trends in detector performance. No count results fell outside the acceptable QC band and no negative trends were identified in instrument performance.

### 2.2.2.3 Minimum Detectable Concentration

The Tennelec Model 5100 was capable of detecting radiations of interest to less than 1% of the DCGL with a two minute count time.

## 2.3 SURVEY METHODS

Survey methods, as described in the following sections, were applied to collect scan and static measurements of surface residual radioactivity, and removable surface radioactivity measurements from structural surfaces.

### 2.3.1 SCAN MEASUREMENTS

Scan measurements were performed to locate radiation anomalies that might indicate elevated areas of residual radioactivity that require further investigation. The level of scan coverage was proportional to the potential for finding elevated areas of residual radioactivity based on the history of the survey unit.

Where no remediation had occurred, inaccessible surfaces (e.g, inside cracks or small bore penetrations) were assumed to have the same level of residual radioactivity as that found on adjacent accessible surfaces. Accessible surfaces were surveyed the same as other structure surfaces. Where remediation had occurred, an approximation of the residual radioactivity on the

inaccessible surface was made and the accessible surfaces were surveyed the same as other structure surfaces except that they were included in the scan coverage area when scanning was done at less than 100% coverage (i.e., Class 2 survey unit).

#### 2.3.1.1 Scan Coverage

Scan measurements of Class 1 survey units were performed over 100% of the surface area. Scan measurements of Class 2 survey units were performed over 20% of the surface area. For Class 3 survey units, scan measurements were performed over 5 to 10% of the surface area. In Class 2 and Class 3 survey units, those areas with the highest potential for elevated residual radioactivity (e.g., walkways, corners, remediated surfaces), based on professional judgment, were selected for scanning. The percent of scan coverage was determined based on the number and size of the selected areas.

#### 2.3.1.2 Surface Residual Radioactivity

Structure surfaces were scanned for beta-gamma emitting radionuclides. Typically, the detector was held less than 2 cm from the surface and moved at 5 cm/sec over an area of one square meter. Once the selected area was scanned, the latched value was electronically entered into the data logger memory.

Normally, the Ludlum Model 43-68 GFP detector with the data logger in ratemeter latching mode was used. For areas with size or geometry constraints, the Ludlum Model 44-9 pancake G-M detector was used.

Structure surfaces were not scanned for alpha-emitting radionuclides. Radiological characterization data indicated that alpha emitters were either not present or were present at activity concentrations that were insignificant in terms of dose contribution. Therefore, alpha-specific measurements of surface residual radioactivity were not performed.

### 2.3.2 STATIC MEASUREMENTS

Static measurements were collected at a frequency and at representative locations throughout the survey unit such that a statistically sound conclusion regarding the radiological condition of the survey unit could be developed.

#### 2.3.2.1 Surface Residual Radioactivity

Static measurements to detect beta-gamma emitting surface residual radioactivity on structure and plant system surfaces were normally collected using the Ludlum Model 43-68 GFP detector with the data logger in scaler mode. For areas with size or geometry constraints, the Ludlum Model 44-9 pancake G-M detector was used. For each discrete measurement, the detector was placed on or near the surface to be measured, a one-minute count was taken, and the value was electronically entered into the data logger memory.



#### 2.3.2.2 Number of Measurements

To simplify the final survey process and to ensure conservatism without an associated unreasonable expenditure of resources, a minimum number of 30 static measurements per survey unit were collected. This number of measurements provided a sample population of sufficient size to assure statistical confidence in the conclusions drawn from the survey data (see Section 4.1.3.3).

#### 2.3.2.3 Measurement Locations

Measurement locations in Class 1 and Class 2 survey units were selected using a random-start systematic spacing method based on a reference coordinate system appropriate for the survey unit. Scale drawings, maps, or photographs of the survey unit were prepared, along with an overlay of the reference coordinate system. A random number generator provided the coordinates of the starting point. Subsequent measurement locations were distributed around the starting point in a systematic pattern across the survey unit area. In some cases, this led to more than the minimum number of 30 static measurements being collected.

For Class 3 survey units, measurement locations were selected using the random selection process (i.e., the reference coordinate system and a random number generator). A random number generator provided the coordinates of each measurement location.

Measurement locations that did not fall within the survey unit area or that could not be surveyed due to health and safety considerations were replaced with other measurement locations determined using the random selection process.

#### 2.3.3 SUPPLEMENTAL MEASUREMENTS

Supplemental measurements to detect removable beta-gamma emitting surface residual radioactivity on structure surfaces were collected at static measurement locations. These measurements (i.e., smears) were collected to verify removable surface radioactivity was no more than 10% of the gross activity DCGL. Smears were counted in the laboratory using the Tennelec Model LB5100.

#### 2.3.4 MEASUREMENT LOCATION IDENTIFICATION

Measurement locations were clearly identified and documented to ensure they could be relocated if necessary. Actual measurement locations were permanently marked in the field and on survey maps. A unique number identifies each measurement location. The number convention, described in Section 2.4.4, allows survey data to be referenced to specific measurement locations identified on the photographs, drawings, or maps of the survey unit.

Physical gridding was used where practical and useful. It provided a mechanism for referencing scan measurements to a specific location. Permanent marker was used to mark the physical grid layout. The basic grid pattern used was a one-meter square grid.

## 2.4 SURVEY PERFORMANCE

### 2.4.1 SAMPLE HANDLING

Smear samples collected for laboratory analysis were tracked. When sample custody was transferred (e.g., when samples were sent to the lab for analysis), a sample tracking record accompanied the sample for tracking purposes. The sample tracking (or chain of custody) record documented the custody of samples from the point of collection until final results were obtained.

### 2.4.2 DATA INVESTIGATION

Locations, identified by scan or static measurements, with residual radioactivity that exceeded the DCGL were marked and investigated. Scan measurements were performed over 100 percent of the area being investigated. Static measurements in the form of scalar or integrated counts were performed at locations with the highest concentration of residual radioactivity. A posting plot was also generated to document the area investigated and the levels of residual radioactivity found.

Three investigations were performed. The results of the data investigations are summarized in Table 3-2. The details of the investigations are included in survey unit summary reports (see Appendix C). Depending on the results of the investigation, the identified areas within the survey unit were remediated and resurveyed, or the elevated measurement comparison was applied.

### 2.4.3 DATA RECORDING

Measurement data were corrected for instrument efficiency, source efficiency, detector area, and measurement size as applicable, and recorded in units appropriate for comparison to the DCGL. The recording units were dpm/100 cm<sup>2</sup>. Measured numerical values were recorded and included values below the MDC. Instrument and material backgrounds were not subtracted from residual radioactivity measurements gathered using portable instrumentation. Instrument background was subtracted from measurements analyzed using laboratory instrumentation.

Measurement results stored as final survey data constitute the final survey of record and are included in the data set for each survey unit. The data were used for calculations to determine compliance with the site release dose criterion. The affected data were stored as characterization data where a survey unit was remediated and/or reclassified during final survey.

### 2.4.4 DATA MANAGEMENT

The Survey Data Management System (SDMS) was used to store and process survey data. The SDMS is an electronic database that contains the final survey data and constitutes the quality record. Administrative controls for maintaining data integrity were incorporated into the software design. SDMS applications were tested as part of two separate tests: factory acceptance testing performed by the vendor and site acceptance testing performed by the Final Survey organization. A test plan and procedure were developed and documented for each functional

module. Documented test results include the acceptance test objectives, test results, test discrepancies, and corrective actions taken to resolve the discrepancies.

Raw survey data captured in the Ludlum Model 2350-1 data logger were downloaded, electronically converted to recording units, and uploaded to the SDMS. Other data, such as laboratory data, were manually entered into the SDMS for analysis.

For electronic storage and retrieval purposes, each survey measurement is identified by a unique 15-digit code. The first seven digits are the survey unit Identification (ID) code (see Section 2.1.3). The last eight digits are the measurement ID code. The first two digits of the measurement ID code identify the type of measurement, as shown in the following table, and the last six digits are the unique measurement location ID.

**Measurement Type Codes**

Type Code	Type Description
01	Static surface beta
04	Removable beta smears
08	Surface scanning beta

Records of survey data include the surveyor identification, measurement type, measurement location, measurement instrumentation used, measurement results, and time and date measurement was taken.

#### 2.4.5 QUALITY CONTROL MEASUREMENTS

Quality Control (QC) measurements were performed to identify, assess, and monitor measurement error and uncertainty attributable to measurement methods or analytical procedures used in the survey data collection process. Two types of QC measurements were performed on a regular basis: QC checks and repeat measurements. A third type of QC measurement, duplicate sample analysis, was performed but is unrelated to the final survey of the MSSS/EPA/SGBB. Where discrepancies were identified or acceptance criteria were not met, an evaluation was performed to determine the cause and identify any necessary follow-up actions.

##### 2.4.5.1 QC Checks

Three direct observations of survey set-up and close-out activities and scan and static measurements were performed. The observations were reviewed with the surveyors and follow-up actions such as on-the-spot correction, surveyor refresher training, changes in work process control, development of good practices, and procedural corrections and improvements were taken.

##### 2.4.5.2 QC Repeat Measurements

A set of fifteen repeat measurements was collected at each of eight measurement locations. The selected measurement locations represented a range of residual radioactivity from 4,000 to 6,000 dpm/100 cm<sup>2</sup>. For each data set, the mean value was calculated and compared to the

original measurement value. Measurement accuracy was deemed acceptable where the original measurement fell within  $\pm 20\%$  of the mean of the repeat measurement data set. The original measurements for four of the eight measurement locations selected did not meet the QC acceptance criterion.

An evaluation was performed which determined that the static measurement locations used for collecting the QC repeat measurements should not have been selected for use with the Ludlum Model 44-9 pancake G-M detector, which was used to collect that particular set of QC repeat measurements. As a general rule, repeat measurements are collected at static measurement locations with residual radioactivity above 5,000 dpm/100 cm<sup>2</sup>. That value is about three times background for a Ludlum Model 43-68 GFP detector, which is the primary detector used. That same value represents less than two times background for a Ludlum Model 44-9. The QC repeat measurement locations all had residual radioactivity levels around 5,000 dpm/100 cm<sup>2</sup>. Measurement locations with results at or near background levels are not used because of the relatively large measurement uncertainty. QC repeat measurements should be collected at measurement locations with residual radioactivity at levels greater than two times background, a practice which was inadvertently not applied in the collection of QC repeat measurements addressed here.

#### 2.4.6 PROCEDURES

Final survey activities were implemented and controlled using approved plant procedures. A list of those procedures is given in Table 2-2.

#### 2.4.7 TECHNICAL BASIS DOCUMENTS

Calculations and memoranda were prepared to document methods that were used, how the methods were derived, underlying assumptions for decisions that were made, the basis for deviations, and other information that warranted documentation. The technical basis documents developed to support/conduct the MSSS/EPA/SGBB final survey are listed in the table below.

##### Calculations

Number	Title
FSC 2002-04	Gross Activity DCGL for Systems, Structures, and Components Impacted Due to Primary to Secondary System Leakage
FSC 2002-08	Remediation Levels for the Primary to Secondary Affected Areas DCGL
FSC 2003-03	Site Specific Scabbled Concrete Source Efficiency Factor
FSC 2003-06	Area Factors for Use with the Primary to Secondary Affected Areas DCGL

##### Memoranda

Number	Title
FS-016-03	QC Measurement Evaluation 2003-04

#### 2.4.8 CONTROL OF VENDOR SUPPLIED SERVICES

Quality-related services, shown in the table below, were procured from qualified vendors whose internal Quality Assurance (QA) program was subject to approval in accordance with the Trojan QA Program.

##### Vendor Supplied Services

Vendor	Service
Ludlum Measurements, Inc.	Instrument repair and calibration services
Isotope Products Laboratories	NIST-traceable calibration and check sources
Thermo Nutech	Characterization sample analysis
Duke Engineering	Characterization sample analysis
SAIC	Characterization sample analysis

#### 2.4.9 TRAINING

Final survey data collection and technical support staff members were initially trained and qualified in procedures performed by them, and received annual refresher training thereafter. Surveyors completed scan and static survey practical training on a semi-annual basis. The following table lists the lesson modules developed and used to provide the training.

##### Final Survey Training Program

Module	Title
FS-S-11-LP	Final Survey Plan Overview
FS-S-22-LP	Survey Unit Design
FS-S-33-LP	Survey Instruments/Data Collection
FS-S-55-LP	Scan and Static Survey Practical
FS-S-66-LP	Survey Data Processing
FS-S-77-LP	SDMS Overview
FS-S-88-LP	Annual Refresher Training

Table 2-1

## Summary of Operational Survey Data

Survey ID Code <sup>a</sup>	Description	Operational Survey Results <sup>b</sup> (dpm/100 cm <sup>2</sup> )			Class		
		Coverage	Total	Removable	1	2	3
Main Steam Support Structure							
S18044A	MSSS Elev. 44' Access Area	100%	≤ 65,000	< 1,000	x		
S18044B	MSSS Room Below "B" Cubicle	100%	≤ 24,000	≤ 1,000	x		
S18044C	MSSS Room Below "C" Cubicle	100%	≤ 150,000	Not Available	x		
S18044D	MSSS Room Below "D" Cubicle	100%	≤ 25,000	≤ 1,000	x		
S18045E	MSSS Elev. 45' Passageway	100%	≤ 25,000	< 1,000	x		
S18059A	MSSS Elev. 59' "A" & "D" Cubicles	~100%	≤ 50,000	≤ 1,000	x		
S18059B	MSSS Elev. 59' "B" & "C" Cubicles	~100%	≤ 50,000	≤ 1,000	x		
S18069A	MSSS Elev. 69' to 100' "A" Cubicle	~70%	≤ 40,000	≤ 1,000	x		
S18069B	MSSS Elev. 69' to 100' "B" Cubicle	~50%	< 8,000	< 1,000		x	
S18069C	MSSS Elev. 69' to 79' "C" Cubicle	~100%	≤ 20,000	≤ 1,000	x		
S18069D	MSSS Elev. 69' to 100' "D" Cubicle	~100%	≤ 70,000	≤ 1,000	x		
S18079A	MSSS Elev. 79' to 100' "C" Cubicle	~25%	< 5,000	< 1,000		x	
S18100A	MSSS Elev. 100' Safety Relief Valve Area	~25%	≤ 10,000	< 1,000		x	
Electrical Penetration Area							
S18045A	EPA (major portion)	~75%	< 18,000	≤ 2,000		x	
S18045B	EPA (minor portion)	~100%	≤ 150,000	< 1,000	x		
S18045F	EPA Area Between Cont & Auxiliary Bldgs	~40%	< 5,000	< 1,000			x
S18045G	EPA Area Between Turbine & Control Bldgs	~50%	< 5,000	< 1,000			x
S18093A	EPA Elev. 93' Cont Purge Supply Fan Area	~5%	< 5,000	< 1,000			x
Steam Generator Blowdown Building							
S18045C	SGBB Interior	~10%	< 5,000	≤ 2,000		x	
S18045D	SGBB Exterior	0%	<5,000	<1,000			x

**Notes:**<sup>a</sup> See Section 2.1.3 for description of survey ID code nomenclature.<sup>b</sup> Survey results reported to nearest 1,000 dpm/100 cm<sup>2</sup> and represent pre-remediation values.

Table 2-2

## Final Survey Procedures

Number	Title
TPP 14-24	Transfer of Turnover Units
TPP 16-1	Material/Service Procurement and Control Processes <i>(for purchasing final survey materials and services)</i>
TPP 18-4	Trojan Quality Assurance Records Management Program <i>(for final survey quality records processing)</i>
TPP 18-9	Trojan Calculations <i>(for creating technical basis documents)</i>
TPP 18-10	Control of Quality-Related Computer Programs <i>(for SDMS revision validations)</i>
TPP 20-40	Control of Areas Surveyed for Final Site Release
TPP 22-1	Trojan Training Program <i>(for documenting final survey staff training)</i>
RP 95	Ludlum M2350-1 Data Logger Calibration Procedure <i>(for data logger electronic calibrations/checks only)</i>
RP 159	Conduct of Portable/Semi-Portable Radiation Protection Instrument Program <i>(for instrument tagging and calibration sticker)</i>
RP 450	Final Survey Administrative and Quality Controls
RP 451	Final Survey Unit Design
RP 452	Final Survey Data Collection
RP 453	Final Survey Data Processing
RP 454	Final Survey Background Reference Areas
RP 455	Final Survey Quality Control Measurements
RP 456	Control & Operation of Data Logger Survey Instruments
RP 457	Development and Application of Derived Concentration Guideline Levels
RP 458	Final Survey Remediation Levels and ALARA Evaluations
RP 459	Final Survey Instruments Calibration Program
RP 460	Final Survey Data Management
RP 461	Groundwater Sample Collection
RG 20-10	SDMS Applications Instructions
CL 161	LB5100 Planchet Counting System Calibration Procedure
LI 162	LB5100 Planchet Counting System Operation

### 3. FINAL SURVEY RESULTS

Final survey scan, static, and supplemental data were collected from the MSSS/EPA/SGBB. Scan measurements were performed over approximately 2,000 m<sup>2</sup> and a total of 640 static measurements were collected as final survey data. Table 3-1 summarizes the final survey results. In addition, 640 supplemental removable surface radioactivity measurements (or smears) were collected, with results all less than 1,000 dpm/100 cm<sup>2</sup>. Three data investigations were performed of four locations identified by scan measurements with elevated residual radioactivity. The four locations represent a total of approximately 0.1 m<sup>2</sup> of surface area with residual radioactivity above the DCGL. The results of the data investigations are summarized in Table 3-2. A detailed summary of final survey data for each survey unit is given in the survey unit summary reports in Appendices C, D, and E. Scan measurement data are provided in the Supplement. Measurement results given in the following sections are for direct surface beta measurements, unless otherwise noted.

#### 3.1 MAIN STEAM SUPPORT STRUCTURE

The MSSS, shown in Figures 3-1 through 3-3, comprises 10 Class 1 survey units and three Class 2 survey units. Three investigations were performed of areas identified by scanning with elevated residual radioactivity above the DCGL.

For Class 1 survey units, the surface area of each survey unit ranged from 45 to 310 m<sup>2</sup>. Scan measurements were performed over 100% of the surface area, with results ranging from 530 to 18,000 dpm/100 cm<sup>2</sup>, with small areas up to 27,000 dpm/100 cm<sup>2</sup>. Static measurements were collected from 30 to 36 locations in each survey unit, with results ranging from 340 to 7,100 dpm/100 cm<sup>2</sup>. Average measured values ranged from 730 to 2,500 dpm/100 cm<sup>2</sup>.

Scan measurements identified a total of four locations with elevated residual radioactivity in three different Class 1 survey units. Data investigations revealed 0.11 m<sup>2</sup> of surface area with residual radioactivity above the DCGL, and radioactivity levels up to 142,000 dpm/100 cm<sup>2</sup>. Three of the four locations were remediated and resurveyed. Post-remediation survey results showed radioactivity levels up to 13,000 dpm/100 cm<sup>2</sup>. The fourth location, which had been previously remediated, was accepted as is.

For Class 2 survey units, the surface area of each survey unit ranged from 123 to 311 m<sup>2</sup>. Scan measurements were performed over 20% of the surface area, with results ranging from 640 to 4,000 dpm/100 cm<sup>2</sup>. Static measurements were collected from 30 locations in each survey unit. Static measurement results ranged from 350 to 1,700 dpm/100 cm<sup>2</sup>, with average measured values ranging from 730 to 910 dpm/100 cm<sup>2</sup>.

#### 3.2 ELECTRICAL PENETRATION AREA

The EPA, shown in Figures 3-1 and 3-4, comprises a single Class 1 survey unit, a single Class 2 survey unit, and three Class 3 survey units. No areas were identified with elevated residual radioactivity above the DCGL. The surface area of the Class 1 survey unit, S18045B, was 74 m<sup>2</sup>. Scan measurements were performed over 100% of the surface area, with results ranging



from 1,900 to 9,800 dpm/100 cm<sup>2</sup>. Static measurements were collected from 40 locations with results ranging from 1,600 to 5,800 dpm/100 cm<sup>2</sup> and an average measured value of 2,800 dpm/100 cm<sup>2</sup>.

The surface area of the Class 2 survey unit, S18045A, was 836 m<sup>2</sup>. Scan measurements were performed over 20% of the surface area, with results ranging from 710 to 9,500 dpm/100 cm<sup>2</sup>. Static measurements were collected from 30 locations with results ranging from 460 to 1,500 dpm/100 cm<sup>2</sup> and an average measured value of 980 dpm/100 cm<sup>2</sup>.

For the three Class 3 survey units - S18045F, S18045G, and S18093A, the surface area of each survey unit ranged from 463 to 970 m<sup>2</sup>. Scan measurements were performed over 5% of the surface area, with results ranging from 700 to 2,200 dpm/100 cm<sup>2</sup>. Static measurements were collected from 30 locations in each survey unit. Static measurement results ranged from 500 to 1,600 dpm/100 cm<sup>2</sup>, with average measured values ranging from 980 to 1,200 dpm/100 cm<sup>2</sup>.

### 3.3 STEAM GENERATOR BLOWDOWN BUILDING

The SGBB, shown in Figure 3-1, comprises a single Class 2 survey unit and a single Class 3 survey unit. No areas were identified with elevated residual radioactivity above the DCGL.

The surface area of the Class 2 survey unit, S18045C, was 134 m<sup>2</sup>. Scan measurements were performed over 20% of the surface area, with results ranging from 1,000 to 1,800 dpm/100 cm<sup>2</sup>. Static measurements were collected from 34 locations with results ranging from 790 to 1,300 dpm/100 cm<sup>2</sup> and an average measured value of 1,000 dpm/100 cm<sup>2</sup>.

The surface area of the Class 3 survey unit, S18045D, was 151 m<sup>2</sup>. Scan measurements were performed over 10% of the surface area, with results ranging from 1,300 to 1,700 dpm/100 cm<sup>2</sup>. Static measurements were collected from 33 locations with results ranging from 650 to 1,300 dpm/100 cm<sup>2</sup> and an average measured value of 1,100 dpm/100 cm<sup>2</sup>.

Table 3-1

## Summary of Final Survey Results

Survey ID Code <sup>a</sup>	Description	Class			Survey Area (m <sup>2</sup> ) <sup>b</sup>		Scan Measurements (dpm/100 cm <sup>2</sup> )			Static Measurements (dpm/100 cm <sup>2</sup> )			
		1	2	3	Floor <sup>c</sup>	Other <sup>d</sup>	Coverage (%)	Low Value <sup>e</sup>	High Value <sup>e</sup>	Number	Low Value <sup>e</sup>	Mean <sup>e</sup>	High Value <sup>e</sup>
Main Steam Support Structure													
S18044A	MSSS Elev. 44' Access Area	x			40	270	100	1,600	13,000	33	1,600	2,200	5,600
S18044B	MSSS Room Below "B" Cubicle	x			8	91	100	1,000	9,400	30	890	1,600	2,100
S18044C	MSSS Room Below "C" Cubicle	x			4	41	100	2,100	13,000	30	1,700	2,100	3,300
S18044D	MSSS Room Below "D" Cubicle	x			4	42	100	2,100	6,600	30	1,700	2,500	7,100
S18045E	MSSS Elev. 45' Passageway	x			35	184	100	1,300	18,000	33	1,600	2,300	3,800
S18059A	MSSS Elev. 59' "A" & "D" Cubicles	x			13	143	100	1,000	20,000	32	1,000	2,200	4,600
S18059B	MSSS Elev. 59' "B" & "C" Cubicles	x			5	104	100	1,700	7,300	36	1,500	2,000	2,700
S18069A	MSSS Elev. 69' to 100' "A" Cubicle	x			22	197	100	530	27,000 <sup>f</sup>	31	340	1,100	2,300
S18069B	MSSS Elev. 69' to 100' "B" Cubicle		x		19	200	20	670	4,000	30	350	730	1,200
S18069C	MSSS Elev. 69' to 79' "C" Cubicle	x			14	53	100	1,300	13,000	34	750	1,700	2,800
S18069D	MSSS Elev. 69' to 100' "D" Cubicle	x			14	190	100	1,200	12,000	34	590	1,900	3,800
S18079A	MSSS Elev. 79' to 100' "C" Cubicle		x		2	121	20	640	1,400	30	410	910	1,300
S18100A	MSSS Elev. 100' Safety Relief Valve Area		x		54	257	20	640	3,200	30	440	860	1,700
Electrical Penetration Area													
S18045A	EPA (major portion)		x		25	811	20	710	9,500	30	460	980	1,500
S18045B	EPA (minor portion)	x			11	63	100	1,900	9,800	40	1,600	2,800	5,800
S18045F	EPA Area Between Containment & Auxiliary Bldg			x	89	599	5	770	1,900	30	610	1,200	1,600
S18045G	EPA Area Between Turbine Bldg & Control Bldg			x	197	773	5	700	2,200	30	500	1,000	1,500
S18093A	EPA Elev. 93' Containment Purge Supply Fan Area			x	96	367	5	750	1,600	30	620	980	1,400
Steam Generator Blowdown Building													
S18045C	SGBB Interior		x		18	116	20	1,000	1,800	34	790	1,000	1,300
S18045D	SGBB Exterior			x	0	151	10	1,300	1,700	33	650	1,100	1,300

## Notes:

<sup>a</sup> See Section 2.1.3 for description of survey ID code nomenclature.<sup>b</sup> Where survey unit consists of walls or ceilings only, survey unit was sized so as to preserve dose modeling assumptions.<sup>c</sup> Includes floor surface area only.<sup>d</sup> Includes balance of surface area in survey unit.<sup>e</sup> Survey results reported to two significant digits.<sup>f</sup> Data investigation performed and elevated measurement comparison applied.

Table 3-2

## Summary of Data Investigation Results and Actions Taken

Survey Unit	Class	Identified Locations		Total Area >DCGL (m <sup>2</sup> )	Action(s) Taken	Maximum Value (dpm/100 cm <sup>2</sup> ) <sup>a</sup>	
		Scan	Static			Before	After
Main Steam Support Structure							
S18044A	1	2	0	0.03	remediate/resurvey	142,000	13,000
S18044B	1	1	0	0.06	remediate/resurvey	33,000	2,000
S18069A	1	1	0	0.02	apply EMC	27,000	N/A
Electrical Penetration Area							
No data investigations performed.							
Steam Generator Blowdown Building							
No data investigations performed.							

Notes:<sup>a</sup> Values rounded to nearest 1,000 dpm/100 cm<sup>2</sup>; investigation level is 21,000 dpm/100 cm<sup>2</sup>.

Figure 3-1

MSSS/EPA/SGBB - Elevation 45'

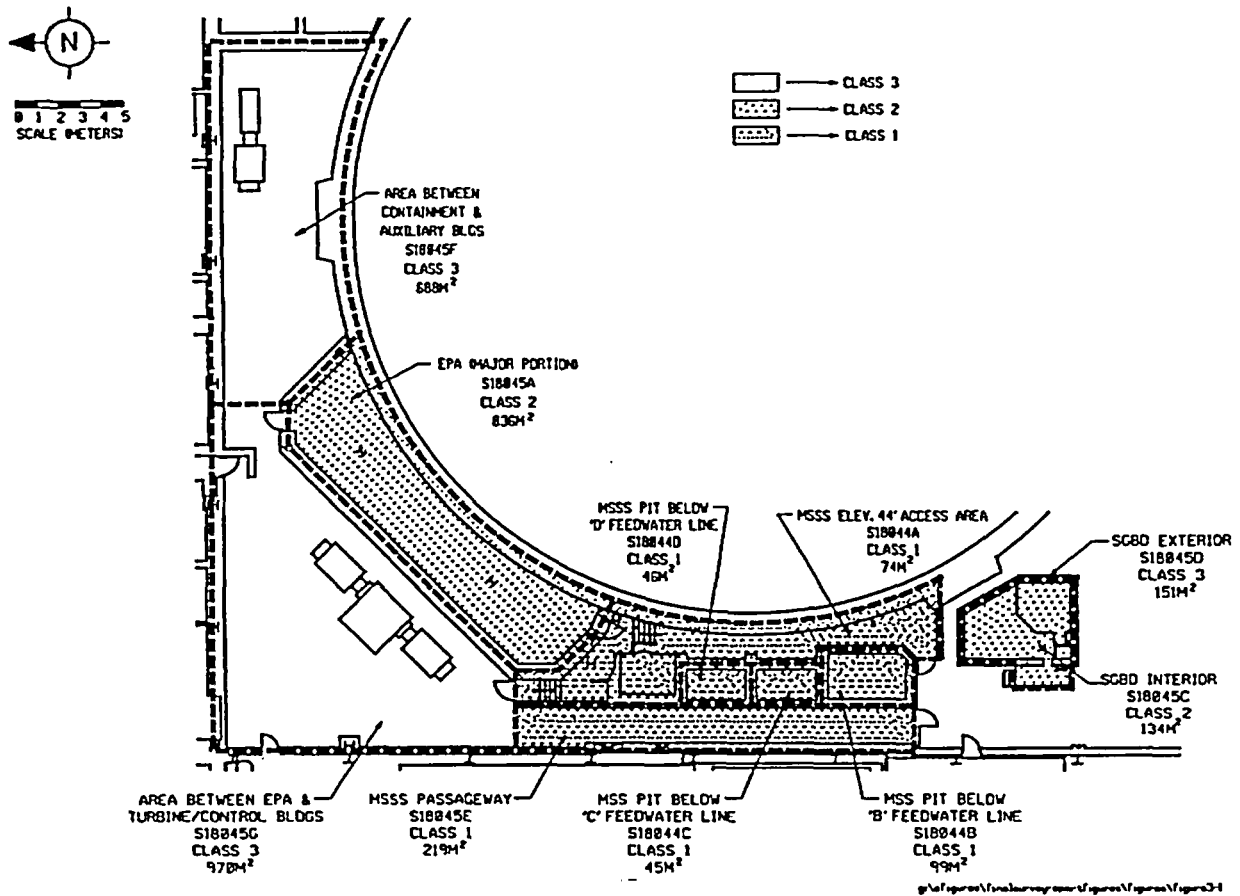
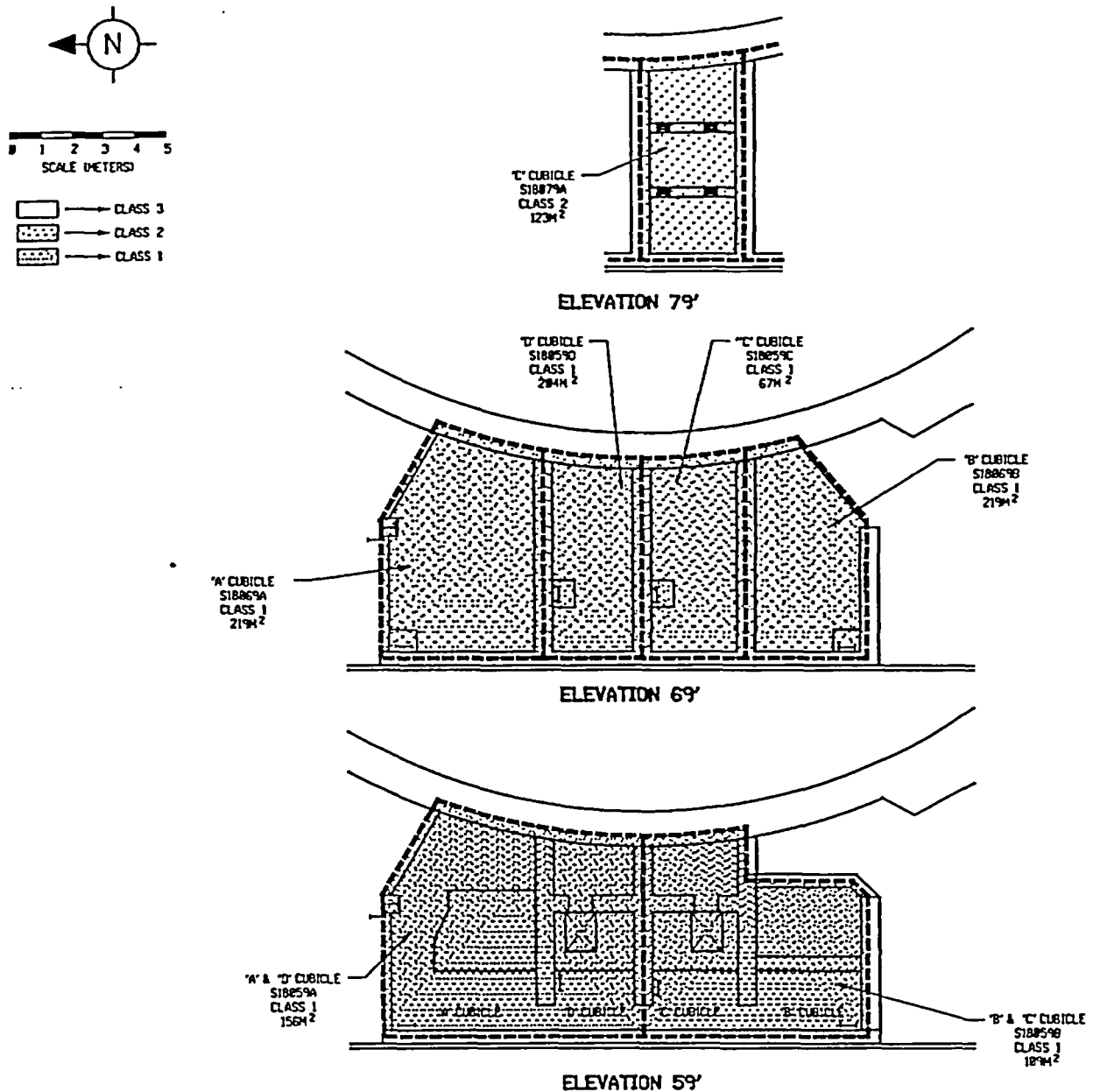


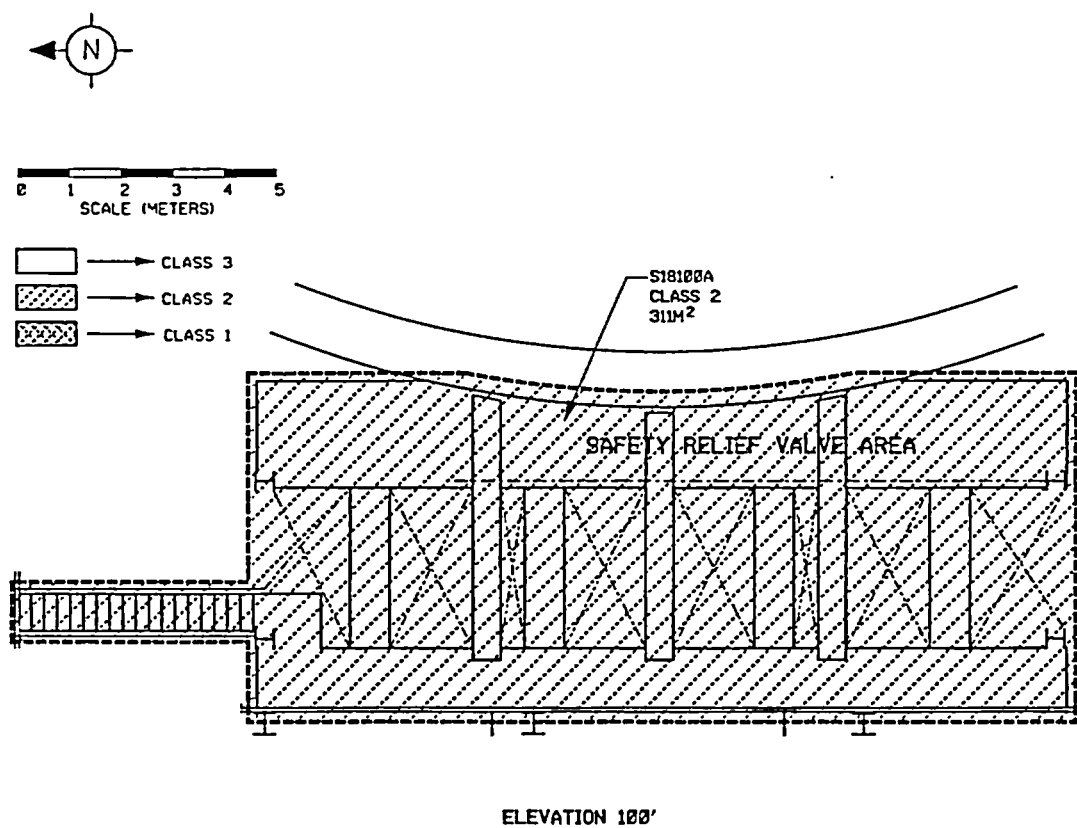
Figure 3-2

MSSS – Elevations 59', 69', and 79'



g:\figures\finalsurveyreport\figures\figure3-2

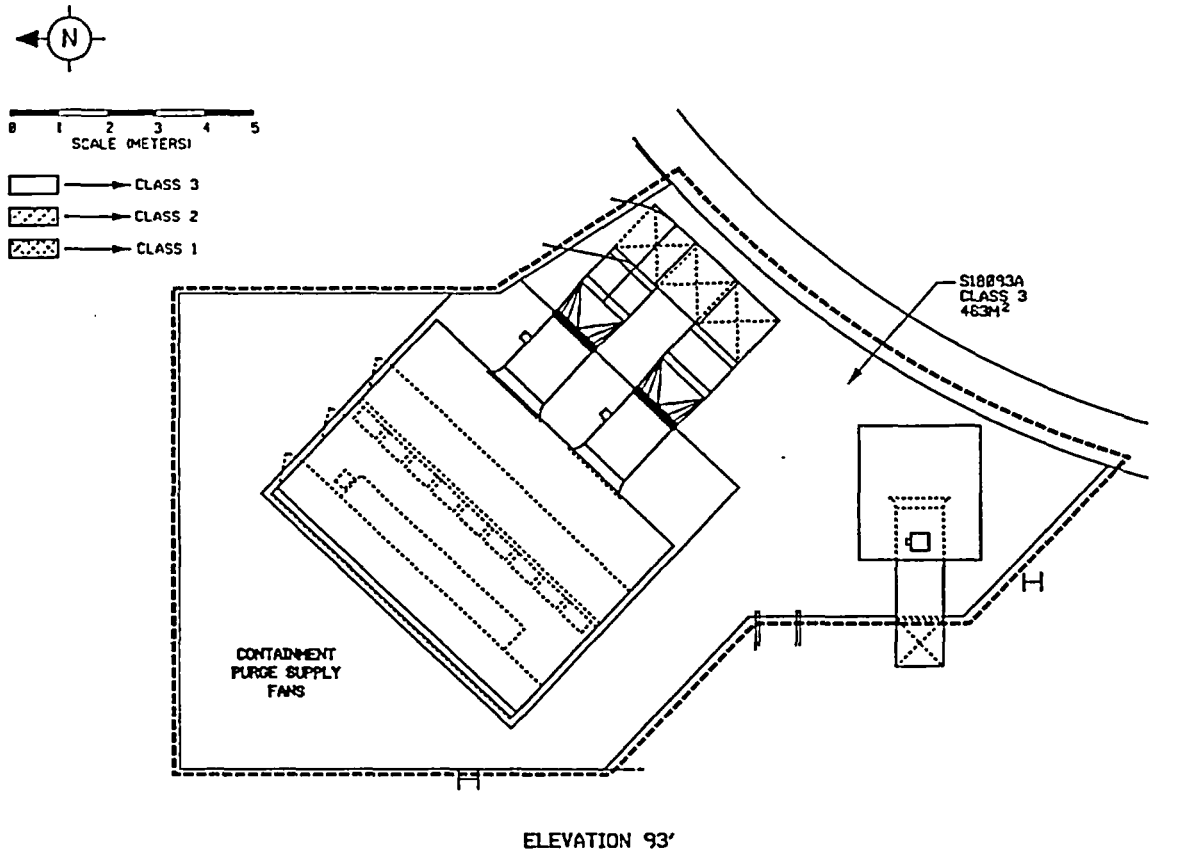
Figure 3-3  
 MSSS – Elevation 100'



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Figure 3-4

EPA Containment Purge Supply Area – Elevation 93'



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## 4. DATA ASSESSMENT

Final survey data were reviewed to ensure that they were of a sufficient type, quantity, and quality such that conclusions could be drawn with confidence regarding the radiological condition of the survey unit. Conclusions were drawn and documented in a separate release record prepared for each survey unit. A summary of the release record for each survey unit is given in Appendices C, D, and E.

### 4.1 DATA VERIFICATION AND VALIDATION

Data were reviewed to verify Data Quality Objectives (DQOs) established in the final survey design were met. Graphical representations and statistical comparisons of the data were made which provided both qualitative and quantitative information about the data. An assessment was performed to verify the data supported the underlying assumptions necessary for the statistical tests, if applicable.

#### 4.1.1 DATA QUALITY

The final survey data were verified authentic, appropriately documented, and technically defensible. Specifically, the following conclusions were made:

1. The instruments used to collect the data were capable of detecting the radiation of interest at or below the investigation level.
2. The calibration of the instruments used to collect the data was current and radioactive sources used for calibration were NIST traceable.
3. Instrument response was checked before and, where required, after data collection each day.
4. The MDCs and the assumptions used to develop them were appropriate for the instruments and the survey methods used to collect the data.
5. The survey methods used to collect the data were appropriate for the media and types of radiation being measured.
6. Special measurement methods used to collect the data were applied as warranted by survey conditions.
7. The custody of samples collected for laboratory analysis was tracked from the point of collection until final results were obtained.
8. The final survey data set consists of qualified measurement results that are representative of the current facility status and randomly collected as prescribed by the survey design.



#### 4.1.2 GRAPHICAL DATA REVIEW

Survey data were graphed to identify patterns, relationships, or potential anomalies in the data that might go unnoticed using purely numerical methods. A frequency plot was used to examine the general shape of the data distribution.

#### 4.1.3 BASIC STATISTICAL COMPARISONS

Statistical quantities (range, median, and standard deviation) were calculated for the final survey data set for each final survey unit. The calculated quantities were compared to the test values shown in the following table.

**Basic Statistical Comparisons**

Statistical Quantity	Test Value	Failure Response
Range (R)	$R \leq 5 \sigma$	Examine data for outliers
Median ( $\bar{u}$ )	$ (\bar{u} - \text{mean}) / \sigma  \leq 0.5$	Examine data for outliers and anomalies
Standard Deviation ( $\sigma$ )	$\sigma \leq 0.2 \times \text{DCGL}$	Determine if more measurements are necessary

Where the statistical quantity failed the comparison, the data set and/or survey design assumptions were examined. The following table summarizes the statistical quantity failures.

**Statistical Quantity Failures**

Survey Unit	Calculated Value	Acceptance Criterion	Reason for Failure		
			Number of Outliers	High/Low Value (dpm/100 cm <sup>2</sup> ) <sup>a</sup>	Balance of Data (dpm/100 cm <sup>2</sup> ) <sup>a</sup>
Range Test					
S18044A	4,074	≤ 3,846	1	6,000	<3,000
S18045C	537	≤ 519	1	1,000	<1,000 <sup>b</sup>
Median Test					
S18045B	0.541	≤ 0.500	N/A	N/A	N/A <sup>c</sup>
Standard Deviation Test					
No test failures					

**Notes:**

<sup>a</sup> Values rounded to nearest 1,000 dpm/100 cm<sup>2</sup>.

<sup>b</sup> Small standard deviation due to tight data set population distribution.

<sup>c</sup> Right-skewed data set.

##### 4.1.3.1 Range Test

Where the range was greater than 5 standard deviations, the data were examined for outliers. Outliers usually represented true extreme values of a distribution, such as areas of elevated residual radioactivity, and indicated more variability in the population than was expected. There were two range test failures (S18044A and S18045C); however, no data were discarded. The

failures were generally caused by a very tight distribution with a single outlier with elevated results compared to the rest of the data set.

#### 4.1.3.2 Median Test

Failure of the median test indicates large differences between the mean and the median and is an indication of the skewness in the data, warranting an examination of the data for outliers or anomalies. There was a single median test failure (S18045B); however, no data were discarded. The failure was caused by a right-skewed data set.

#### 4.1.3.3 Standard Deviation Test

Where the value of the calculated standard deviation was larger than that estimated in the survey design (the initial design value was  $0.2 \times \text{DCGL}$ ), an insufficient number of measurements may have been taken and additional measurements may have been necessary. There were no failures of the standard deviation test.

As an additional measure of assurance, a retrospective power analysis was performed to verify the power of the Sign test would have been sufficient based on a minimum of 30 measurements collected and an actual standard deviation larger than that estimated in the survey design. The largest standard deviation from actual survey data collected was used (survey unit S18044D) along with survey design values contained in the LTP, Appendix 4-1, to construct the power analysis. The results, shown in the table below, indicate that fewer than 15 measurements per survey unit would have provided a sample population of sufficient size to assure statistical confidence in the conclusions drawn from the survey data. Therefore, the number of measurements collected was in all cases adequate.

**Retrospective Power Analysis Data**

Parameter	Value
Standard Deviation ( $\sigma$ )	$0.1 \times \text{DCGL}$
Lower Bound of Gray Region (LBGR)	$0.4 \times \text{DCGL}$
False Positive Decision Error ( $\alpha$ )	0.05
False Negative Decision Error ( $\beta$ )	0.05
Minimum Size of Sample Population	<15

## 4.2 SATISFACTION OF THE SITE RELEASE CRITERIA

Four conditions were established that, when met, satisfy the site release criteria (see Section 1.3.1). These conditions were applied to each survey unit as shown in Table 4-1.

#### 4.2.1 CONDITION #1 - MEAN TEST

Condition #1 requires that the average residual radioactivity above background be less than or equal to the DCGL. To determine if Condition #1 was met, the mean of the final survey unit data set for each survey unit was compared to the DCGL. In all cases, the average residual radioactivity was less than  $0.2 \times \text{DCGL}$ . Therefore, each survey unit satisfies Condition #1.

#### 4.2.2 CONDITION #2 - ELEVATED MEASUREMENT COMPARISON

Condition #2 requires that individual measurements, representing small areas of residual radioactivity that exceed the DCGL, do not exceed the elevated measurement comparison (EMC) DCGL. To determine if Condition #2 was met, the individual measurement in the single survey unit (S18069A) that exceeded the DCGL was compared to the EMC DCGL. The individual measurement was less than  $0.2 \times \text{EMC DCGL}$ . Therefore, the survey unit satisfies Condition #2.

The EMC DCGL was developed using the methodology and the area factors provided in the LTP, Appendix 4-1. The radionuclide-specific area factors given in the LTP could not be used directly to develop the EMC DCGL since the gross activity DCGL was derived based on a radionuclide distribution and not on a single radionuclide. Instead, a weighting method was applied using the radionuclide distribution and the relative activity fractions used to derive the gross activity DCGL. The radionuclides of interest were those used in the derivation of the gross activity DCGL. Area factors for use with the gross activity DCGL (except for the gross activity DCGL applied to survey unit S18045B) were calculated for areas of elevated residual radioactivity of  $1 \text{ m}^2$ ,  $4 \text{ m}^2$ , and  $9 \text{ m}^2$  in size. The area factors were 8.5, 2.0, and 1.0, respectively. As applied, areas smaller in size than  $1 \text{ m}^2$  were assumed to be  $1 \text{ m}^2$  and the  $1 \text{ m}^2$  value of 8.5 was used. Since there were no areas larger than  $1 \text{ m}^2$ , the EMC DCGL was 178,500 dpm/100  $\text{cm}^2$  ( $8.5 \times \text{DCGL}$ ).

#### 4.2.3 CONDITION #3 - SIGN TEST

Condition #3 requires that where one or more static measurements exceed the DCGL, the average residual radioactivity passes the Sign statistical test. To determine if Condition #3 was met, the Sign test would have been applied to the final survey data set of any survey unit with one or more static measurement above the DCGL. In this case, however, there were none. Therefore, each survey unit satisfies Condition #3.

The Sign statistical test was not applied to the final survey data set of any survey unit since none had one or more static measurements that exceeded the DCGL. The data provided statistically significant evidence that the level of residual radioactivity in the survey unit does not exceed the site release dose criterion. The results of the statistical test are the basis for the decision that the survey unit is acceptable for unrestricted release can be made with sufficient confidence and without further analysis. The Wilcoxon Rank Sum (WRS) statistical test was not used.

It is obvious that if all data measurements in the data set are less than the DCGL, the data set will always pass the Sign test. Therefore, the Sign test is not performed on such a data set.

#### 4.2.4 CONDITION #4 - ALARA EVALUATION

Condition #4 requires that remediation be performed where it is ALARA to reduce the levels of residual radioactivity to below the concentrations necessary to meet the DCGLs. The levels of residual radioactivity were considered ALARA once remediation actions, considered to be cost effective, were taken. To determine if Condition #4 was met, an ALARA evaluation was performed for every Class 1 or Class 2 survey unit. In all cases, the ALARA evaluation verified that remediation was performed where it was ALARA to do so. Therefore, each survey unit satisfies Condition #4.

The ALARA evaluation ensured that: (1) residual radioactivity had been reduced to levels that are as low as reasonably achievable, and (2) efforts to remove residual radioactivity were commensurate with the level of risk the residual radioactivity poses. The ALARA evaluation examined various remediation actions to determine which actions, if any, have a net benefit in further reducing the levels of residual radioactivity. The evaluation compared residual radioactivity levels to calculated remediation levels (see Appendix A) for possible remediation actions. The remediation action was taken where the level of residual radioactivity exceeded the remediation level. Conversely, if the concentration was less than the remediation level, the level of residual radioactivity was documented as ALARA and the remediation action was not performed. By their classification, Class 3 survey units are considered ALARA and no evaluation is performed.

Table 4-1

## Satisfaction of Conditions for Site Release

Survey ID Code	Description	Class			Condition #1 Mean Test		Condition #2 EMC			Condition #3 Sign Test		Condition #4 ALARA		Conclusion: Satisfies Release Criteria?
		1	2	3	Mean	% of DCGL	Area (m²)	Max Value	% of EMC	S+ Value	Critical Value	Rad Levels ALARA?	Remediated to ALARA?	
Main Steam Support Structure														
S18044A	MSSS Elev. 44' Access Area	x			2,200	10%	---	---	---	---	---	N	Y	Y
S18044B	MSSS Room Below "B" Cubicle	x			1,600	8%	---	---	---	---	---	Y	N/A	Y
S18044C	MSSS Room Below "C" Cubicle	x			2,100	10%	---	---	---	---	---	N	Y	Y
S18044D	MSSS Room Below "D" Cubicle	x			2,500	12%	---	---	---	---	---	N	Y	Y
S18045E	MSSS Elev. 45' Passageway	x			2,300	11%	---	---	---	---	---	N	Y	Y
S18059A	MSSS Elev. 59' "A" & "D" Cubicles	x			2,200	10%	---	---	---	---	---	N	Y	Y
S18059B	MSSS Elev. 59' "B" & "C" Cubicles	x			2,000	10%	---	---	---	---	---	N	Y	Y
S18069A	MSSS Elev. 69' to 100' "A" Cubicle	x			1,100	5%	0.02	27,000	15%	---	---	N	Y	Y
S18069B	MSSS Elev. 69' to 100' "B" Cubicle		x		730	3%	---	---	---	---	---	Y	N/A	Y
S18069C	MSSS Elev. 69' to 79' "C" Cubicle	x			1,700	8%	---	---	---	---	---	Y	N/A	Y
S18069D	MSSS Elev. 69' to 100' "D" Cubicle	x			1,900	9%	---	---	---	---	---	N	Y	Y
S18079A	MSSS Elev. 79' to 100' "C" Cubicle		x		910	4%	---	---	---	---	---	Y	N/A	Y
S18100A	MSSS Elev. 100' Safety Relief Valve Area		x		860	4%	---	---	---	---	---	Y	N/A	Y
Electrical Penetration Area														
S18045A	EPA (major portion)		x		980	5%	---	---	---	---	---	Y	N/A	Y
S18045B	EPA (minor portion)	x			2,800	13%	---	---	---	---	---	N	Y	Y
S18045F	EPA Area Between Containment & Auxiliary Bldg			x	1,200	6%	---	---	---	---	---	Y	N/A	Y
S18045G	EPA Area Between Turbine Bldg & Control Bldg			x	1,000	5%	---	---	---	---	---	Y	N/A	Y
S18093A	EPA Elev. 93' Containment Purge Supply Fan Area			x	980	5%	---	---	---	---	---	Y	N/A	Y
Steam Generator Blowdown Building														
S18045C	SGBB Interior		x		1,000	5%	---	---	---	---	---	Y	N/A	Y
S18045D	SGBB Exterior			x	1,100	5%	---	---	---	---	---	Y	N/A	Y

## 5. FINAL SURVEY CONCLUSION

The final survey of the MSSS/EPA/SGBB was performed in accordance with the LTP and its implementing procedures. Final survey data of adequate quantity and quality were collected from each of the 20 survey units. The survey data for each survey unit showed:

1. The average residual radioactivity, which included the background distribution, was less than the DCGL.
2. Individual measurements, representing small areas of residual radioactivity that exceeded the DCGL, did not exceed the EMC DCGL.
3. Since no individual measurements exceeded the DCGL, the average residual radioactivity passed the Sign statistical test.
4. Remediation was performed where it was ALARA to reduce the levels of residual radioactivity to below the concentrations necessary to meet the DCGLs.

These conditions satisfy the site release criteria established in the LTP and the radiological criteria for unrestricted use given in 10 CFR 20.1402 (see Section 1.3). Therefore, it is concluded that the MSSS/EPA/SGBB are suitable for release to unrestricted use.

## 6. REFERENCES

- 6-1 Code of Federal Regulations, Title 10, Part 20.1402, "Radiological Criteria for Unrestricted Use."
- 6-2 Portland General Electric Company Topical Report PGE-1061, "Trojan Nuclear Plant Defueled Safety Analysis Report and License Termination Plan (PGE-1078)"
- 6-3 Portland General Electric Company Topical Report PGE-8010, "Trojan Nuclear Quality Assurance Program."
- 6-4 Portland General Electric Company, "Trojan Nuclear Plant Radiological Site Characterization Report," Revision 0.1, February 8, 1995.

## **APPENDIX A**

### **SURVEY PREPARATION ACTIVITIES**

This appendix provides a general description of decommissioning activities in the nature of an historical assessment that was used to determine the final survey classification of each of the areas within the MSSS/EPA/SGBB. Detailed decommissioning information as well as a brief radiological history is found in the LTP, Section 3.

The MSSS/EPA/SGBB were prepared for final survey by a series of decommissioning activities, including radiological characterization, dismantlement or demolition, remediation, and turnover to final survey. Radiological characterization data were gathered and analyzed. The results guided decisions regarding the need for, extent of, and most effective means of remediation. Highly contaminated structures, equipment, and components were dismantled or demolished and removed for disposal. Remaining structure and equipment surfaces were remediated, as needed, and then systematically turned over for final survey. An assessment of the operation and radiological history established the initial classification of areas within the MSSS/EPA/SGBB.

### **RADIOLOGICAL CHARACTERIZATION**

Radiological characterization of the MSSS/EPA/SGBB was completed in two phases. The initial radiological characterization was performed as Phase I. It is documented in the "Trojan Nuclear Plant Radiological Site Characterization Report," Revision 0.1, dated February 8, 1995. Phase II involved routine radiological surveys, referred to as operational surveys. These surveys were used to support dismantlement and remediation activities. Areas that were not, or could not be, surveyed during Phase I were surveyed during Phase II. Based on the surveys gathered as part of Phase II characterization, the predominant beta-gamma emitters on structure surfaces affected by primary system to secondary system leakage were found to be  $^{60}\text{Co}$  and  $^{137}\text{Cs}$ .

### **DISMANTLEMENT AND DEMOLITION ACTIVITIES**

Most of the components and equipment in the MSSS/EPA/SGBB were removed and disposed of. Concrete walls were removed or decontaminated. Plate steel, structural steel, grating, ladders, and platforms were decontaminated in place or were removed by unbolting or cutting, and disposed of.

### **REMEDIATION ACTIVITIES**

Remaining structural and equipment surfaces were remediated using a variety of techniques ranging from wiping to surface material removal. Removable surface radioactivity was remediated via simple means such as wiping down an area and vacuuming to collect dirt and loose radioactivity from recesses and corners. These were considered good practices and were typically applied. Grinding or abrasive blasting were used to remove fixed radioactivity from steel and surfaces other than concrete. Concrete surfaces were remediated by scabbling.



Remediation levels were established for various types of remediation actions such as scrubbing, grinding, abrasive blasting, and scabbling. Remediation levels were developed using an unbiased analysis of remediation actions that could both avert future dose (a benefit to society) and cost money (a potential detriment to society). They are based on the methodology and assumptions given in the LTP, Section 2.4.2. Where the level of residual radioactivity exceeded the remediation level, the remediation action was taken. Conversely, if the concentration was less than the remediation level, the level of residual radioactivity was considered ALARA and the remediation action was not performed.

The remediation levels applied to the MSSS/EPA/SGBB are given below. The exception to this, which is addressed in Appendix B, are the remediation levels applied to survey unit S18045B.

#### Remediation Levels

Remediation Action	Action Level (dpm/100 cm <sup>2</sup> )
Hand scrubbing	25,000
Grinding	30,000
Abrasive blasting	65,000
Scabbling	78,000

The MSSS/EPA/SGBB were some of the first areas on the plant site to undergo remediation. Early remediation activities preceeded the LTP by several years and were performed under the assumption that, for ALARA purposes, detectable levels of radioactivity had to be removed. As a result, areas with low levels of detectable radioactivity were remediated. Remediation of these areas would not have been required by the remediation levels, shown above, that were later established.

#### TURNOVER

A systematic approach was established for the turnover of the MSSS/EPA/SGBB from the Decommissioning organization to the Final Survey organization. Dismantlement and remediation activities were completed in areas that could be isolated or controlled in such a manner as to minimize the potential for the reintroduction of contamination from ongoing decommissioning activities in adjacent or nearby areas. These work areas were then prepared for final survey data collection. The MSSS/EPA/SGBB were divided into four work areas, listed in the following table, each of which was turned over separately.

#### Turnover List

Turnover Checklist No.	Work Area Description
40	Steam Generator Blowdown Building (interior)
63	Electrical Penetration Area and adjacent outside areas
80	Steam Generator Blowdown Building (exterior)
82	Main Steam Support Structure

Prior to turnover, a walkdown of the work area was performed when the final configuration was known, usually near or after the completion of dismantlement and remediation activities. The physical state of the area and the scope of work necessary to prepare it for final survey were assessed during the walkdown. Requirements for access, isolation, and control were also addressed during the walkdown. Support activities necessary to conduct the final survey, such as scaffolding, interference removal, and electrical tag-outs, were identified. Safety concerns such as access to confined spaces, high walls, and ceilings were also identified.

Tools, equipment, and materials not needed for final survey data collection were removed. Housekeeping and clean-up activities were completed. Scaffolding and other temporary equipment needed for final survey data collection were put in place. Administrative and physical controls were instituted to minimize the possibility of introducing radioactive material from ongoing decommissioning activities in adjacent or nearby areas. These measures included personnel training, installation of barriers to control access to the area, installation of postings with access/egress requirements, and removing access to the area.

#### HISTORICAL ASSESSMENT AND INITIAL CLASSIFICATION

Based on an assessment of relevant historical information, an initial classification was assigned to the structural surfaces and equipment remaining following the completion of dismantlement, demolition, and remediation activities.

Information used in the assessment included the operational and radiological history of the area, the remediation activities performed in the area, and the radiological characterization data collected during decommissioning prior to turnover. Measurement results given in the following sections are for direct surface beta measurements, unless otherwise noted.

#### MAIN STEAM SUPPORT STRUCTURE

The MSSS was designated a Class 1 area, with the exception of the some vertical surfaces above the 69' and 79' elevations, including the safety relief valve area, which were designated Class 2 areas. Operational survey measurement results for the Class 1 areas generally indicated less than 50,000 dpm/100cm<sup>2</sup>; however, small areas with levels of up to 150,000 dpm/100 cm<sup>2</sup> were detected. For Class 2 areas, operational survey measurement results were less than 10,000 dpm/100 cm<sup>2</sup>. Smear results for Class 1 and Class 2 areas indicated removable surface radioactivity up to 1,000 dpm/100 cm<sup>2</sup>.

#### ELECTRICAL PENETRATION AREA

The EPA was designated a Class 2 area, with the exception of a lower wall and floor area, which was designated Class 1. Adjacent outside areas were designated Class 3 areas. Operational survey measurement results for the Class 1 area generally indicated levels of residual radioactivity less than 10,000 dpm/100 cm<sup>2</sup>, with small areas up to 150,000 dpm/100 cm<sup>2</sup>. Operational survey measurement results for the Class 2 area were less than 18,000 dpm/100 cm<sup>2</sup>. For the Class 3 area, results were less than 5,000 dpm/100 cm<sup>2</sup>. Smear results for all EPA areas indicated removable surface radioactivity of no more than 2,000 dpm/100 cm<sup>2</sup>.

## STEAM GENERATOR BLOWDOWN BUILDING

The SGBB interior was designated a Class 2 area. Interior concrete and masonry block surfaces were determined to have been painted at time of construction and the paint was not removed. The SGBB exterior was designated a Class 3 area. Operational survey measurement results for both the Class 2 and Class 3 areas indicated levels of residual radioactivity less than 5,000 dpm/100 cm<sup>2</sup>. Smear results indicated removable surface radioactivity of no more than 2,000 dpm/100 cm<sup>2</sup>.

## APPENDIX B

## SPECIAL HANDLING OF SURVEY UNIT S18045B

Survey unit S18045B consists of concrete floor and lower wall surfaces in the EPA on Elev. 45' that were heavily contaminated, largely due to leakage from the reactor coolant sampling system. Since the source of contamination was direct leakage from the primary system, it was judged appropriate to apply the Containment gross activity DCGL of 22,000 dpm/100 cm<sup>2</sup>. Remediation levels and area factors based on the Containment gross activity DCGL were also applied to survey unit S18045B. The gross activity DCGL of 21,000 dpm/100 cm<sup>2</sup>, developed for areas affected by primary to secondary system leakage, was applied to the balance of the MSSS/EPA/SGBB.

CONTAINMENT GROSS ACTIVITY DCGL

Samples were collected from representative surfaces in the Containment prior to surface remediation and were used to establish the radionuclide distribution of surface residual radioactivity. The samples were sent to an offsite laboratory for analysis and the laboratory results were used to calculate a gross activity DCGL value for each sample. Several radionuclides of interest were detected in each of the samples. The predominant beta-gamma emitters were found to be <sup>60</sup>Co and <sup>137</sup>Cs. Alpha emitters were either not detected by sample analysis or were detected at activity concentrations that are insignificant in terms of dose contribution. The radionuclide detected with the highest activity concentration was <sup>137</sup>Cs, which accounted for between 81 and 98% of the total activity of each sample. For purposes of calculating the DCGL, radionuclides of interest that were not detected were assumed present at their MDC. They were included in the DCGL calculation where their MDC exceeded 10% of their respective screening DCGLs. There was some variability in relative radionuclide fractions when one sample was compared to another. Therefore, the most conservative calculated value, 22,000 dpm/100 cm<sup>2</sup>, was selected as the gross activity DCGL. The radionuclide distribution assumed for this DCGL is shown below.

## Containment Gross Activity DCGL Radionuclide Distribution

Radionuclide	Activity Fraction	Surface Screening DCGL (dpm/100 cm <sup>2</sup> )	Activity Fraction/DCGL	Fraction of DCGL <sup>a</sup>	DCGL Dose Contribution (mrem/yr)
<sup>14</sup> C	4.07E-03	3.7E+06	1.10E-09	< 0.001	0.0
<sup>60</sup> Co	5.19E-02	7.1E+03	7.30E-06	0.161	4.0
<sup>90</sup> Sr	1.12E-02	8.7E+03	1.29E-06	0.028	0.7
<sup>134</sup> Cs	4.86E-03	1.3E+04	3.74E-07	0.008	0.2
<sup>137</sup> Cs	9.25E-01	2.8E+04	3.30E-05	0.728	18.2
<sup>241</sup> Pu	2.97E-03	8.8E+02	3.37E-06	0.074	1.9
Totals:	1.00E+00	---	4.53E-05	1.000	25.0

## Notes

<sup>a</sup> This value is calculated by dividing the Activity Fraction/DCGL value for the radionuclide by the sum of the Activity Fraction/DCGL values for all the radionuclides.

**REMEDICATION LEVELS**

Remediation levels, given below, were developed based on the Containment gross activity for remediation methods applied to the surfaces in the Containment. Remediation levels for concrete scabbling were not developed for Containment surfaces since nearly all of the surfaces were metal.

**Remediation Levels**

Remediation Action	Action Level (dpm/100 cm <sup>2</sup> )
Hand scrubbing	20,000
Grinding	20,000
Abrasive blasting	76,000
Material Removal	200,000

Concrete scabbling, abrasive blasting, and jack hammering were the remediation methods employed to remove the heavy surface contamination in survey unit S18045B. Based on the operational surveys of areas within survey unit S18045B, the remediation methods that were performed were effective.

**AREA FACTORS**

Area factors for use with the Containment gross activity DCGL were calculated for areas of elevated residual radioactivity of 1 m<sup>2</sup>, 4 m<sup>2</sup>, and 9 m<sup>2</sup> in size. The area factors were 8.0, 1.9, and 1.0, respectively. Since there were no areas of elevated residual radioactivity found in survey unit S18045B, the area factors were not used.

**TECHNICAL BASIS DOCUMENTS**

Calculations were prepared to document the derivation of the Containment gross activity DCGL, and the remediation levels and area factors for use with that DCGL.

**Technical Basis Documents****Calculations**

Number	Title
FSC 2001-01	Gross Activity DCGL for Containment
FSC 2001-03	Remediation Levels for the Containment Gross Activity DCGL
FSC 2001-06	Area Factors for Use with the Containment Gross Activity DCGL

## APPENDIX C

SURVEY UNIT SUMMARY REPORTS – MSSS

<u>Survey Unit ID Code</u>	<u>Page(s)</u>
S18044A .....	C-2 through C-8
S18044B.....	C-9 through C-12
S18044C.....	C-13 through C-16
S18044D .....	C-17 through C-20
S18045E.....	C-21 through C-24
S18059A .....	C-25 through C-29
S18059B.....	C-30 through C-34
S18069A .....	C-35 through C-40
S18069B.....	C-41 through C-46
S18069C.....	C-47 through C-52
S18069D .....	C-53 through C-59
S18079A .....	C-59 through C-64
S18100A .....	C-65 through C-70

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18044A  
 Survey Unit Name: MSSS Access Area

Classification: Class 1  
 Size (m<sup>2</sup>): 310

Data Quality Values

Type 1 Error: 0.05  
 Statistical Test: SGN

Type 2 Error: 0.05  
 Statistical Test Results: Sign test not required

Relative Shift: 3.0

Measurement Values

Measurement Type: Static Surface Beta  
 Measurement Units: dpm/100cm<sup>2</sup>

Number of Measurements: 33  
 DCGL: 21,000

Location	Value	Location	Value
S18044A01000001	1,956	S18044A01000026	1,569
S18044A01000002	3,462	S18044A01000027	1,569
S18044A01000003	1,550	S18044A01000028	1,869
S18044A01000004	1,850	S18044A01000029	1,762
S18044A01000005	3,193	S18044A01000030	1,887
S18044A01000006	2,425	S18044A01000031	1,894
S18044A01000007	5,624	S18044A01000032	1,825
S18044A01000008	2,406	S18044A01000033	2,243
S18044A01000009	1,831		
S18044A01000010	2,031		
S18044A01000011	1,819		
S18044A01000012	1,762		
S18044A01000013	2,212		
S18044A01000014	1,719		
S18044A01000015	1,944		
S18044A01000016	1,994		
S18044A01000017	2,312		
S18044A01000018	1,700		
S18044A01000019	2,925		
S18044A01000020	1,962		
S18044A01000021	1,887		
S18044A01000022	1,662		
S18044A01000023	2,368		
S18044A01000024	2,650		
S18044A01000025	1,725		

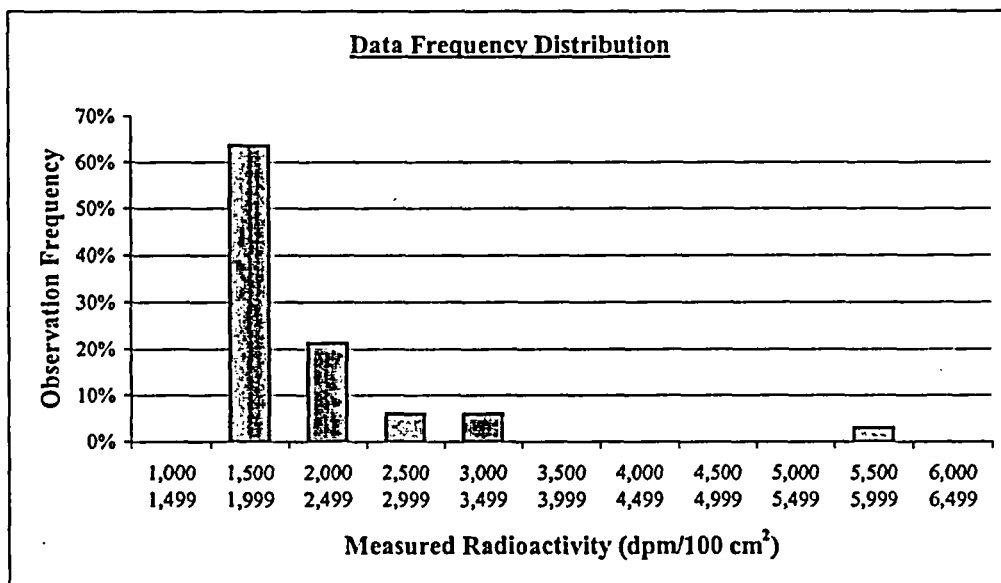
## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18044A  
 Survey Unit Name: MSSS Access Area

Classification: Class 1  
 Size (m<sup>2</sup>): 310

## Measurement Data Statistical Evaluation

Statistical Comparisons				Statistical Quantities	
Test	Calculated Value	Acceptance Criteria	Acceptable?	Range:	4,074
Range	4,074	3,846	See comment below	Median:	1,894
Median	0.358	0.500	Pass	Mean:	2,169
Mean	2,169	16,800	Pass	Std Dev:	769
Std Dev	769	4,200	Pass	Minimum:	1,550
All data less than DCGL; Sign statistical test not required.				Maximum:	5,624
				DCGL:	21,000



Plot Parameters		Interval	High End	Low End	Number of Observations	Observation Frequency
# of measurements:	33	1	1,499	1,000	0	0%
# of intervals:	11	2	1,999	1,500	21	64%
Interval increment:	500	3	2,499	2,000	7	21%
Minimum:	1,000	4	2,999	2,500	2	6%
Maximum:	6,499	5	3,499	3,000	2	6%
<b>Comment:</b> Range failure is a test artifact due to single measurement value greater than 5,500 dpm and a relatively small standard deviation. All data are valid and accepted for final survey release record.		6	3,999	3,500	0	0%
		7	4,499	4,000	0	0%
		8	4,999	4,500	0	0%
		9	5,499	5,000	0	0%
		10	5,999	5,500	1	3%
		11	6,499	6,000	0	0%
		Total:			33	100%



**FINAL SURVEY RESULTS SUMMARY**

**Survey Unit ID Code:** S18044A  
**Survey Unit Name:** MSSS Access Area

**Classification:** Class 1  
**Size (m<sup>2</sup>):** 310

**Judgmental and Miscellaneous Measurement Data**

**Measurement Type:** Surface Scanning Beta  
**Measurement Units:** dpm/100cm<sup>2</sup>  
**Minimum Value:** 1,621

**Scan Coverage (%):** 100  
**Investigation Level:** 21,000  
**Maximum Value:** 12,800

**Measurement Type:** Removable Beta  
**Measurement Units:** dpm/100cm<sup>2</sup>  
**Minimum Value:** 2  
**Maximum Value:** 21

**Number of Measurements:** 33  
**Investigation Level:** 2,100  
**Mean:** 10  
**Standard Deviation:** 4

**Discussion of Anomalous Measurement Data****Investigation Summary**

**Reason for Investigation:** Two original scan measurements exceeded investigation level.

**Elevated Measurement Comparision (EMC):**

<b>DCGL (Investigation Level):</b>	21,000
<b>Measurement Units:</b>	dpm/100cm <sup>2</sup>
<b>Maximum Value:</b>	141,900
<b>Size of Area Exceeding DCGL (m<sup>2</sup>):</b>	0.03
<b>Size of Survey Unit (m<sup>2</sup>):</b>	310
<b>Survey Unit Area &gt;DCGL (%):</b>	0.01
<b>EMC Value:</b>	N/A

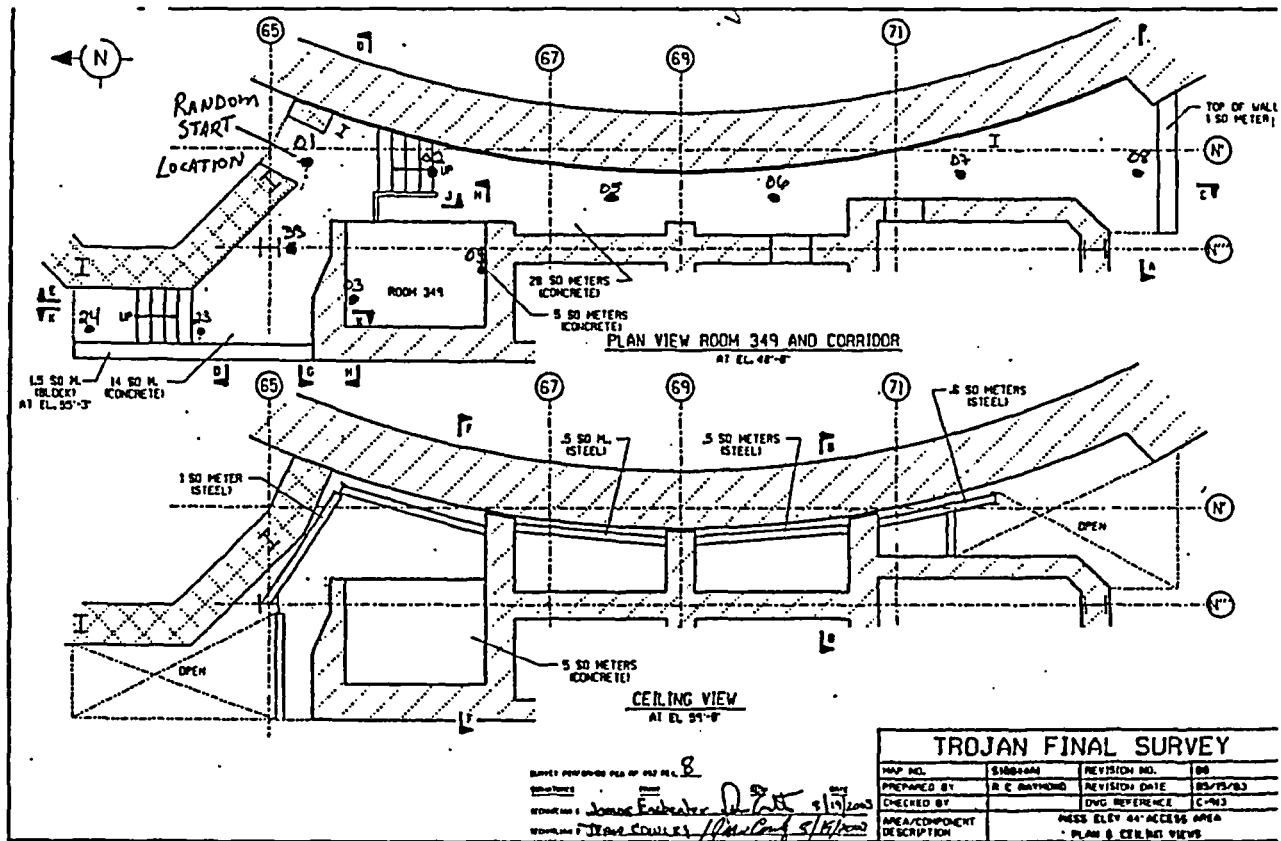
**Action Taken:** The two very small areas were remediated. Original scan results for locations 302 & 320 were deleted. Area resurveyed following remediation as locations 329 & 330.

**Basis for Action Taken:** Management decision to remediate and resurvey the elevated areas identified in wall penetrations rather than apply the DCGL<sub>emc</sub>.

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18044A  
 Survey Unit Name: MSSS Access Area

Classification: Class 1  
 Size (m<sup>2</sup>): 310

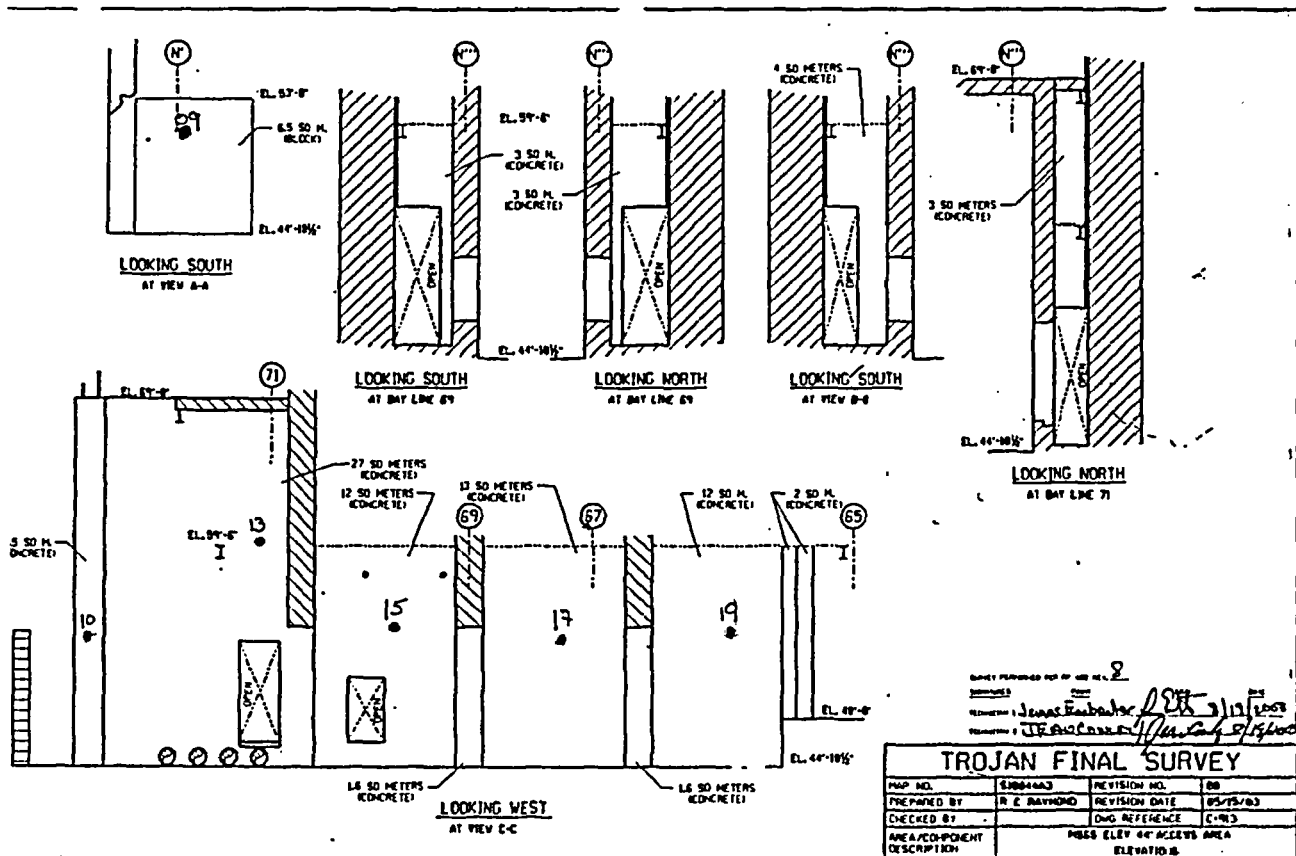
Static Measurement Locations Map



## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18044A  
 Survey Unit Name: MSSS Access Area

Classification: Class 1  
 Size (m<sup>2</sup>): 310

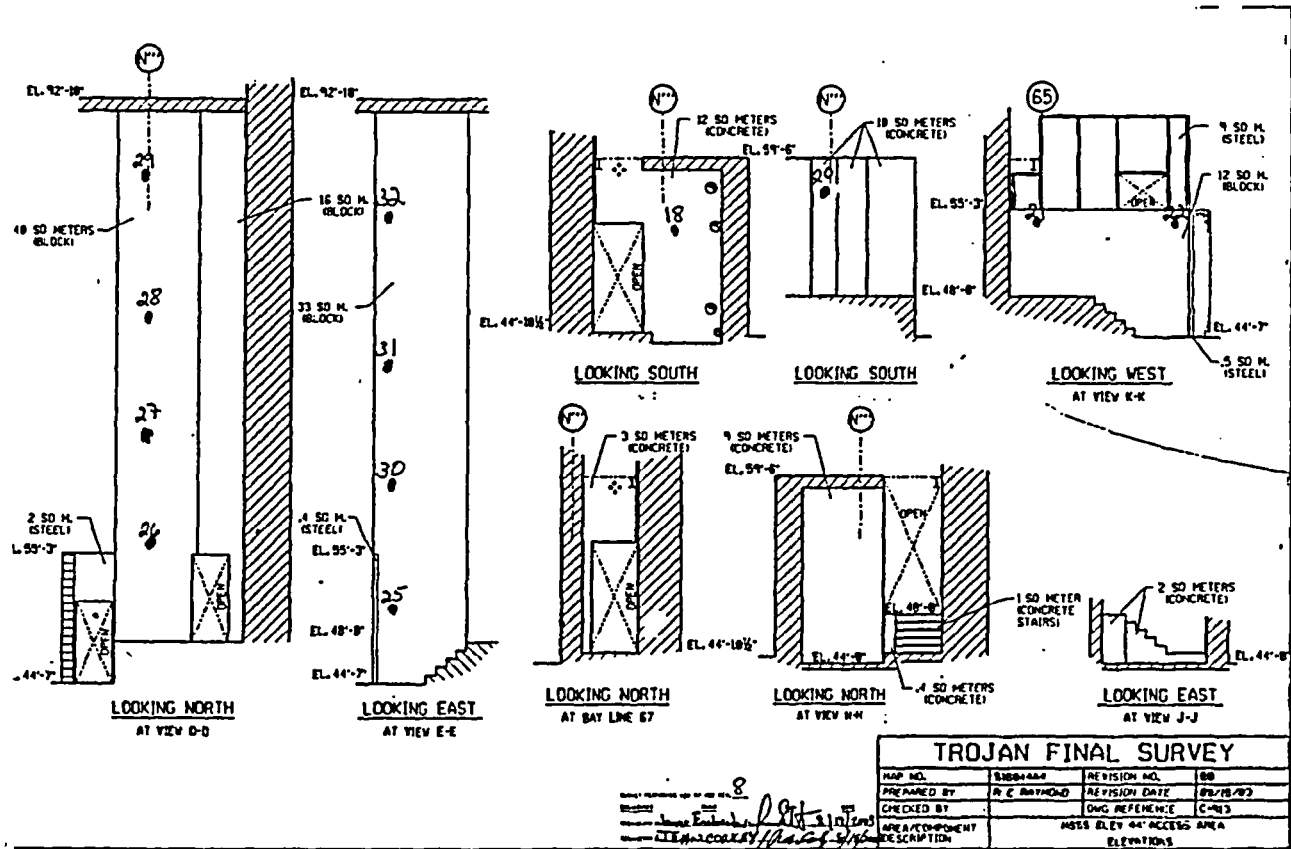
Static Measurement Locations Map

# FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18044A  
Survey Unit Name: MSSS Access Area

Classification: Class 1  
Size (m<sup>2</sup>): 310

## Static Measurement Locations Map



## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18044B

Survey Unit Name: Room Below B AFW Line

Classification: Class 1

Size (m<sup>2</sup>): 99Data Quality Values

Type 1 Error: 0.05

Statistical Test: SGN

Type 2 Error: 0.05

Statistical Test Results: Sign test not required

Relative Shift: 3.0

Measurement Values

Measurement Type: Static Surface Beta

Measurement Units: dpm/100cm<sup>2</sup>

Number of Measurements: 30

DCGL: 21,000

Location	Value	Location	Value
S18044B01000001	1,520	S18044B01000026	1,446
S18044B01000002	1,184	S18044B01000027	1,823
S18044B01000003	1,170	S18044B01000028	1,809
S18044B01000004	1,009	S18044B01000029	1,843
S18044B01000005	1,507	S18044B01000030	1,755
S18044B01000006	1,614		
S18044B01000007	1,601		
S18044B01000008	1,762		
S18044B01000009	1,641		
S18044B01000010	1,950		
S18044B01000011	1,554		
S18044B01000012	1,950		
S18044B01000013	1,318		
S18044B01000014	1,829		
S18044B01000015	1,312		
S18044B01000016	1,298		
S18044B01000017	1,090		
S18044B01000018	888		
S18044B01000019	2,072		
S18044B01000020	1,782		
S18044B01000021	1,856		
S18044B01000022	1,513		
S18044B01000023	1,829		
S18044B01000024	2,024		
S18044B01000025	1,971		

## FINAL SURVEY RESULTS SUMMARY

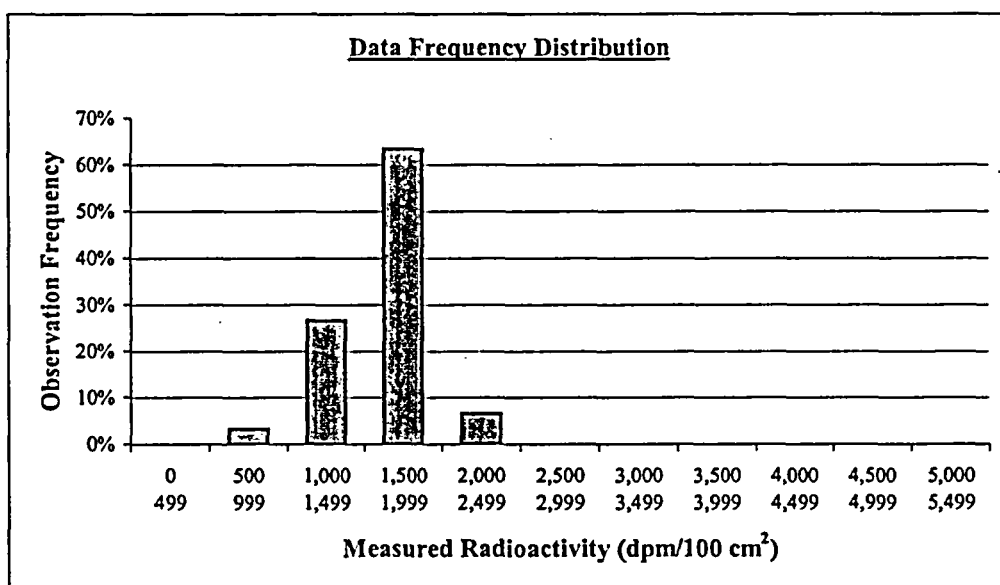
Survey Unit ID Code: S18044B  
 Survey Unit Name: Room Below B AFW Line

Classification: Class 1  
 Size (m<sup>2</sup>): 99

## Measurement Data Statistical Evaluation

Statistical Comparisons				Statistical Quantities	
Test	Calculated Value	Acceptance Criteria	Acceptable?	Range:	1,184
Range	1,184	1,600	Pass	Median:	1,628
Median	0.094	0.500	Pass	Mean:	1,597
Mean	1,597	16,800	Pass	Std Dev:	320
Std Dev	320	4,200	Pass	Minimum:	888
				Maximum:	2,072
				DCGL:	21,000

All data less than DCGL; Sign statistical test not required.



Plot Parameters		Interval	High End	Low End	Number of Observations	Observation Frequency
# of measurements:	30	1	499	0	0	0%
# of intervals:	11	2	999	500	1	3%
Interval increment:	500	3	1,499	1,000	8	27%
Minimum:	0	4	1,999	1,500	19	63%
Maximum:	5,499	5	2,499	2,000	2	7%
		6	2,999	2,500	0	0%
		7	3,499	3,000	0	0%
		8	3,999	3,500	0	0%
		9	4,499	4,000	0	0%
		10	4,999	4,500	0	0%
		11	5,499	5,000	0	0%
		Total:			30	100%

**Comment:**  
 NONE

**FINAL SURVEY RESULTS SUMMARY****Survey Unit ID Code:** S18044B**Classification:** Class 1**Survey Unit Name:** Room Below B AFW Line**Size (m<sup>2</sup>):** 99**Judgmental and Miscellaneous Measurement Data****Measurement Type:** Surface Scanning Beta**Scan Coverage (%):** 100**Measurement Units:** dpm/100cm<sup>2</sup>**Investigation Level:** 21,000**Minimum Value:** 1,045**Maximum Value:** 9,356**Measurement Type:** Removable Beta**Number of Measurements:** 30**Measurement Units:** dpm/100cm<sup>2</sup>**Investigation Level:** 2,100**Minimum Value:** 5**Mean:** 10**Maximum Value:** 18**Standard Deviation:** 4**Discussion of Anomalous Measurement Data****Investigation Summary****Reason for Investigation:** Two original scan measurements exceeded investigation level.**Elevated Measurement Comparision (EMC):**

<b>DCGL (Investigation Level):</b>	21,000
<b>Measurement Units:</b>	dpm/100cm <sup>2</sup>
<b>Maximum Value:</b>	32,960
<b>Size of Area Exceeding DCGL (m<sup>2</sup>):</b>	0.06
<b>Size of Survey Unit (m<sup>2</sup>):</b>	99
<b>Survey Unit Area &gt;DCGL (%):</b>	0.07
<b>EMC Value:</b>	N/A

**Action Taken:** The single small elevated area overlapping two scan grids was remediated. Original scan results for locations 027 & 028 were deleted. Area resurveyed following remediation as locations 099 & 120.

**Basis for Action Taken:** Management decision to remediate and resurvey the elevated areas identified on the floor rather than apply the DCGL<sub>emc</sub>.

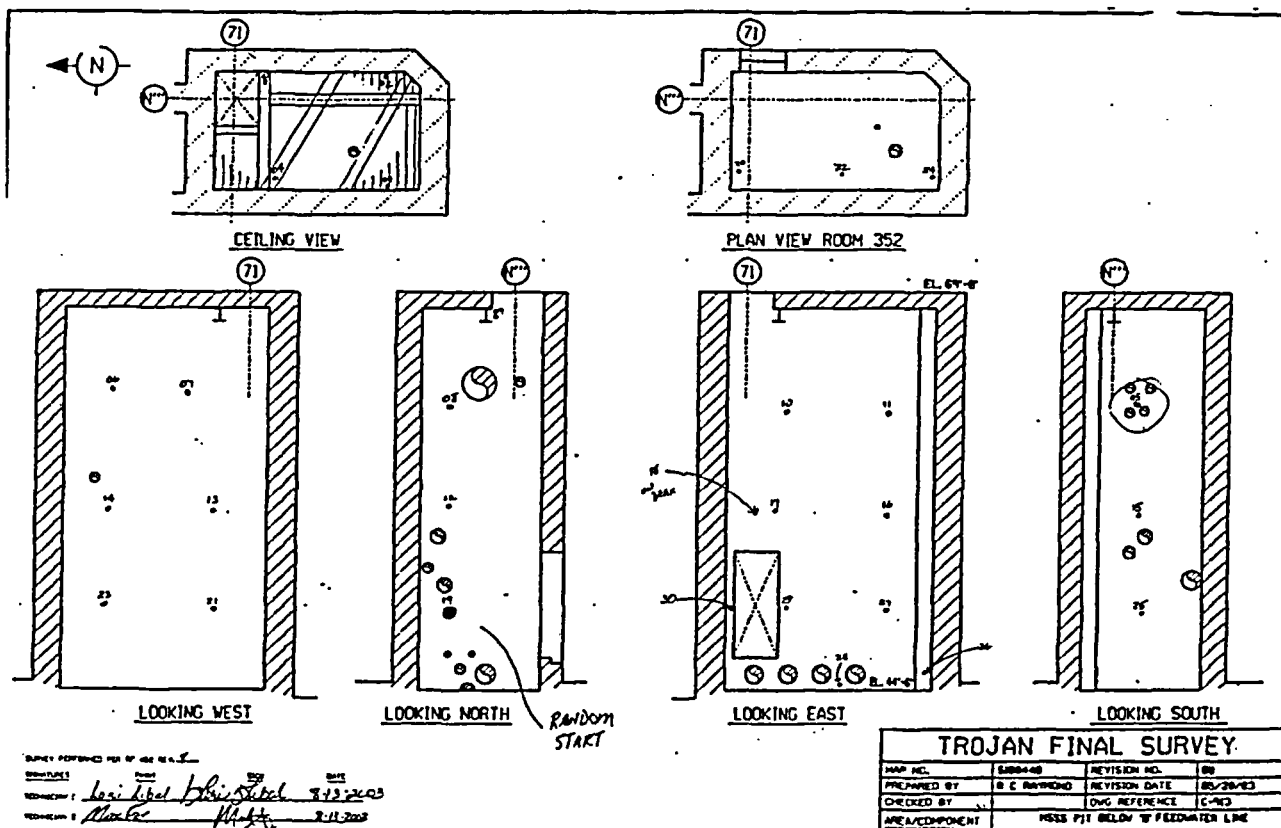


# FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18044B  
Survey Unit Name: Room Below B AFW Line

Classification: Class 1  
Size (m<sup>2</sup>): 99

## Static Measurement Locations Map



## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18044C

Classification: Class 1

Survey Unit Name: Room Below C AFW Line

Size (m<sup>2</sup>): 45Data Quality Values

Type 1 Error: 0.05

Type 2 Error: 0.05

Relative Shift: 3.0

Statistical Test: SGN

Statistical Test Results: Sign test not required

Measurement Values

Measurement Type: Static Surface Beta

Number of Measurements: 30

Measurement Units: dpm/100cm<sup>2</sup>

DCGL: 21,000

Location	Value	Location	Value
S18044C01000001	3,007	S18044C01000026	1,936
S18044C01000002	1,962	S18044C01000027	1,716
S18044C01000003	2,187	S18044C01000028	1,852
S18044C01000004	2,478	S18044C01000029	3,284
S18044C01000005	2,168	S18044C01000030	1,852
S18044C01000006	2,129		
S18044C01000007	2,110		
S18044C01000008	1,929		
S18044C01000009	2,542		
S18044C01000010	1,955		
S18044C01000011	2,484		
S18044C01000012	2,278		
S18044C01000013	2,103		
S18044C01000014	2,445		
S18044C01000015	2,826		
S18044C01000016	1,878		
S18044C01000017	1,665		
S18044C01000018	1,749		
S18044C01000019	1,826		
S18044C01000020	1,781		
S18044C01000021	1,962		
S18044C01000022	1,871		
S18044C01000023	2,000		
S18044C01000024	2,033		
S18044C01000025	1,813		

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18044C

Survey Unit Name: Room Below C AFW Line

Classification: Class 1

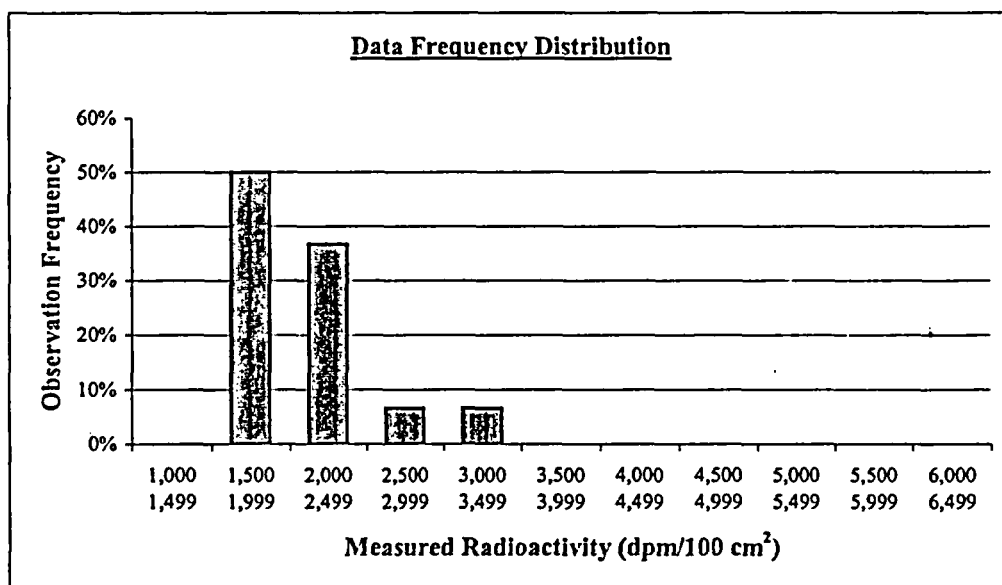
Size (m<sup>2</sup>): 45

## Measurement Data Statistical Evaluation

Statistical Comparisons			
Test	Calculated Value	Acceptance Criteria	Acceptable?
Range	1,619	1,959	Pass
Median	0.374	0.500	Pass
Mean	2,127	16,800	Pass
Std Dev	392	4,200	Pass

All data less than DCGL; Sign statistical test not required.

Statistical Quantities	
Range:	1,619
Median:	1,981
Mean:	2,127
Std Dev:	392
Minimum:	1,665
Maximum:	3,284
DCGL:	21,000



Plot Parameters	
# of measurements:	30
# of intervals:	11
Interval increment:	500
Minimum:	1,000
Maximum:	6,499

Comment:  
NONE.

Interval	High End	Low End	Number of Observations	Observation Frequency
1	1,499	1,000	0	0%
2	1,999	1,500	15	50%
3	2,499	2,000	11	37%
4	2,999	2,500	2	7%
5	3,499	3,000	2	7%
6	3,999	3,500	0	0%
7	4,499	4,000	0	0%
8	4,999	4,500	0	0%
9	5,499	5,000	0	0%
10	5,999	5,500	0	0%
11	6,499	6,000	0	0%
Total:			30	100%

**FINAL SURVEY RESULTS SUMMARY**

**Survey Unit ID Code:** S18044C

**Classification:** Class 1

**Survey Unit Name:** Room Below C AFW Line

**Size (m<sup>2</sup>):** 45

**Judgmental and Miscellaneous Measurement Data**

**Measurement Type:** Surface Scanning Beta

**Scan Coverage (%):** 100

**Measurement Units:** dpm/100cm<sup>2</sup>

**Investigation Level:** 21,000

**Minimum Value:** 2,087

**Maximum Value:** 13,220

**Measurement Type:** Removable Beta

**Number of Measurements:** 30

**Measurement Units:** dpm/100cm<sup>2</sup>

**Investigation Level:** 2,100

**Minimum Value:** 6

**Mean:** 11

**Maximum Value:** 17

**Standard Deviation:** 3

**Discussion of Anomalous Measurement Data**

**Investigation Summary**

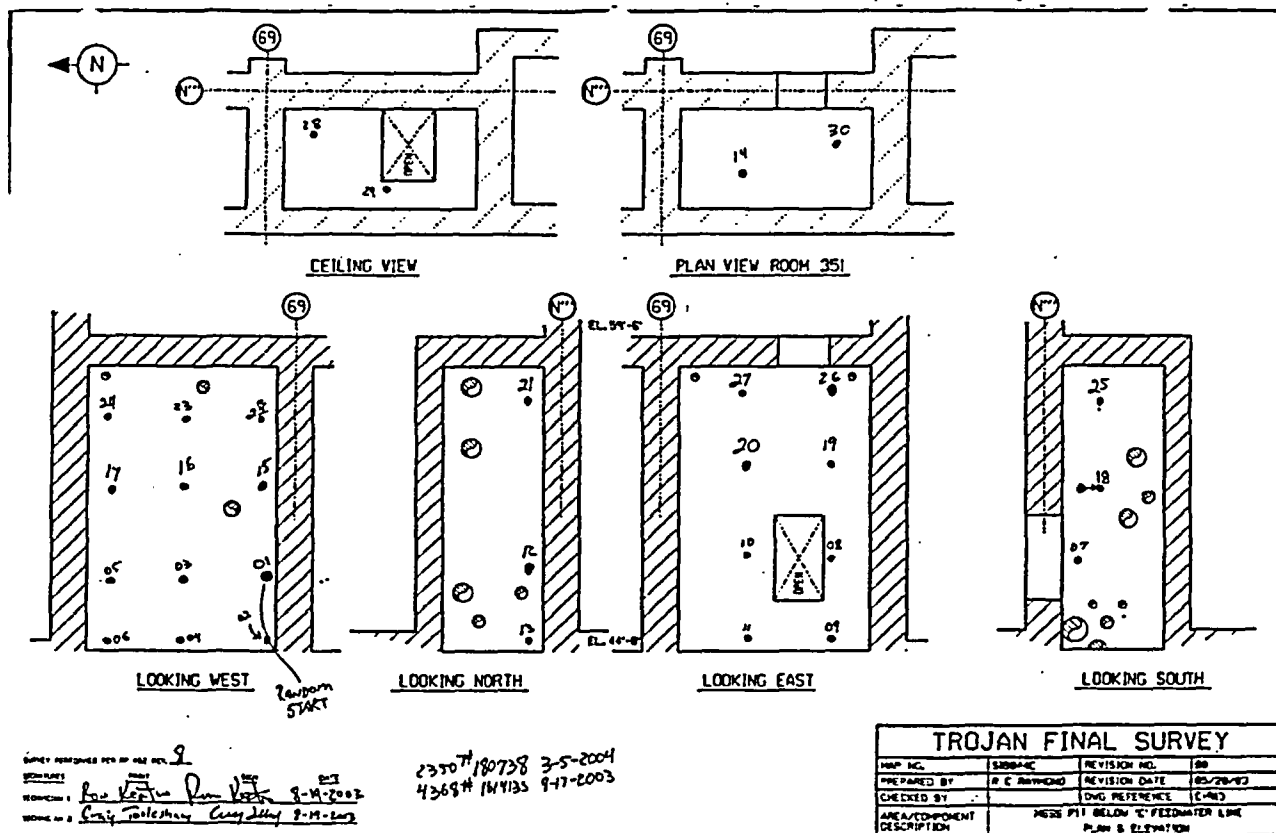
No investigation required for this survey unit. No anomalous measurement data.

# FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18044C  
Survey Unit Name: Room Below C AFW Line

Classification: Class 1  
Size (m<sup>2</sup>): 45

## Static Measurement Locations Map



## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18044D

Survey Unit Name: Room Below D AFW Line

Classification: Class 1

Size (m<sup>2</sup>): 46Data Quality Values

Type 1 Error: 0.05

Statistical Test: SGN

Type 2 Error: 0.05

Statistical Test Results: Sign test not required

Relative Shift: 3.0

Measurement Values

Measurement Type: Static Surface Beta

Measurement Units: dpm/100cm<sup>2</sup>

Number of Measurements: 30

DCGL: 21,000

Location	Value	Location	Value
S18044D01000001	7,072	S18044D01000026	2,479
S18044D01000002	2,239	S18044D01000027	2,472
S18044D01000003	1,723	S18044D01000028	2,466
S18044D01000004	2,245	S18044D01000029	2,460
S18044D01000005	2,020	S18044D01000030	2,454
S18044D01000006	2,387		
S18044D01000007	2,058		
S18044D01000008	2,097		
S18044D01000009	1,968		
S18044D01000010	1,974		
S18044D01000011	1,781		
S18044D01000012	2,755		
S18044D01000013	2,291		
S18044D01000014	2,452		
S18044D01000015	2,091		
S18044D01000016	1,936		
S18044D01000017	2,013		
S18044D01000018	2,129		
S18044D01000019	2,368		
S18044D01000020	2,742		
S18044D01000021	3,775		
S18044D01000022	4,975		
S18044D01000023	2,684		
S18044D01000024	2,168		
S18044D01000025	2,039		

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18044D

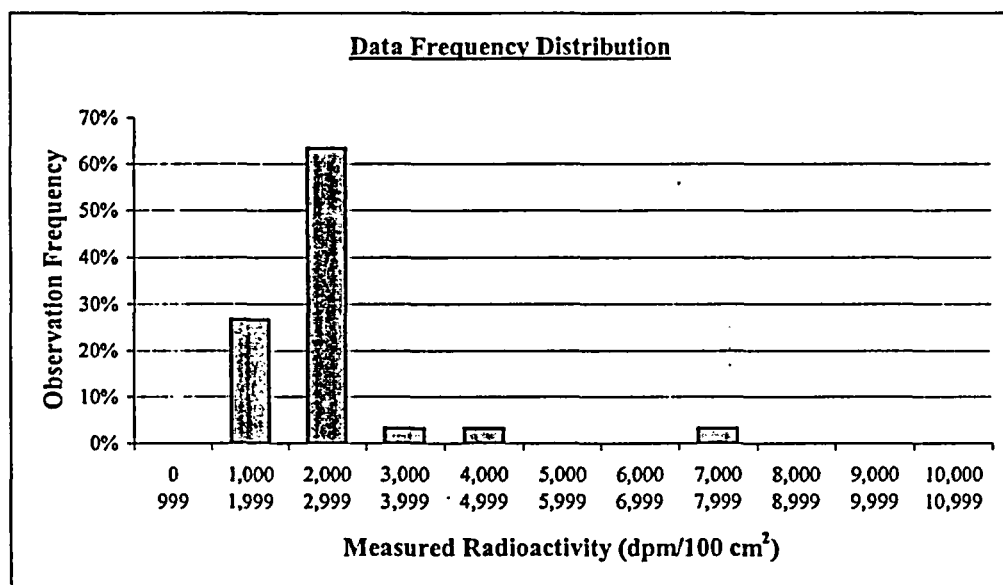
Survey Unit Name: Room Below D AFW Line

Classification: Class 1

Size (m<sup>2</sup>): 46

## Measurement Data Statistical Evaluation

Statistical Comparisons				Statistical Quantities	
Test	Calculated Value	Acceptance Criteria	Acceptable?	Range:	5,356
Range	5,356	5,419	Pass	Median:	2,149
Median	0.313	0.500	Pass	Mean:	2,488
Mean	2,488	16,800	Pass	Std Dev:	1,084
Std Dev	1,084	4,200	Pass	Minimum:	1,716
All data less than DCGL; Sign statistical test not required.				Maximum:	7,072
				DCGL:	21,000



Plot Parameters		Interval	High End	Low End	Number of Observations	Observation Frequency
# of measurements:	30	1	999	0	0	0%
# of intervals:	11	2	1,999	1,000	8	27%
Interval increment:	1,000	3	2,999	2,000	19	63%
Minimum:	0	4	3,999	3,000	1	3%
Maximum:	10,999	5	4,999	4,000	1	3%
		6	5,999	5,000	0	0%
		7	6,999	6,000	0	0%
		8	7,999	7,000	1	3%
		9	8,999	8,000	0	0%
		10	9,999	9,000	0	0%
		11	10,999	10,000	0	0%
		Total:			30	100%

**Comment:**  
NONE.

**FINAL SURVEY RESULTS SUMMARY**

**Survey Unit ID Code:** S18044D

**Classification:** Class 1

**Survey Unit Name:** Room Below D AFW Line

**Size (m<sup>2</sup>):** 46

**Judgmental and Miscellaneous Measurement Data**

**Measurement Type:** Surface Scanning Beta

**Scan Coverage (%):** 100

**Measurement Units:** dpm/100cm<sup>2</sup>

**Investigation Level:** 21,000

**Minimum Value:** 2,117

**Maximum Value:** 6,581

**Measurement Type:** Removable Beta

**Number of Measurements:** 30

**Measurement Units:** dpm/100cm<sup>2</sup>

**Investigation Level:** 2,100

**Minimum Value:** 2

**Mean:** 12

**Maximum Value:** 48

**Standard Deviation:** 8

**Discussion of Anomalous Measurement Data**

**Investigation Summary**

No investigation required for this survey unit. No anomalous measurement data.

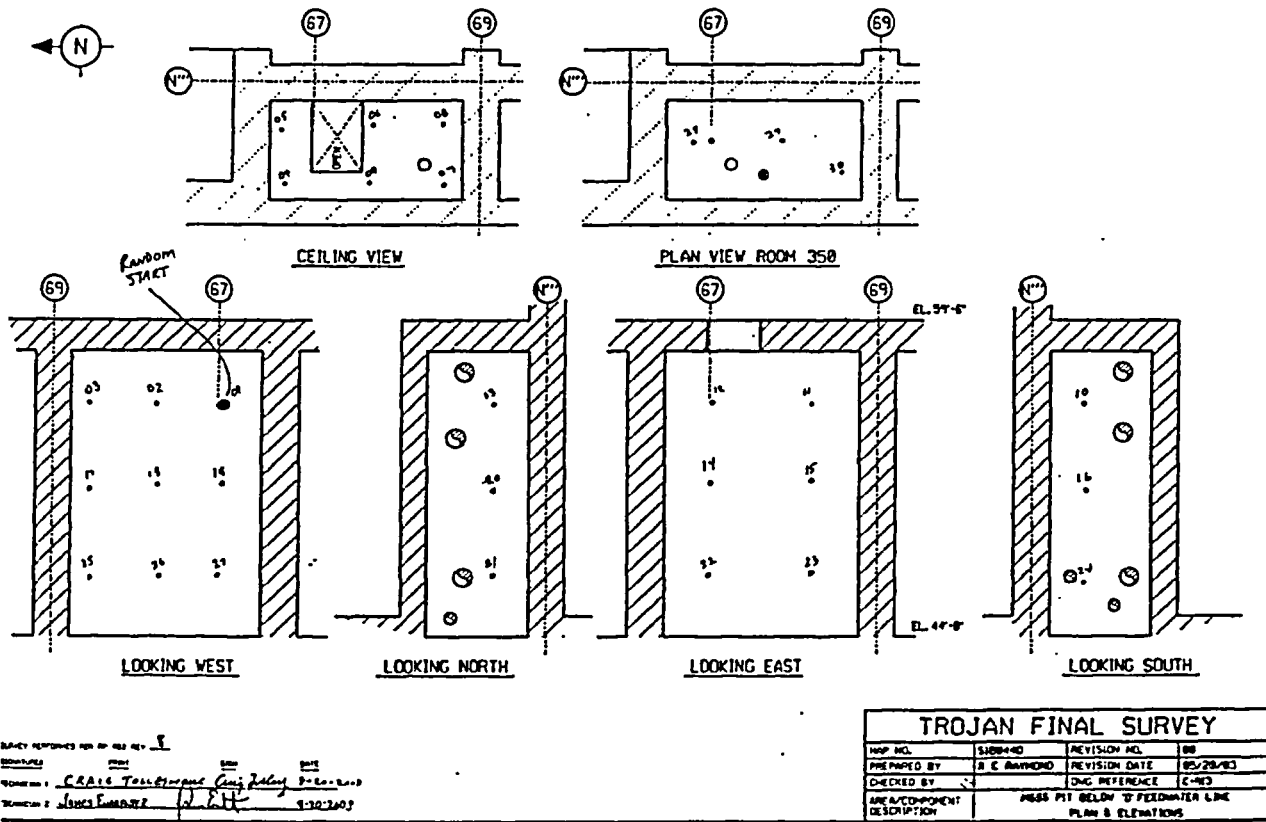


## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18044D

Survey Unit Name: Room Below D AFW Line

Classification: Class 1

Size (m<sup>2</sup>): 46Static Measurement Locations Map

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18045E  
 Survey Unit Name: MSSS Passageway

Classification: Class 1  
 Size (m<sup>2</sup>): 219

Data Quality Values

Type 1 Error: 0.05  
 Statistical Test: SGN

Type 2 Error: 0.05  
 Statistical Test Results: Sign test not required

Relative Shift: 3.0

Measurement Values

Measurement Type: Static Surface Beta  
 Measurement Units: dpm/100cm<sup>2</sup>

Number of Measurements: 33  
 DCGL: 21,000

Location	Value	Location	Value
S18045E01000001	1,850	S18045E01000026	1,869
S18045E01000002	1,794	S18045E01000027	2,368
S18045E01000003	1,825	S18045E01000028	3,000
S18045E01000004	1,831	S18045E01000029	3,456
S18045E01000005	1,850	S18045E01000030	3,681
S18045E01000006	1,975	S18045E01000031	3,781
S18045E01000007	2,306	S18045E01000032	2,456
S18045E01000008	1,925	S18045E01000033	2,887
S18045E01000009	1,950		
S18045E01000010	1,794		
S18045E01000011	1,600		
S18045E01000012	1,706		
S18045E01000013	1,612		
S18045E01000014	1,912		
S18045E01000015	2,791		
S18045E01000016	2,312		
S18045E01000017	2,012		
S18045E01000018	2,475		
S18045E01000019	2,356		
S18045E01000020	2,581		
S18045E01000021	3,525		
S18045E01000022	2,181		
S18045E01000023	1,919		
S18045E01000024	2,212		
S18045E01000025	1,956		

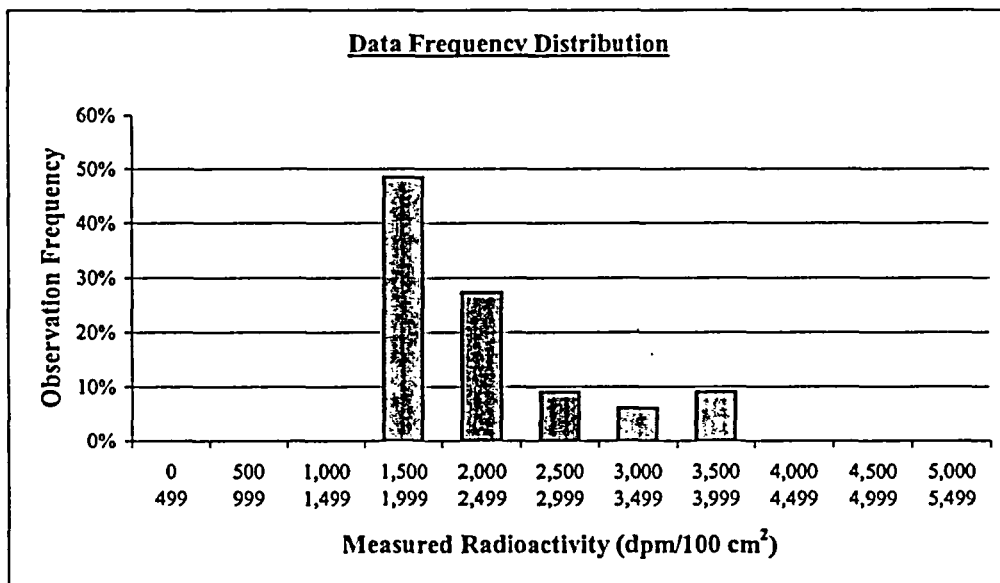
## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18045E  
 Survey Unit Name: MSSS Passageway

Classification: Class 1  
 Size (m<sup>2</sup>): 219

## Measurement Data Statistical Evaluation

Statistical Comparisons				Statistical Quantities	
Test	Calculated Value	Acceptance Criteria	Acceptable?	Range:	2,181
Range	2,181	3,050	Pass	Median:	2,012
Median	0.465	0.500	Pass	Mean:	2,295
Mean	2,295	16,800	Pass	Std Dev:	610
Std Dev	610	4,200	Pass	Minimum:	1,600
All data less than DCGL; Sign statistical test not required.				Maximum:	3,781
				DCGL:	21,000



Plot Parameters		Interval	High End	Low End	Number of Observations	Observation Frequency
# of measurements:	33	1	499	0	0	0%
# of intervals:	11	2	999	500	0	0%
Interval increment:	500	3	1,499	1,000	0	0%
Minimum:	0	4	1,999	1,500	16	48%
Maximum:	5,499	5	2,499	2,000	9	27%
		6	2,999	2,500	3	9%
		7	3,499	3,000	2	6%
		8	3,999	3,500	3	9%
		9	4,499	4,000	0	0%
		10	4,999	4,500	0	0%
		11	5,499	5,000	0	0%
		Total:			33	100%

**Comment:**  
 NONE.

**FINAL SURVEY RESULTS SUMMARY**

**Survey Unit ID Code:** S18045E  
**Survey Unit Name:** MSSS Passageway

**Classification:** Class 1  
**Size (m<sup>2</sup>):** 219

**Judgmental and Miscellaneous Measurement Data**

**Measurement Type:** Surface Scanning Beta  
**Measurement Units:** dpm/100cm<sup>2</sup>  
**Minimum Value:** 1,327

**Scan Coverage (%):** 100  
**Investigation Level:** 21,000  
**Maximum Value:** 17,530

**Measurement Type:** Removable Beta  
**Measurement Units:** dpm/100cm<sup>2</sup>  
**Minimum Value:** 2  
**Maximum Value:** 14

**Number of Measurements:** 33  
**Investigation Level:** 2,100  
**Mean:** 9  
**Standard Deviation:** 3

**Discussion of Anomalous Measurement Data**

**Investigation Summary**

No investigation required for this survey unit. No anomalous measurement data.

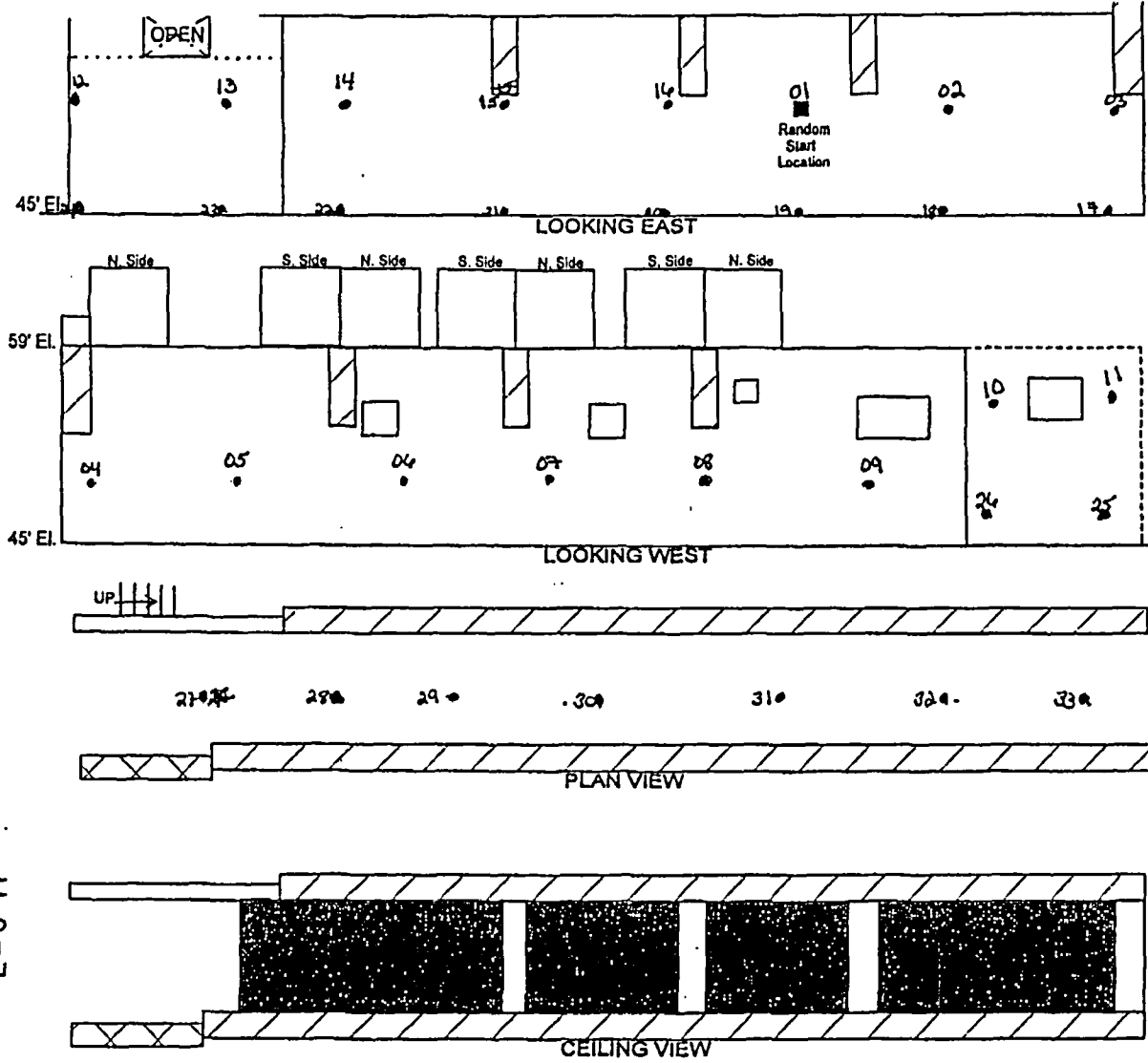
# FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18045E  
Survey Unit Name: MSSS Passageway

Classification: Class 1  
Size (m<sup>2</sup>): 219

## Static Measurement Locations Map

FINAL SURVEY UNIT S18045E, STATIC MEASUREMENT LOCATIONS  
L = 8' 11"



Survey Technician: *T. Crowe* Date: 1/29/2003  
Survey Technician: *James E. ...* Date: 1/29/2003

Data collection performed  
IAW RP 452 Rev. 8

045esml.cad

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18059A  
 Survey Unit Name: MSSS Cubicles A & D

Classification: Class 1  
 Size (m<sup>2</sup>): 156

Data Quality Values

Type 1 Error: 0.05  
 Statistical Test: SGN

Type 2 Error: 0.05  
 Statistical Test Results: Sign test not required

Relative Shift: 3.0

Measurement Values

Measurement Type: Static Surface Beta  
 Measurement Units: dpm/100cm<sup>2</sup>

Number of Measurements: 32  
 DCGL: 21,000

Location	Value	Location	Value
S18059A01000001	3,048	S18059A01000026	2,838
S18059A01000002	2,375	S18059A01000027	3,022
S18059A01000003	4,648	S18059A01000028	2,133
S18059A01000004	2,121	S18059A01000029	2,267
S18059A01000005	3,283	S18059A01000030	1,917
S18059A01000006	2,457	S18059A01000031	2,368
S18059A01000007	1,873	S18059A01000032	1,416
S18059A01000008	1,917		
S18059A01000009	1,949		
S18059A01000010	1,219		
S18059A01000011	1,048		
S18059A01000012	1,416		
S18059A01000013	1,035		
S18059A01000014	1,340		
S18059A01000015	2,171		
S18059A01000016	1,905		
S18059A01000017	2,260		
S18059A01000018	3,771		
S18059A01000019	2,171		
S18059A01000020	2,641		
S18059A01000021	3,048		
S18059A01000022	1,410		
S18059A01000023	1,524		
S18059A01000024	2,216		
S18059A01000025	2,070		

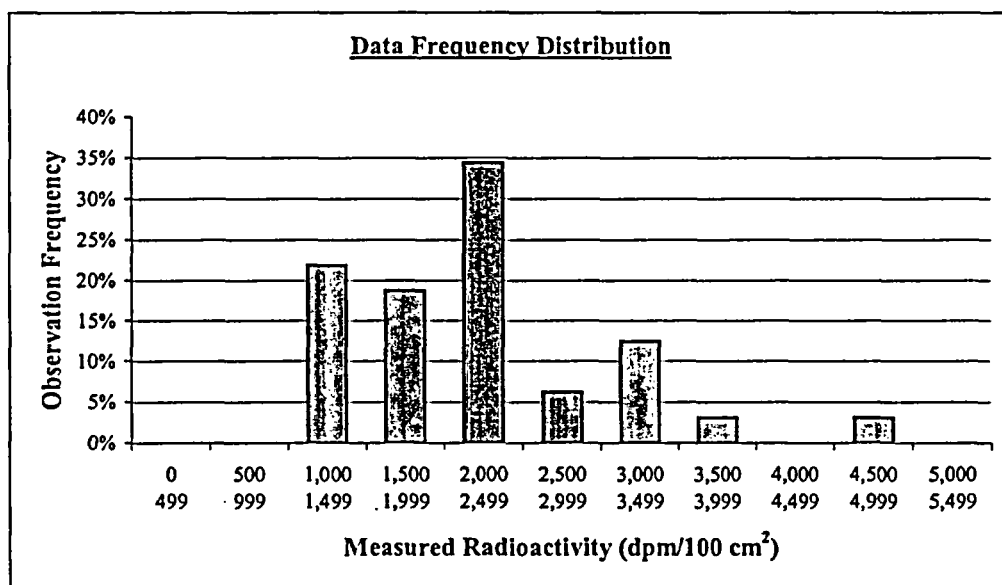
## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18059A  
 Survey Unit Name: MSSS Cubicles A & D

Classification: Class 1  
 Size (m<sup>2</sup>): 156

## Measurement Data Statistical Evaluation

Statistical Comparisons				Statistical Quantities	
Test	Calculated Value	Acceptance Criteria	Acceptable?	Range:	3,613
Range	3,613	3,978	Pass	Median:	2,152
Median	0.079	0.500	Pass	Mean:	2,215
Mean	2,215	16,800	Pass	Std Dev:	796
Std Dev	796	4,200	Pass	Minimum:	1,035
All data less than DCGL; Sign statistical test not required.				Maximum:	4,648
				DCGL:	21,000



Plot Parameters		Interval	High End	Low End	Number of Observations	Observation Frequency
# of measurements:	32	1	499	0	0	0%
# of intervals:	11	2	999	500	0	0%
Interval increment:	500	3	1,499	1,000	7	22%
Minimum:	0	4	1,999	1,500	6	19%
Maximum:	5,499	5	2,499	2,000	11	34%
		6	2,999	2,500	2	6%
		7	3,499	3,000	4	13%
		8	3,999	3,500	1	3%
		9	4,499	4,000	0	0%
		10	4,999	4,500	1	3%
		11	5,499	5,000	0	0%
		Total:			32	100%

**Comment:**  
 NONE

**FINAL SURVEY RESULTS SUMMARY**

**Survey Unit ID Code:** S18059A  
**Survey Unit Name:** MSSS Cubicles A & D

**Classification:** Class 1  
**Size (m<sup>2</sup>):** 156

**Judgmental and Miscellaneous Measurement Data**

**Measurement Type:** Surface Scanning Beta  
**Measurement Units:** dpm/100cm<sup>2</sup>  
**Minimum Value:** 1,046

**Scan Coverage (%):** 100  
**Investigation Level:** 21,000  
**Maximum Value:** 20,090

**Measurement Type:** Removable Beta  
**Measurement Units:** dpm/100cm<sup>2</sup>  
**Minimum Value:** 2  
**Maximum Value:** 21

**Number of Measurements:** 32  
**Investigation Level:** 2,100  
**Mean:** 11  
**Standard Deviation:** 5

**Discussion of Anomalous Measurement Data**

**Investigation Summary**

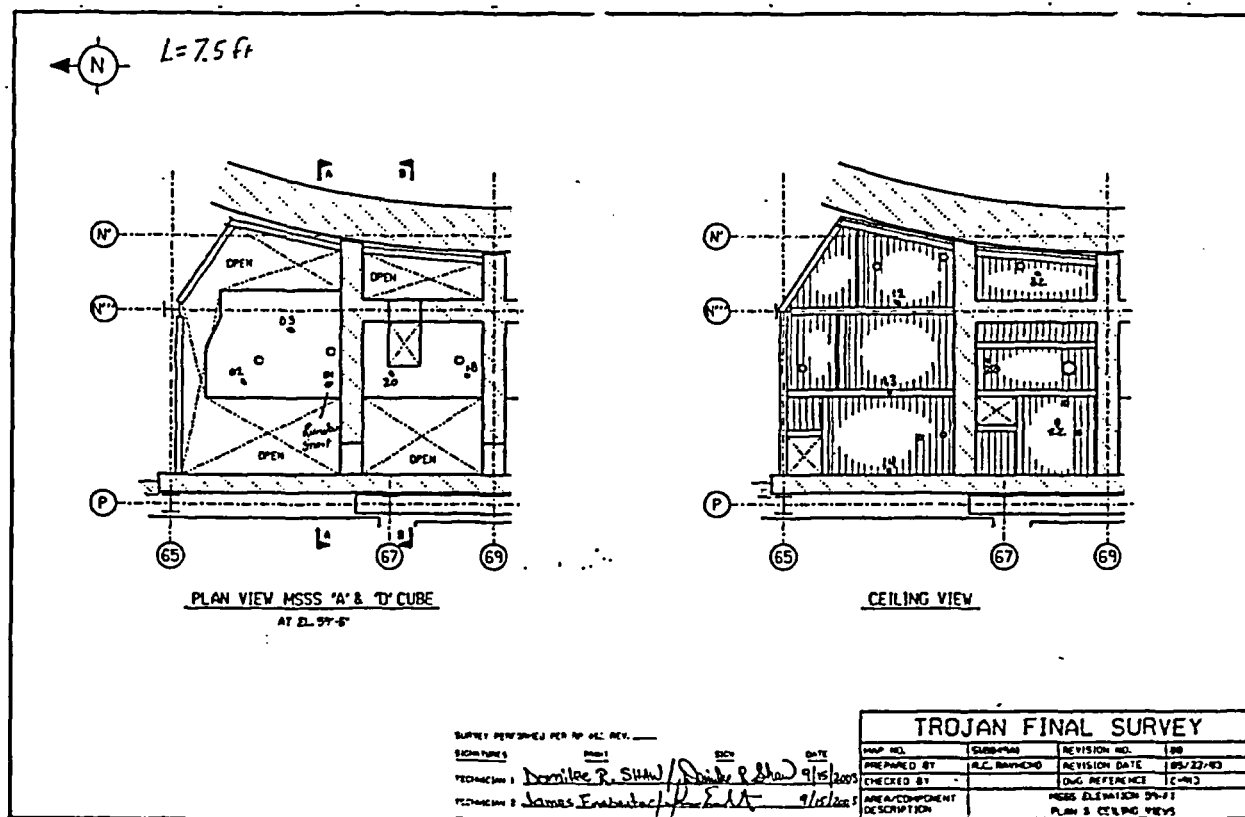
No investigation required for this survey unit. No anomalous measurement data.



## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18059A  
 Survey Unit Name: MSSS Cubicles A & D

Classification: Class 1  
 Size (m<sup>2</sup>): 156

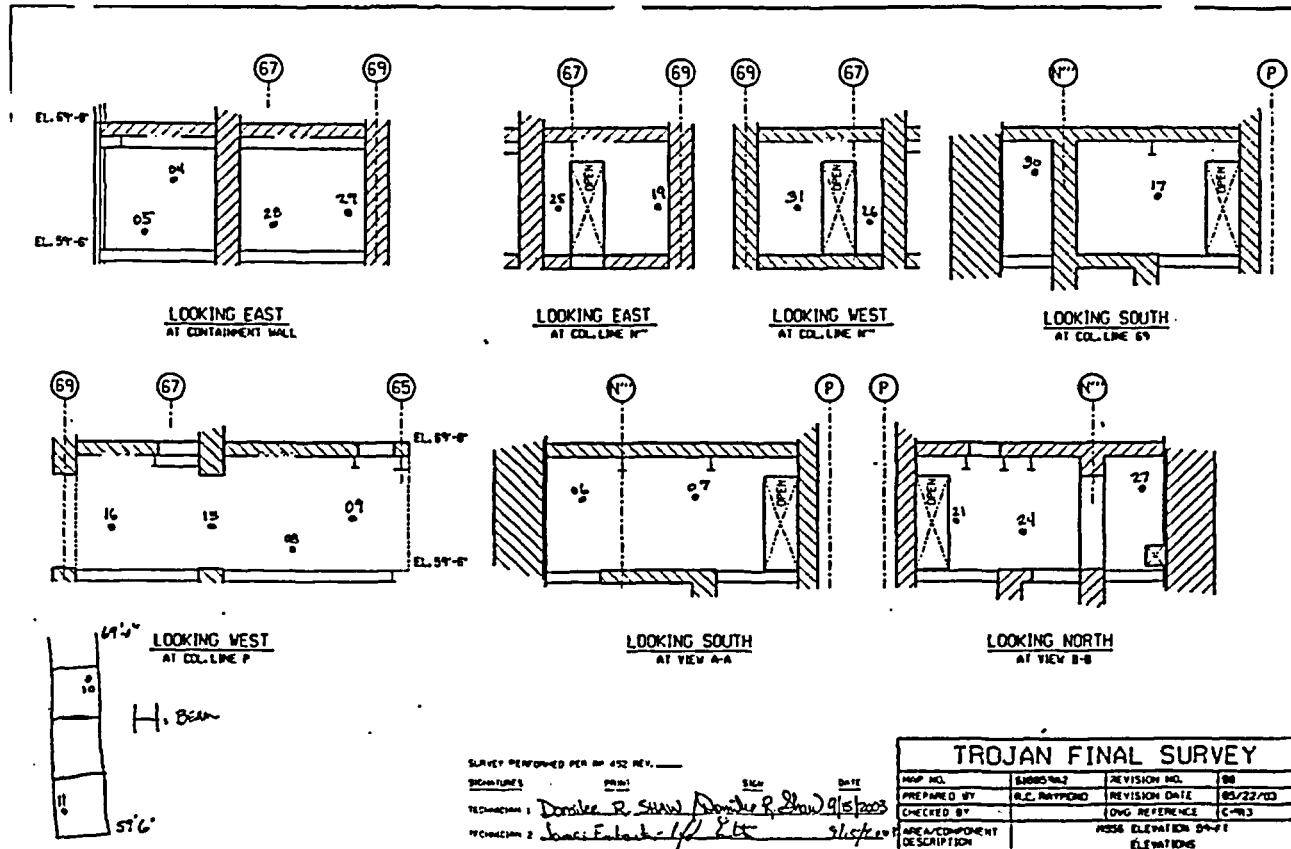
Static Measurement Locations Map

# FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18059A  
Survey Unit Name: MSSS Cubicles A & D

Classification: Class 1  
Size (m<sup>2</sup>): 156

## Static Measurement Locations Map



## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18059B  
 Survey Unit Name: MSSS Cubicles B & C

Classification: Class 1  
 Size (m<sup>2</sup>): 109

Data Quality Values

Type 1 Error: 0.05  
 Statistical Test: SGN

Type 2 Error: 0.05  
 Statistical Test Results: Sign test not required

Relative Shift: 3.0

Measurement Values

Measurement Type: Static Surface Beta  
 Measurement Units: dpm/100cm<sup>2</sup>

Number of Measurements: 36  
 DCGL: 21,000

Location	Value	Location	Value
S18059B01000001	1,816	S18059B01000026	1,816
S18059B01000002	1,638	S18059B01000027	1,613
S18059B01000003	1,886	S18059B01000028	1,873
S18059B01000004	2,063	S18059B01000029	1,879
S18059B01000005	1,854	S18059B01000030	1,854
S18059B01000006	1,886	S18059B01000031	1,924
S18059B01000007	1,898	S18059B01000032	1,460
S18059B01000008	1,956	S18059B01000033	1,619
S18059B01000009	2,006	S18059B01000034	2,654
S18059B01000010	2,006	S18059B01000035	2,584
S18059B01000011	2,025	S18059B01000036	2,311
S18059B01000012	2,121		
S18059B01000013	2,102		
S18059B01000014	1,498		
S18059B01000015	1,822		
S18059B01000016	1,987		
S18059B01000017	1,860		
S18059B01000018	1,905		
S18059B01000019	2,032		
S18059B01000020	2,578		
S18059B01000021	2,095		
S18059B01000022	2,089		
S18059B01000023	2,102		
S18059B01000024	2,083		
S18059B01000025	1,797		

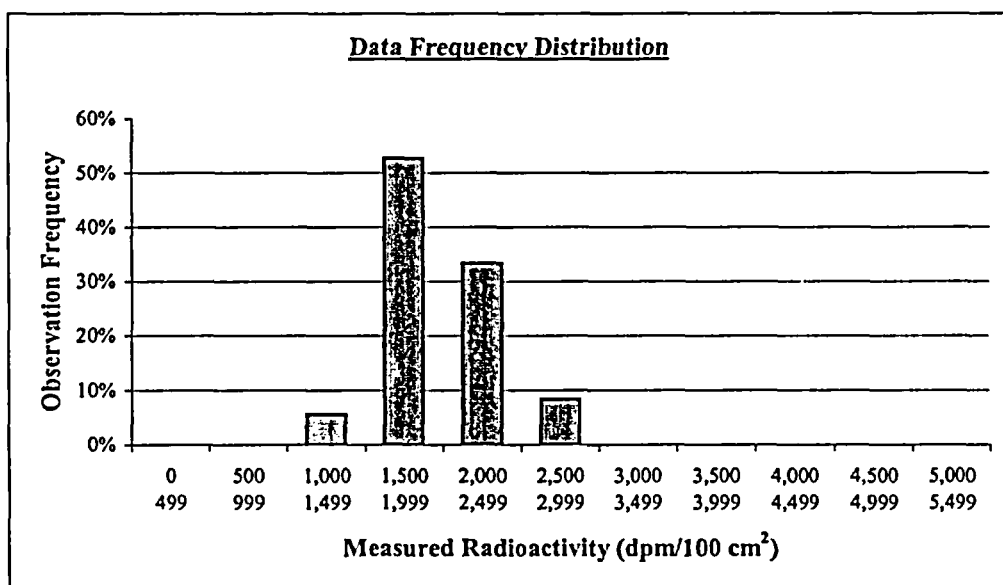
## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18059B  
 Survey Unit Name: MSSS Cubicles B & C

Classification: Class 1  
 Size (m<sup>2</sup>): 109

## Measurement Data Statistical Evaluation

Statistical Comparisons				Statistical Quantities	
Test	Calculated Value	Acceptance Criteria	Acceptable?	Range:	1,194
Range	1,194	1,329	Pass	Median:	1,915
Median	0.185	0.500	Pass	Mean:	1,964
Mean	1,964	16,800	Pass	Std Dev:	266
Std Dev	266	4,200	Pass	Minimum:	1,460
All data less than DCGL; Sign statistical test not required.				Maximum:	2,654
				DCGL:	21,000



Plot Parameters		Interval	High End	Low End	Number of Observations	Observation Frequency
# of measurements:	36	1	499	0	0	0%
# of intervals:	11	2	999	500	0	0%
Interval increment:	500	3	1,499	1,000	2	6%
Minimum:	0	4	1,999	1,500	19	53%
Maximum:	5,499	5	2,499	2,000	12	33%
		6	2,999	2,500	3	8%
		7	3,499	3,000	0	0%
		8	3,999	3,500	0	0%
		9	4,499	4,000	0	0%
		10	4,999	4,500	0	0%
		11	5,499	5,000	0	0%
		Total:			36	100%

**Comment:**  
 NONE

**FINAL SURVEY RESULTS SUMMARY**

**Survey Unit ID Code:** S18059B  
**Survey Unit Name:** MSSS Cubicles B & C

**Classification:** Class 1  
**Size (m<sup>2</sup>):** 109

**Judgmental and Miscellaneous Measurement Data**

**Measurement Type:** Surface Scanning Beta  
**Measurement Units:** dpm/100cm<sup>2</sup>  
**Minimum Value:** 1,690

**Scan Coverage (%):** 100  
**Investigation Level:** 21,000  
**Maximum Value:** 7,312

**Measurement Type:** Removable Beta  
**Measurement Units:** dpm/100cm<sup>2</sup>  
**Minimum Value:** 0  
**Maximum Value:** 18

**Number of Measurements:** 36  
**Investigation Level:** 2,100  
**Mean:** 9  
**Standard Deviation:** 4

**Discussion of Anomalous Measurement Data**

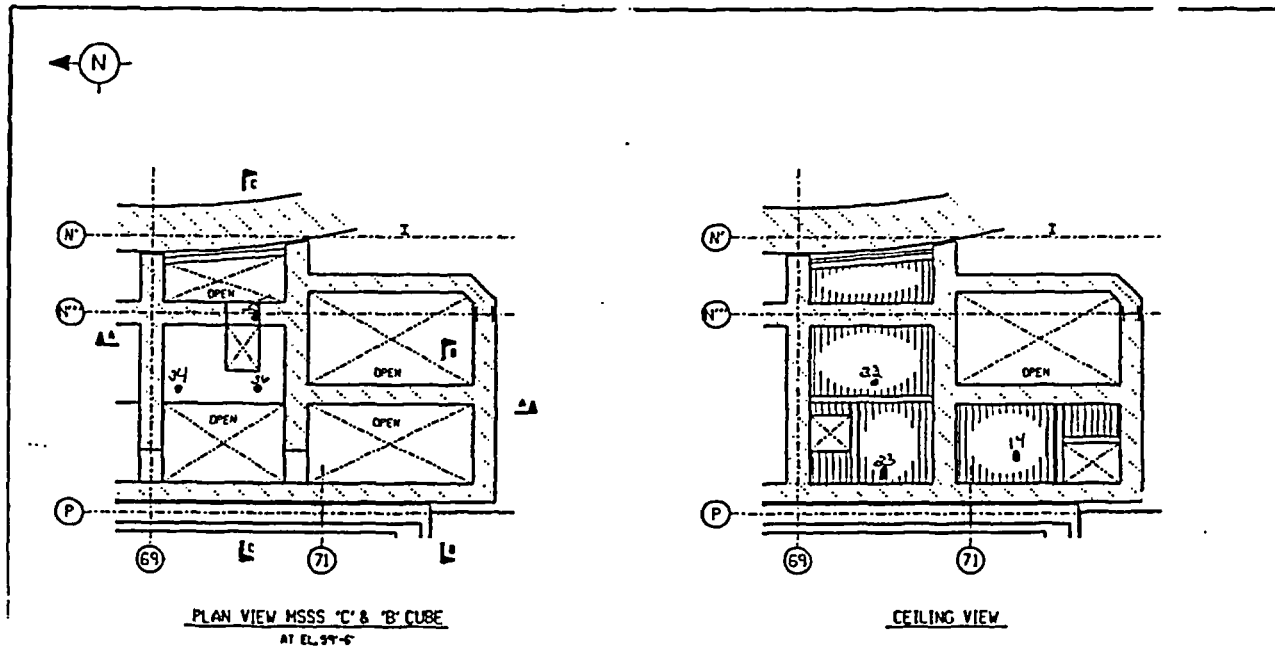
**Investigation Summary**

No investigation required for this survey unit. No anomalous measurement data.

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18059B  
 Survey Unit Name: MSSS Cubicles B & C

Classification: Class 1  
 Size (m<sup>2</sup>): 109

Static Measurement Locations Map

SURVEY PERFORMED PER US 452 REV. 8  
 SIGNATURE: J. E. [Signature] DATE: 2-27-2003  
 TECHNICIAN 1: J. E. [Signature]  
 TECHNICIAN 2: J. [Signature]

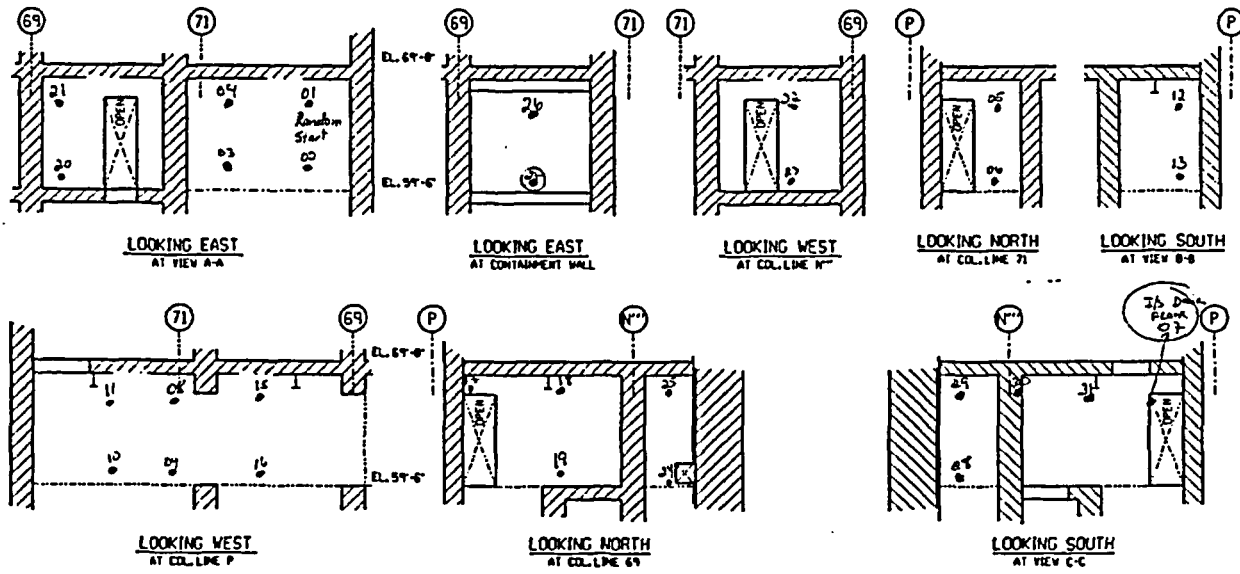
TROJAN FINAL SURVEY			
MAP NO.	S18059B1	REVISION NO.	20
PREPARED BY	R.C. BAYBEND	REVISION DATE	05/22/03
CHECKED BY		LONG REFERENCE	C-93
AREA/COMPONENT DESCRIPTION	MSSS ELEVATION 99'-6\" PLAN & CEILING VIEWS		

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18059B  
Survey Unit Name: MSSS Cubicles B & C

Classification: Class 1  
Size (m<sup>2</sup>): 109

### Static Measurement Locations Map



SURVEY PERFORMED PER RP 452 REV. 2  
SIGNATURES: [Signature] DATE: 9-27-2003  
TECHNICIAN 1: J. E. [Signature]  
TECHNICIAN 2: J. E. [Signature] 9/27/2003

TROJAN FINAL SURVEY			
MAP NO.	S18059B2	REVISION NO.	00
PREPARED BY	R.E. RAYMOND	REVISION DATE	05/22/03
CHECKED BY		ENG. REFERENCE	C-113
AREA/COMPONENT DESCRIPTION	MSSS ELEVATION 59-71 2. ELEVATIONS		

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18069A  
 Survey Unit Name: MSSS Cubicle A

Classification: Class 1  
 Size (m<sup>2</sup>): 219

Data Quality Values

Type 1 Error: 0.05  
 Statistical Test: SGN

Type 2 Error: 0.05  
 Statistical Test Results: Sign test not required

Relative Shift: 3.0

Measurement Values

Measurement Type: Static Surface Beta  
 Measurement Units: dpm/100cm<sup>2</sup>

Number of Measurements: 31  
 DCGL: 21,000

Location	Value	Location	Value
S18069A01000001	1,896	S18069A01000026	377
S18069A01000002	1,516	S18069A01000027	482
S18069A01000003	1,414	S18069A01000028	927
S18069A01000004	933	S18069A01000029	1,316
S18069A01000005	1,234	S18069A01000030	1,101
S18069A01000006	1,304	S18069A01000031	1,012
S18069A01000007	1,450		
S18069A01000008	1,628		
S18069A01000009	2,304		
S18069A01000010	1,263		
S18069A01000011	1,539		
S18069A01000012	1,276		
S18069A01000013	1,073		
S18069A01000014	935		
S18069A01000015	421		
S18069A01000016	474		
S18069A01000017	336		
S18069A01000018	377		
S18069A01000019	397		
S18069A01000020	879		
S18069A01000021	863		
S18069A01000022	1,134		
S18069A01000023	1,361		
S18069A01000024	1,077		
S18069A01000025	956		



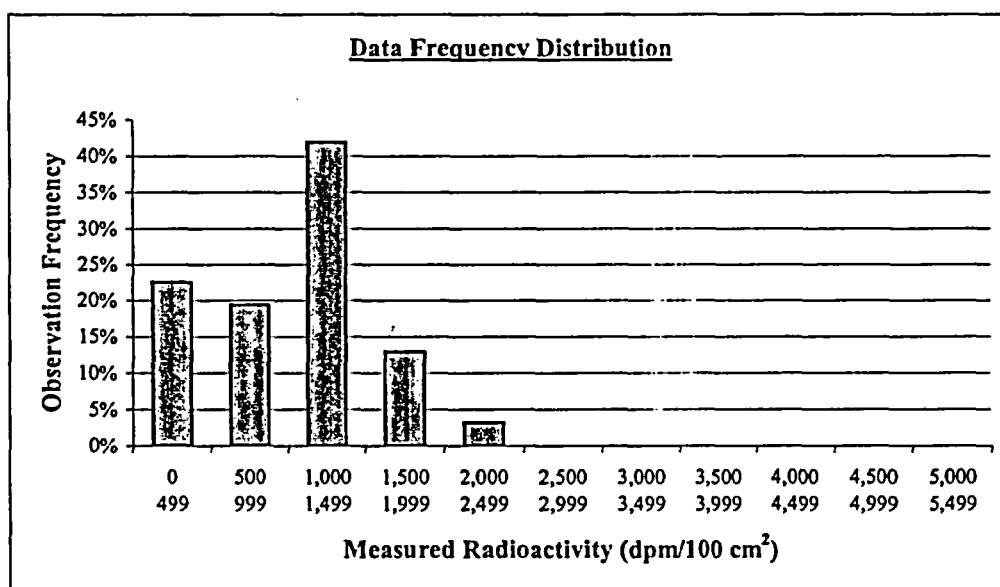
## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18069A  
 Survey Unit Name: MSSS Cubicle A

Classification: Class 1  
 Size (m<sup>2</sup>): 219

## Measurement Data Statistical Evaluation

Statistical Comparisons				Statistical Quantities	
Test	Calculated Value	Acceptance Criteria	Acceptable?	Range:	1,968
Range	1,968	2,369	Pass	Median:	1,077
Median	0.009	0.500	Pass	Mean:	1,073
Mean	1,073	16,800	Pass	Std Dev:	474
Std Dev	474	4,200	Pass	Minimum:	336
All data less than DCGL; Sign statistical test not required.				Maximum:	2,304
				DCGL:	21,000



Plot Parameters		Interval	High End	Low End	Number of Observations	Observation Frequency
# of measurements:	31	1	499	0	7	23%
# of intervals:	11	2	999	500	6	19%
Interval increment:	500	3	1,499	1,000	13	42%
Minimum:	0	4	1,999	1,500	4	13%
Maximum:	5,499	5	2,499	2,000	1	3%
		6	2,999	2,500	0	0%
		7	3,499	3,000	0	0%
		8	3,999	3,500	0	0%
		9	4,499	4,000	0	0%
		10	4,999	4,500	0	0%
		11	5,499	5,000	0	0%
		Total:			31	100%

Comment:  
 NONE

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18069A  
Survey Unit Name: MSSS Cubicle A

Classification: Class 1  
Size (m<sup>2</sup>): 219

Judgmental and Miscellaneous Measurement Data

Measurement Type: Surface Scanning Beta  
Measurement Units: dpm/100cm<sup>2</sup>  
Minimum Value: 529

Scan Coverage (%): 100  
Investigation Level: 21,000  
Maximum Value: 26,960

Measurement Type: Removable Beta  
Measurement Units: dpm/100cm<sup>2</sup>  
Minimum Value: 2  
Maximum Value: 21

Number of Measurements: 31  
Investigation Level: 2,100  
Mean: 10  
Standard Deviation: 4

Discussion of Anomalous Measurement DataInvestigation Summary

Reason for Investigation: A scan measurement value exceeded the investigation level.

Elevated Measurement Comparision (EMC):

DCGL (Investigation Level):	21,000
Measurement Units:	dpm/100cm <sup>2</sup>
Maximum Value:	26,960
Size of Area Exceeding DCGL (m <sup>2</sup> ):	0.02
Size of Survey Unit (m <sup>2</sup> ):	219
Survey Unit Area >DCGL (%):	0.01
EMC Value:	178,500

Action Taken: Accepted the elevated measurement value, and applied DCGL<sub>emc</sub>.

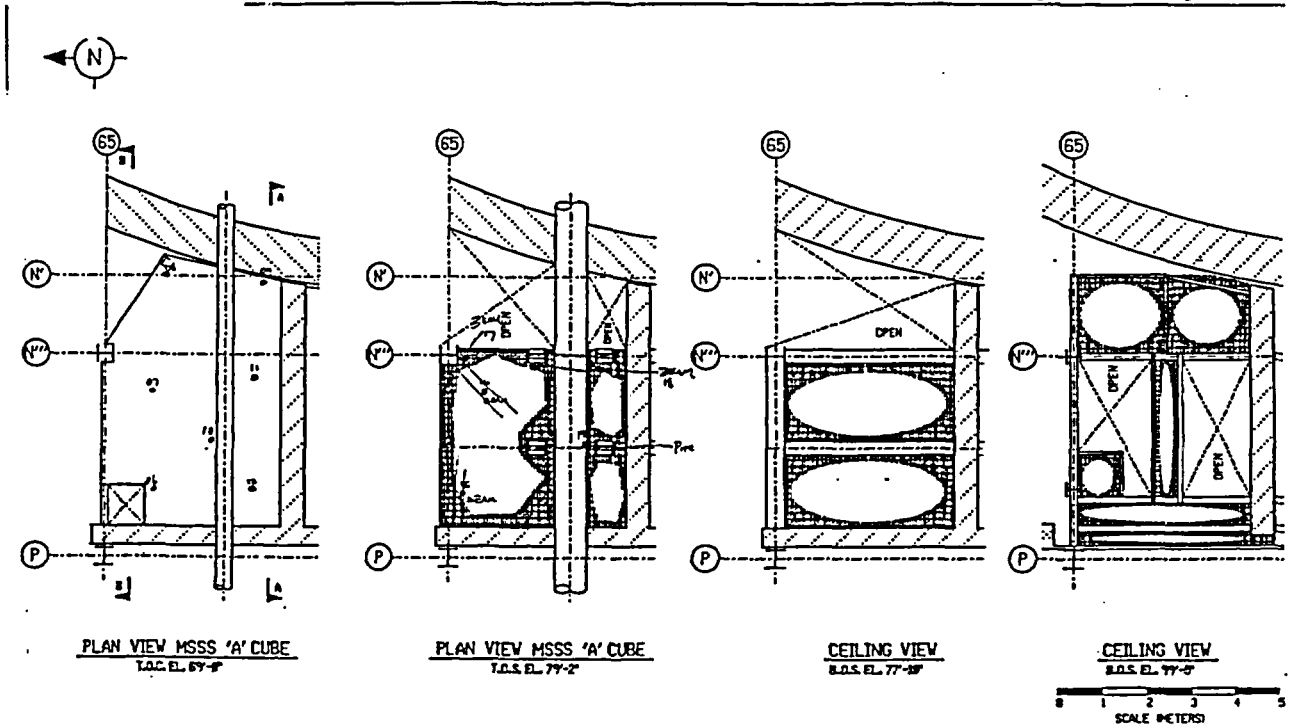
Basis for Action Taken: A single small area of elevated activity was identified by scan survey with a Model 44-9 pancake GM detector on a pipe flange exiting the containment building wall. An investigation survey with a Model 43-68 GFP detector measured 5,345 dpm/100cm<sup>2</sup> for this location. Retained the original scan value as a conservative representation of the area, as it is only 15% of the DCGL<sub>emc</sub>. The original measurement value is also ALARA, since it is less than the remediation action level for removal.

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18069A  
Survey Unit Name: MSSS Cubicle A

Classification: Class 1  
Size (m<sup>2</sup>): 219

### Static Measurement Locations Map



SURVEY PERFORMED PER RP 452 REV. 5  
SIGNATURES: *[Signature]* *[Signature]* DATE: 9-25-2003  
TECHNICIAN 1: *[Signature]* 9-24-2003  
TECHNICIAN 2: *[Signature]*

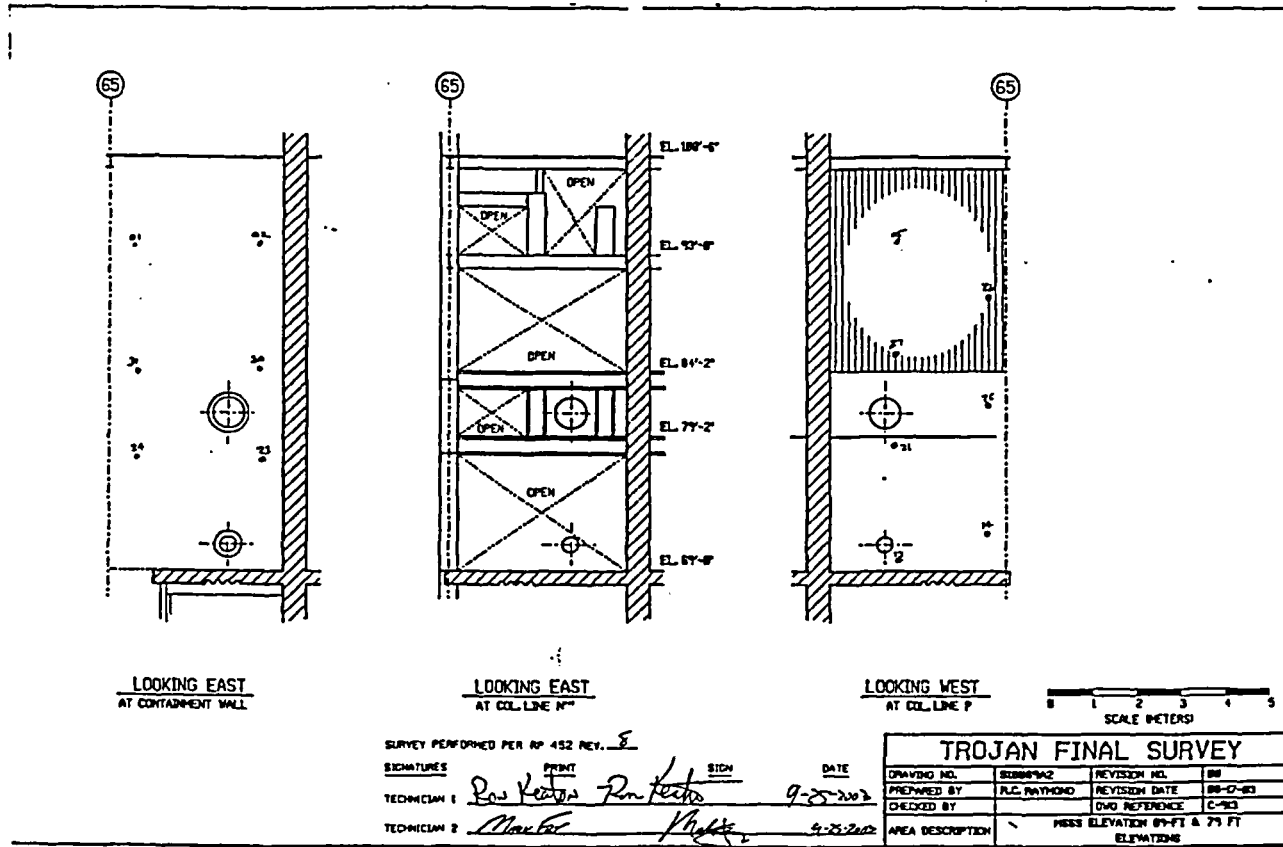
TROJAN FINAL SURVEY			
MAP NO.	SLAB/STAIR	REVISION NO.	88
PREPARED BY	R.L. RATHBON	REVISION DATE	88-17-83
CHECKED BY		DWG REFERENCE	C-183
AREA/COMPONENT DESCRIPTION	MSSS ELEVATION 89'-FT & 79' FT PLAN & CEILING VIEWS		

# FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18069A  
Survey Unit Name: MSSS Cubicle A

Classification: Class 1  
Size (m<sup>2</sup>): 219

## Static Measurement Locations Map

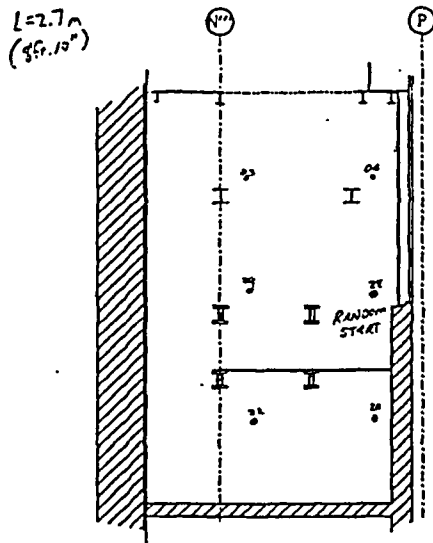


# FINAL SURVEY RESULTS SUMMARY

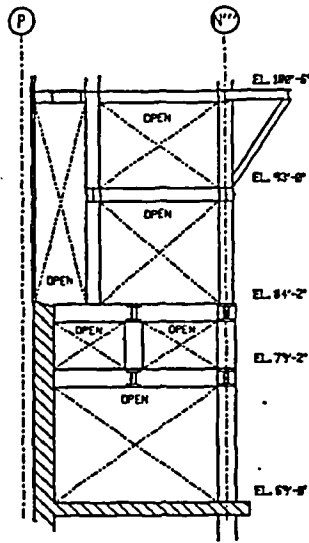
Survey Unit ID Code: S18069A  
 Survey Unit Name: MSSS Cubicle A

Classification: Class 1  
 Size (m<sup>2</sup>): 219

## Static Measurement Locations Map



LOOKING SOUTH  
 AT VIEW A-A



LOOKING NORTH  
 AT VIEW B-B



SURVEY PERFORMED PER RP 452 REV. S

SIGNATURES	PRINT	SIGN	DATE
TECHNICIAN 1	<i>[Signature]</i>	<i>[Signature]</i>	9-22-2003
TECHNICIAN 2	<i>[Signature]</i>	<i>[Signature]</i>	9-22-2003

TROJAN FINAL SURVEY			
MAP NO.	00000003	REVISION NO.	00
PREPARED BY	ALC. RAYMOND	REVISION DATE	08-07-03
CHECKED BY		DWG. REFERENCE	C-103
AREA/COMPONENT DESCRIPTION	MSSS ELEVATION 8'-6" & 7'-6" ELEVATIONS		

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18069B  
 Survey Unit Name: MSSS Cubicle B

Classification: Class 2  
 Size (m<sup>2</sup>): 219

Data Quality Values

Type 1 Error: 0.05  
 Statistical Test: SGN

Type 2 Error: 0.05  
 Statistical Test Results: Sign test not required

Relative Shift: 3.0

Measurement Values

Measurement Type: Static Surface Beta  
 Measurement Units: dpm/100cm<sup>2</sup>

Number of Measurements: 30  
 DCGL: 21,000

Location	Value	Location	Value
S18069B01000001	890	S18069B01000026	528
S18069B01000002	1,021	S18069B01000027	428
S18069B01000003	1,167	S18069B01000028	351
S18069B01000004	882	S18069B01000029	459
S18069B01000005	1,198	S18069B01000030	582
S18069B01000006	952		
S18069B01000007	959		
S18069B01000008	948		
S18069B01000009	905		
S18069B01000010	678		
S18069B01000011	489		
S18069B01000012	925		
S18069B01000013	925		
S18069B01000014	867		
S18069B01000015	424		
S18069B01000016	435		
S18069B01000017	432		
S18069B01000018	651		
S18069B01000019	385		
S18069B01000020	443		
S18069B01000021	451		
S18069B01000022	1,059		
S18069B01000023	871		
S18069B01000024	1,063		
S18069B01000025	416		

## FINAL SURVEY RESULTS SUMMARY

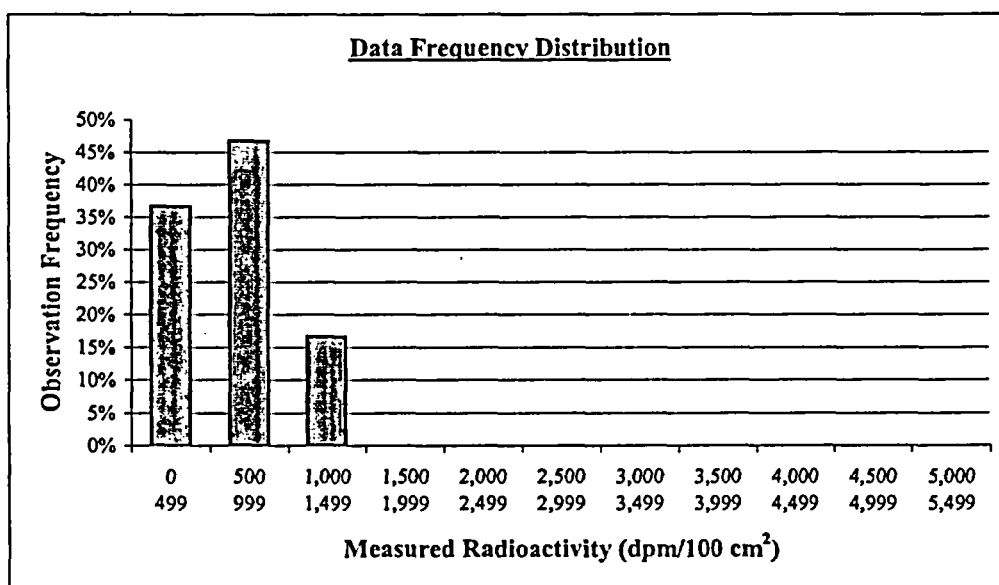
Survey Unit ID Code: S18069B  
 Survey Unit Name: MSSS Cubicle B

Classification: Class 2  
 Size (m<sup>2</sup>): 219

## Measurement Data Statistical Evaluation

Statistical Comparisons				Statistical Quantities	
Test	Calculated Value	Acceptance Criteria	Acceptable?	Range:	847
Range	847	1,359	Pass	Median:	773
Median	0.171	0.500	Pass	Mean:	726
Mean	726	16,800	Pass	Std Dev:	272
Std Dev	272	4,200	Pass	Minimum:	351
				Maximum:	1,198
				DCGL:	21,000

All data less than DCGL; Sign statistical test not required.



Plot Parameters		Interval	High End	Low End	Number of Observations	Observation Frequency
# of measurements:	30	1	499	0	11	37%
# of intervals:	11	2	999	500	14	47%
Interval increment:	500	3	1,499	1,000	5	17%
Minimum:	0	4	1,999	1,500	0	0%
Maximum:	5,499	5	2,499	2,000	0	0%
		6	2,999	2,500	0	0%
		7	3,499	3,000	0	0%
		8	3,999	3,500	0	0%
		9	4,499	4,000	0	0%
		10	4,999	4,500	0	0%
		11	5,499	5,000	0	0%
		Total:			30	100%

**Comment:**  
 NONE

**FINAL SURVEY RESULTS SUMMARY**

**Survey Unit ID Code:** S18069B  
**Survey Unit Name:** MSSS Cubicle B

**Classification:** Class 2  
**Size (m<sup>2</sup>):** 219

**Judgmental and Miscellaneous Measurement Data**

**Measurement Type:** Surface Scanning Beta  
**Measurement Units:** dpm/100cm<sup>2</sup>  
**Minimum Value:** 665

**Scan Coverage (%):** 20  
**Investigation Level:** 21,000  
**Maximum Value:** 3,980

**Measurement Type:** Removable Beta  
**Measurement Units:** dpm/100cm<sup>2</sup>  
**Minimum Value:** 0  
**Maximum Value:** 116

**Number of Measurements:** 30  
**Investigation Level:** 2,100  
**Mean:** 12  
**Standard Deviation:** 20

**Discussion of Anomalous Measurement Data**

**Investigation Summary**

No investigation required for this survey unit. No anomalous measurement data.

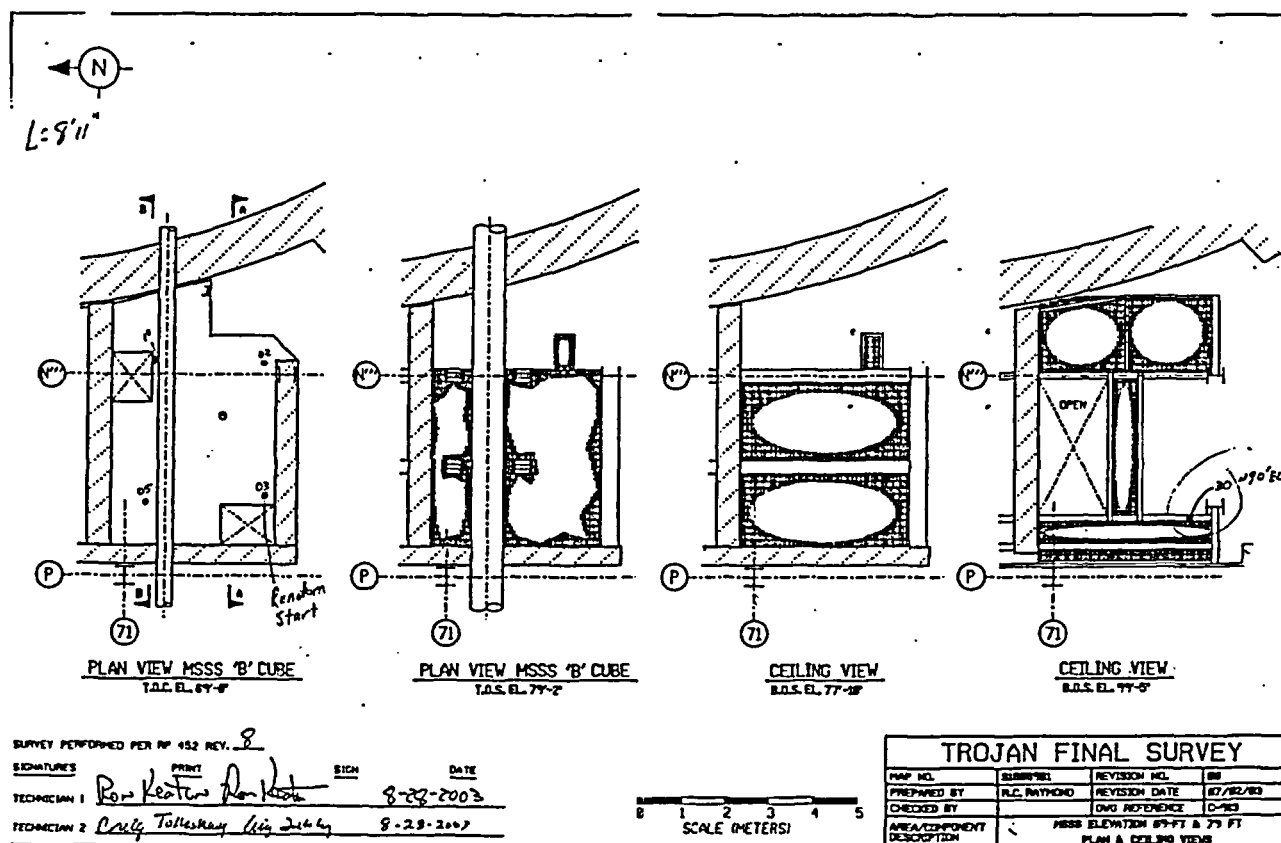


# FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18069B  
Survey Unit Name: MSSS Cubicle B

Classification: Class 2  
Size (m<sup>2</sup>): 219

## Static Measurement Locations Map

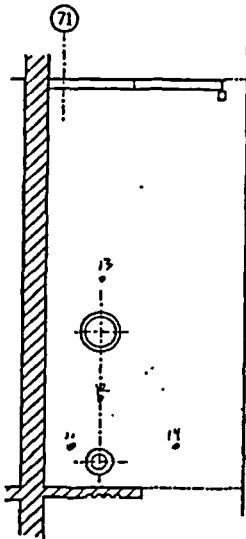


## FINAL SURVEY RESULTS SUMMARY

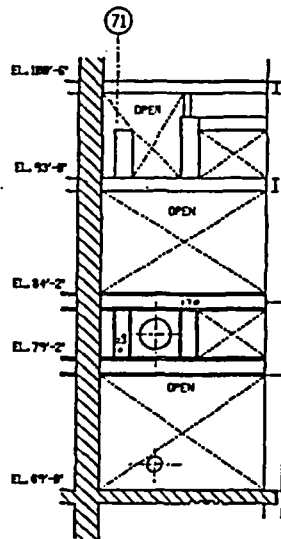
Survey Unit ID Code: S18069B  
Survey Unit Name: MSSS Cubicle B

Classification: Class 2  
Size (m<sup>2</sup>): 219

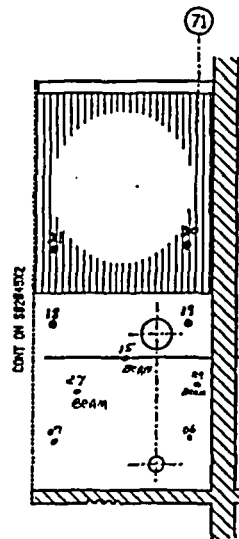
### Static Measurement Locations Map



LOOKING EAST  
AT CONTAINMENT WALL



LOOKING EAST  
AT COL LINE M



LOOKING WEST  
AT COL LINE P

RP 452 Rev. 8  
Run Kester Ron Kester 8-28-2003  
Cair Tollerkey Amy Jeff 8-28-2003

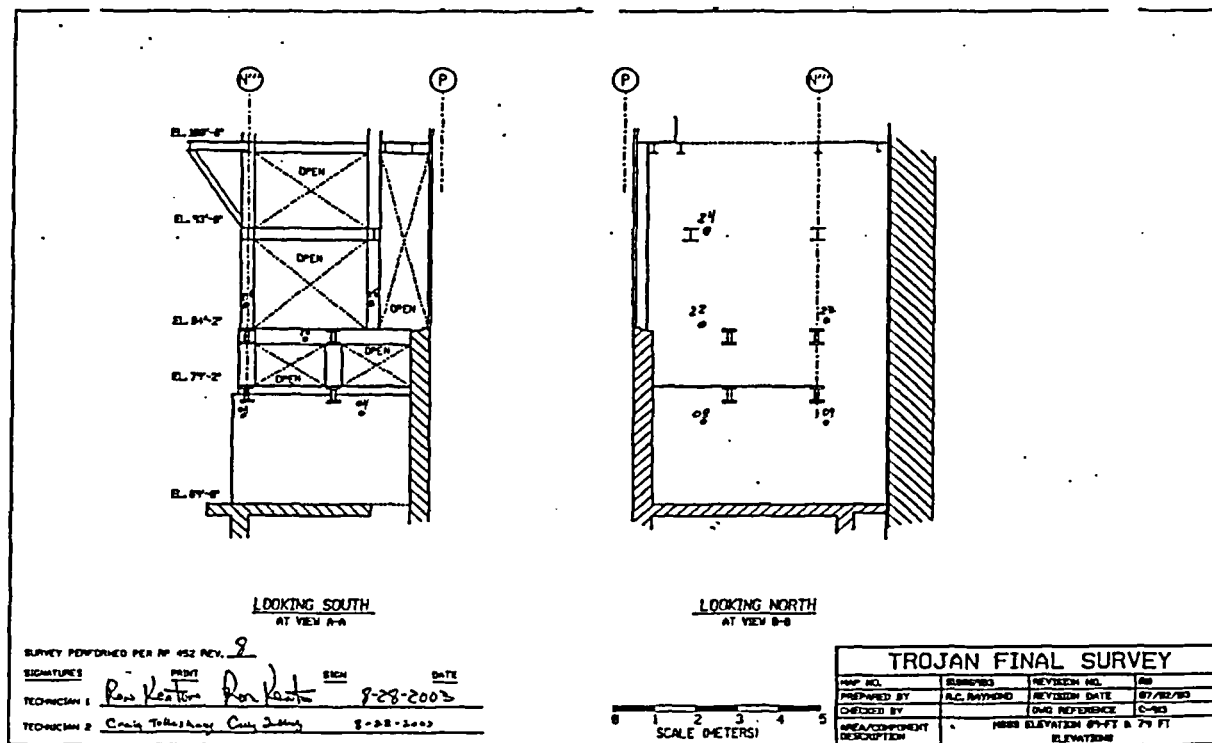
TROJAN FINAL SURVEY			
MAP NO.	0000002	REVISION NO.	00
PREPARED BY	R.L. RAYMOND	REVISION DATE	07/02/03
CHECKED BY		ONG REFERENCE	C-103
AREA/COMPONENT DESCRIPTION	MSSS ELEVATION 67'-0" & 77' FT ELEVATIONS		

# FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18069B  
 Survey Unit Name: MSSS Cubicle B

Classification: Class 2  
 Size (m<sup>2</sup>): 219

## Static Measurement Locations Map



## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18069C  
 Survey Unit Name: MSSS Cubicle C

Classification: Class 1  
 Size (m<sup>2</sup>): 67

Data Quality Values

Type 1 Error: 0.05  
 Statistical Test: SGN

Type 2 Error: 0.05  
 Statistical Test Results: Sign test not required

Relative Shift: 3.0

Measurement Values

Measurement Type: Static Surface Beta  
 Measurement Units: dpm/100cm<sup>2</sup>

Number of Measurements: 34  
 DCGL: 21,000

Location	Value	Location	Value
S18069C01000001	1,645	S18069C01000026	2,042
S18069C01000002	1,472	S18069C01000027	1,210
S18069C01000003	1,350	S18069C01000028	1,446
S18069C01000004	1,325	S18069C01000029	1,856
S18069C01000005	1,440	S18069C01000030	2,279
S18069C01000006	1,318	S18069C01000031	1,875
S18069C01000007	749	S18069C01000032	1,811
S18069C01000008	1,632	S18069C01000033	2,349
S18069C01000009	1,664	S18069C01000034	2,413
S18069C01000010	2,400		
S18069C01000011	2,791		
S18069C01000012	1,811		
S18069C01000013	1,459		
S18069C01000014	922		
S18069C01000015	749		
S18069C01000016	2,451		
S18069C01000017	1,671		
S18069C01000018	1,888		
S18069C01000019	1,754		
S18069C01000020	1,728		
S18069C01000021	1,478		
S18069C01000022	1,856		
S18069C01000023	1,472		
S18069C01000024	1,542		
S18069C01000025	1,626		

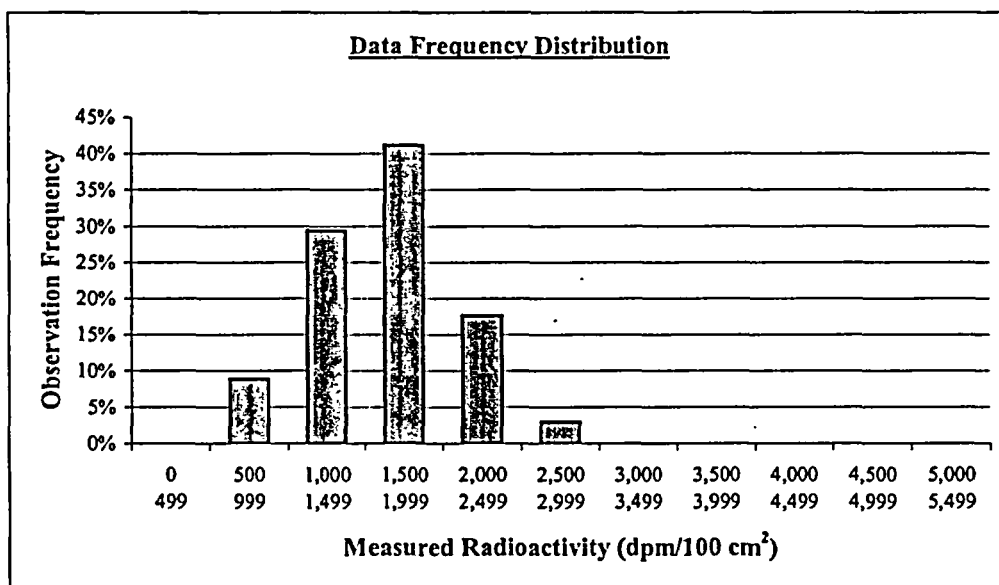
## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18069C  
 Survey Unit Name: MSSS Cubicle C

Classification: Class 1  
 Size (m<sup>2</sup>): 67

## Measurement Data Statistical Evaluation

Statistical Comparisons				Statistical Quantities	
Test	Calculated Value	Acceptance Criteria	Acceptable?	Range:	2,042
Range	2,042	2,338	Pass	Median:	1,655
Median	0.077	0.500	Pass	Mean:	1,690
Mean	1,690	16,800	Pass	Std Dev:	468
Std Dev	468	4,200	Pass	Minimum:	749
All data less than DCGL; Sign statistical test not required.				Maximum:	2,791
				DCGL:	21,000



Plot Parameters		Interval	High End	Low End	Number of Observations	Observation Frequency
# of measurements:	34	1	499	0	0	0%
# of intervals:	11	2	999	500	3	9%
Interval increment:	500	3	1,499	1,000	10	29%
Minimum:	0	4	1,999	1,500	14	41%
Maximum:	5,499	5	2,499	2,000	6	18%
		6	2,999	2,500	1	3%
		7	3,499	3,000	0	0%
		8	3,999	3,500	0	0%
		9	4,499	4,000	0	0%
		10	4,999	4,500	0	0%
		11	5,499	5,000	0	0%
		Total:			34	100%

<u>Comment:</u>
NONE

Comment:  
 NONE

**FINAL SURVEY RESULTS SUMMARY**

Survey Unit ID Code: S18069C  
Survey Unit Name: MSSS Cubicle C

Classification: Class 1  
Size (m<sup>2</sup>): 67

**Judgmental and Miscellaneous Measurement Data**

Measurement Type: Surface Scanning Beta  
Measurement Units: dpm/100cm<sup>2</sup>  
Minimum Value: 1,293

Scan Coverage (%): 100  
Investigation Level: 21,000  
Maximum Value: 12,770

Measurement Type: Removable Beta  
Measurement Units: dpm/100cm<sup>2</sup>  
Minimum Value: 2  
Maximum Value: 22

Number of Measurements: 34  
Investigation Level: 2,100  
Mean: 9  
Standard Deviation: 5

**Discussion of Anomalous Measurement Data**

**Investigation Summary**

No investigation required for this survey unit. No anomalous measurement data.

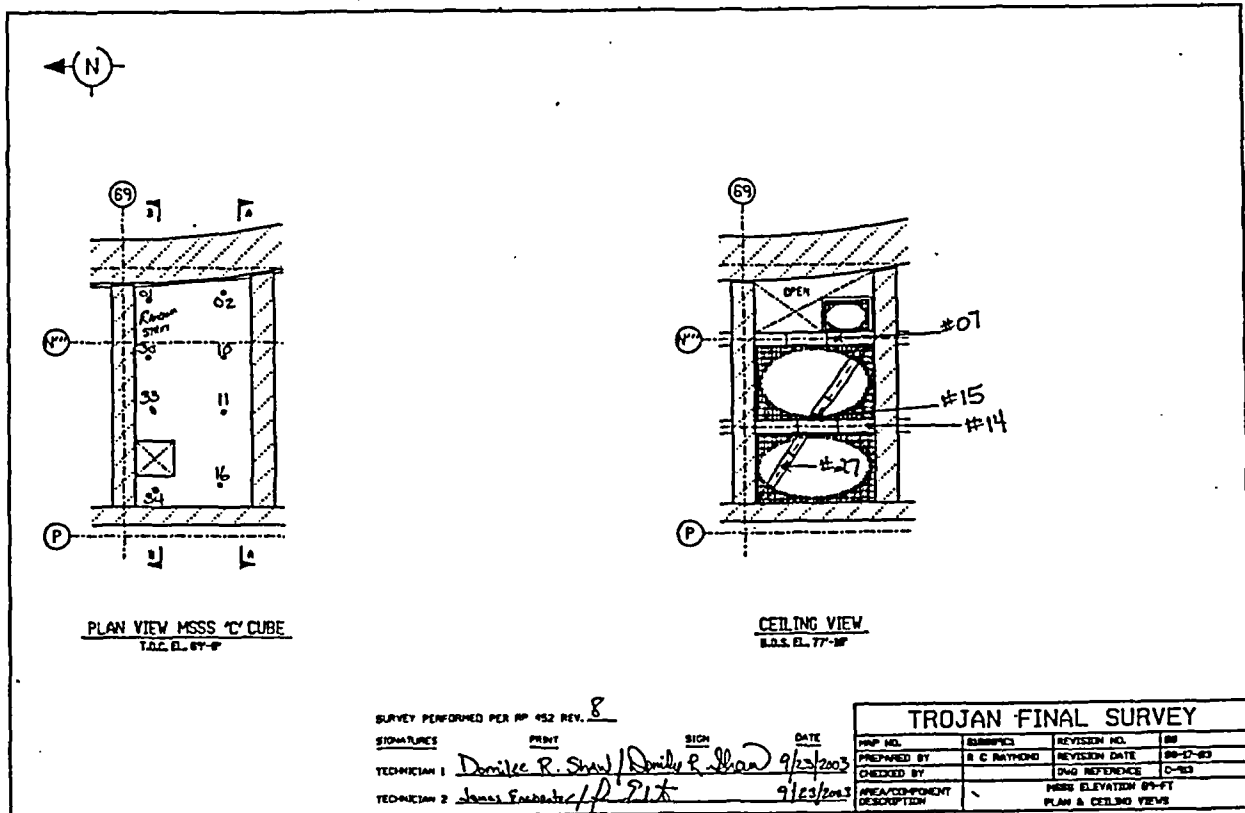
# FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18069C  
Survey Unit Name: MSSS Cubicle C

Classification: Class 1  
Size (m<sup>2</sup>): 67

## Static Measurement Locations Map

Static maps

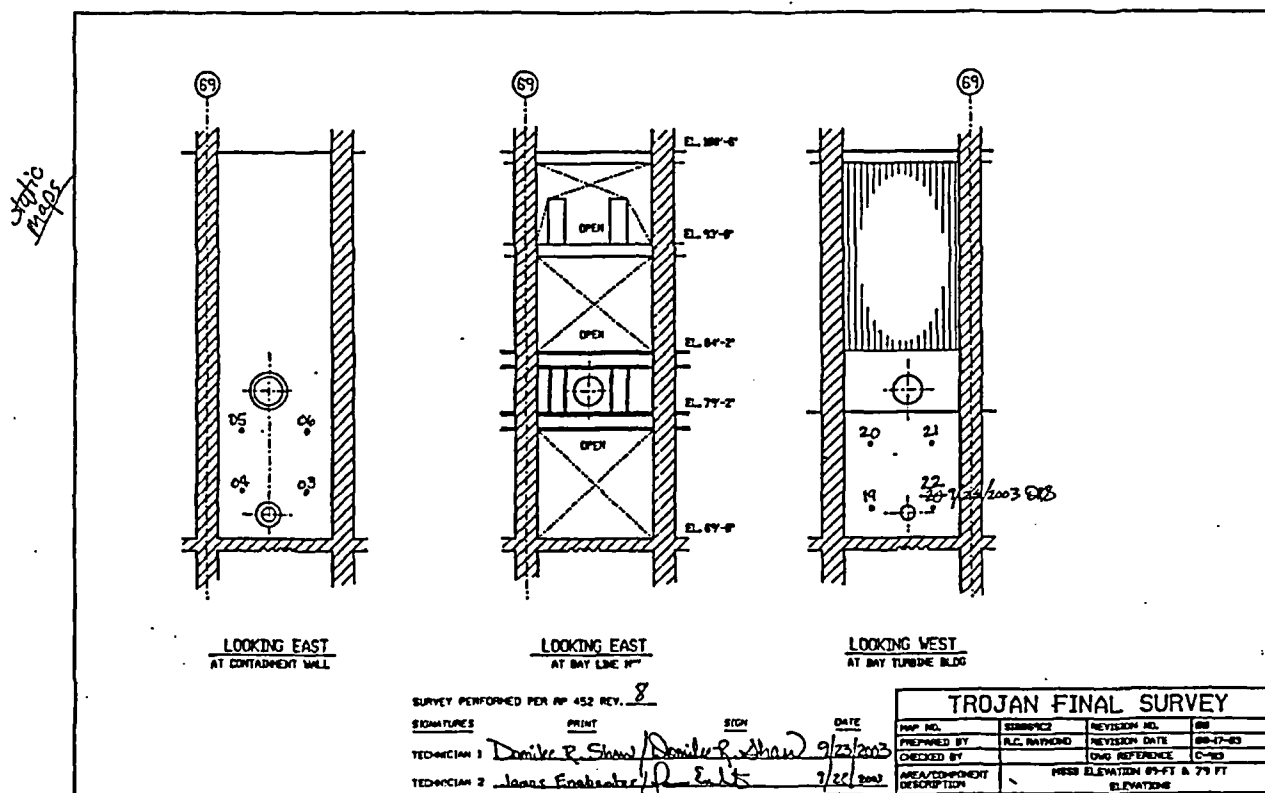


# FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18069C  
 Survey Unit Name: MSSS Cubicle C

Classification: Class 1  
 Size (m<sup>2</sup>): 67

## Static Measurement Locations Map



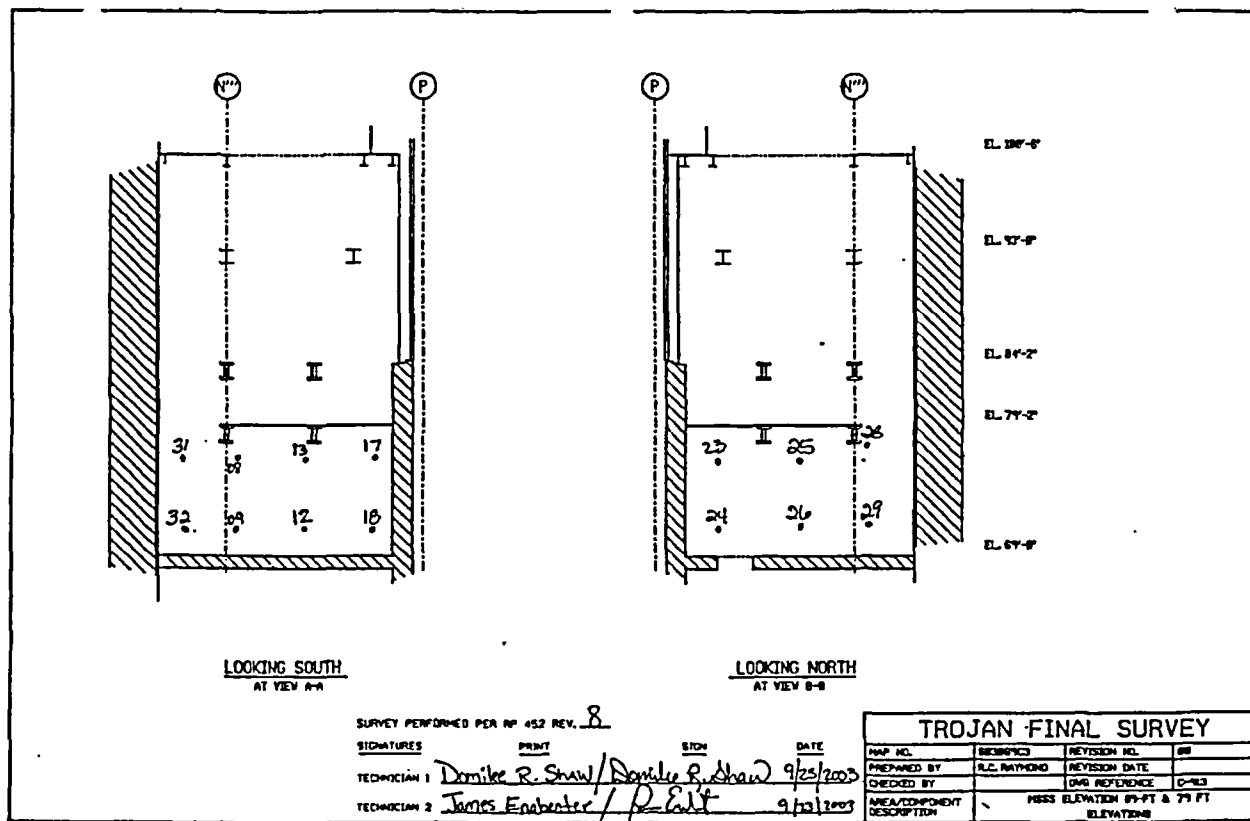


# FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18069C  
Survey Unit Name: MSSS Cubicle C

Classification: Class 1  
Size (m<sup>2</sup>): 67

## Static Measurement Locations Map



## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18069D  
 Survey Unit Name: MSSS Cubicle D

Classification: Class 1  
 Size (m<sup>2</sup>): 204

Data Quality Values

Type 1 Error: 0.05  
 Statistical Test: SGN

Type 2 Error: 0.05  
 Statistical Test Results: Sign test not required

Relative Shift: 3.0

Measurement Values

Measurement Type: Static Surface Beta  
 Measurement Units: dpm/100cm<sup>2</sup>

Number of Measurements: 34  
 DCGL: 21,000

Location	Value	Location	Value
S18069D01000001	901	S18069D01000026	3,773
S18069D01000002	2,065	S18069D01000027	3,403
S18069D01000003	1,681	S18069D01000028	1,836
S18069D01000004	1,836	S18069D01000029	1,971
S18069D01000005	2,253	S18069D01000030	1,957
S18069D01000006	1,883	S18069D01000031	1,991
S18069D01000007	1,749	S18069D01000032	2,798
S18069D01000008	740	S18069D01000033	1,016
S18069D01000009	2,125	S18069D01000034	1,224
S18069D01000010	1,439		
S18069D01000011	1,413		
S18069D01000012	2,670		
S18069D01000013	3,000		
S18069D01000014	2,495		
S18069D01000015	1,708		
S18069D01000016	1,641		
S18069D01000017	713		
S18069D01000018	1,843		
S18069D01000019	2,906		
S18069D01000020	2,193		
S18069D01000021	2,098		
S18069D01000022	1,312		
S18069D01000023	1,897		
S18069D01000024	592		
S18069D01000025	1,762		

## FINAL SURVEY RESULTS SUMMARY

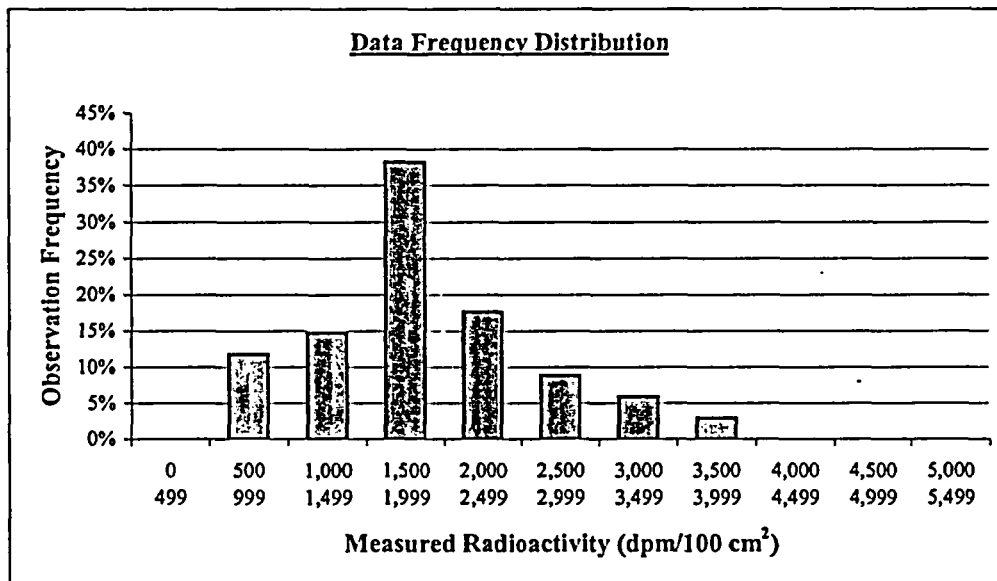
Survey Unit ID Code: S18069D  
 Survey Unit Name: MSSS Cubicle D

Classification: Class 1  
 Size (m<sup>2</sup>): 204

## Measurement Data Statistical Evaluation

Statistical Comparisons				Statistical Quantities	
Test	Calculated Value	Acceptance Criteria	Acceptable?	Range:	3,181
Range	3,181	3,671	Pass	Median:	1,863
Median	0.062	0.500	Pass	Mean:	1,908
Mean	1,908	16,800	Pass	Std Dev:	734
Std Dev	734	4,200	Pass	Minimum:	592
				Maximum:	3,773
				DCGL:	21,000

All data less than DCGL; Sign statistical test not required.



Plot Parameters		Interval	High End	Low End	Number of Observations	Observation Frequency
# of measurements:	34	1	499	0	0	0%
# of intervals:	11	2	999	500	4	12%
Interval increment:	500	3	1,499	1,000	5	15%
Minimum:	0	4	1,999	1,500	13	38%
Maximum:	5,499	5	2,499	2,000	6	18%
		6	2,999	2,500	3	9%
		7	3,499	3,000	2	6%
		8	3,999	3,500	1	3%
		9	4,499	4,000	0	0%
		10	4,999	4,500	0	0%
		11	5,499	5,000	0	0%
		Total:			34	100%

Comment:  
 NONE

**FINAL SURVEY RESULTS SUMMARY**

**Survey Unit ID Code:** S18069D  
**Survey Unit Name:** MSSS Cubicle D

**Classification:** Class 1  
**Size (m<sup>2</sup>):** 204

**Judgmental and Miscellaneous Measurement Data**

**Measurement Type:** Surface Scanning Beta  
**Measurement Units:** dpm/100cm<sup>2</sup>  
**Minimum Value:** 1,218

**Scan Coverage (%):** 100  
**Investigation Level:** 21,000  
**Maximum Value:** 11,590

**Measurement Type:** Removable Beta  
**Measurement Units:** dpm/100cm<sup>2</sup>  
**Minimum Value:** 4  
**Maximum Value:** 13

**Number of Measurements:** 34  
**Investigation Level:** 2,100  
**Mean:** 10  
**Standard Deviation:** 3

**Discussion of Anomalous Measurement Data**

**Investigation Summary**

No investigation required for this survey unit. No anomalous measurement data.

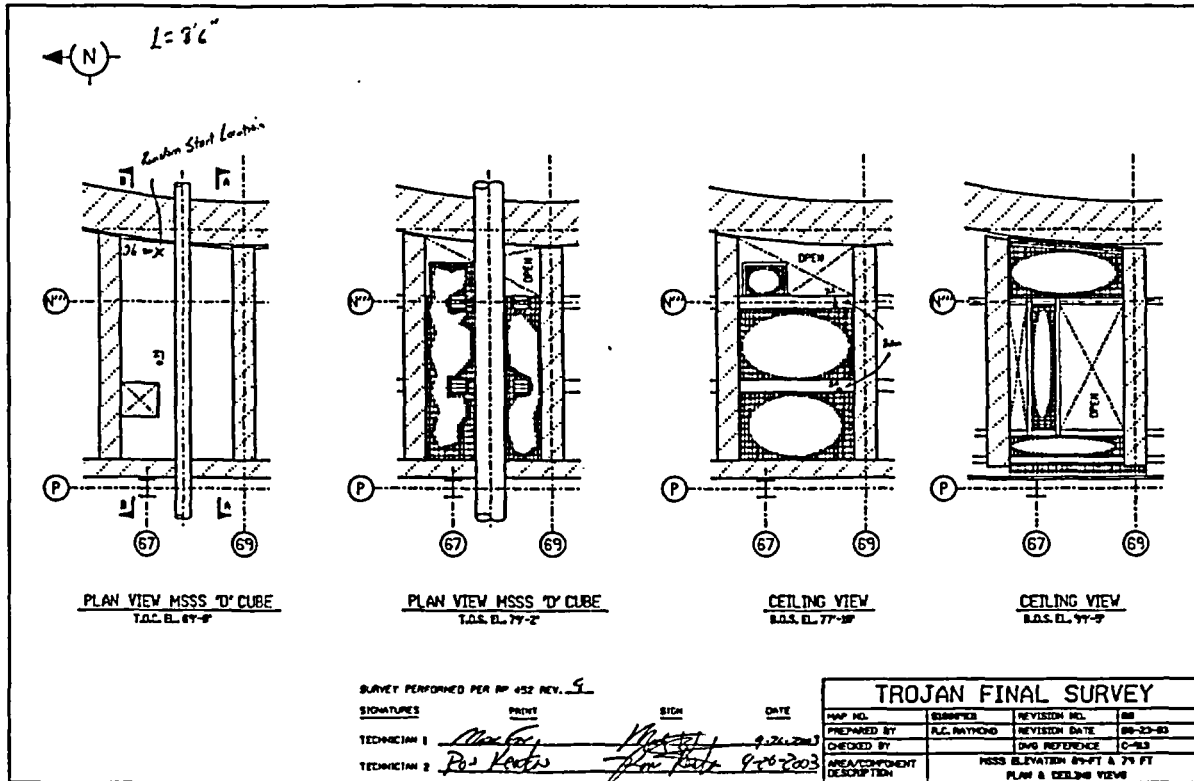
# FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18069D  
Survey Unit Name: MSSS Cubicle D

Classification: Class 1  
Size (m<sup>2</sup>): 204

## Static Measurement Locations Map

Static Map

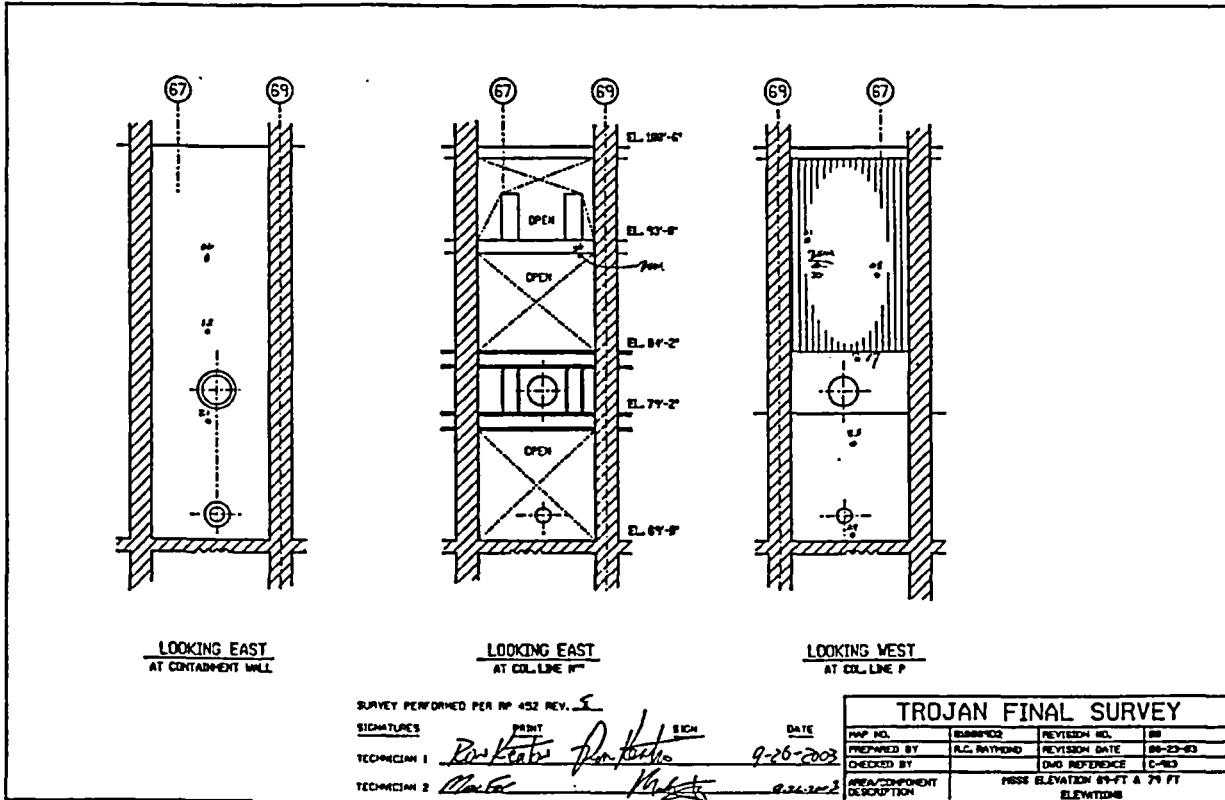


## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18069D  
Survey Unit Name: MSSS Cubicle D

Classification: Class 1  
Size (m<sup>2</sup>): 204

### Static Measurement Locations Map

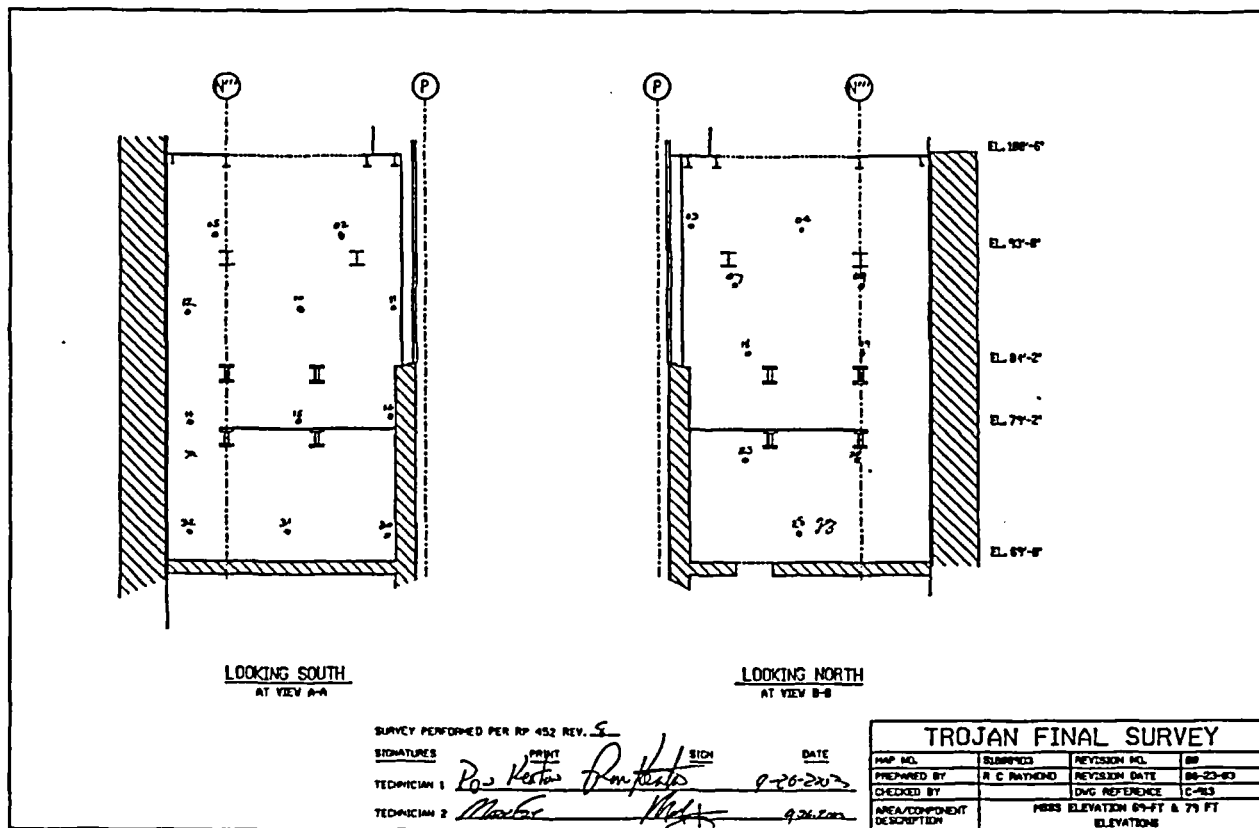


# FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18069D  
Survey Unit Name: MSSS Cubicle D

Classification: Class 1  
Size (m<sup>2</sup>): 204

## Static Measurement Locations Map



## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18079A  
 Survey Unit Name: MSSS Cubicle C

Classification: Class 2  
 Size (m<sup>2</sup>): 123

Data Quality Values

Type 1 Error: 0.05  
 Statistical Test: SGN

Type 2 Error: 0.05  
 Statistical Test Results: Sign test not required

Measurement Values

Measurement Type: Static Surface Beta  
 Measurement Units: dpm/100cm<sup>2</sup>

Number of Measurements: 30  
 DCGL: 21,000

Location	Value	Location	Value
S18079A01000001	867	S18079A01000026	1,202
S18079A01000002	412	S18079A01000027	1,164
S18079A01000003	497	S18079A01000028	1,052
S18079A01000004	1,090	S18079A01000029	1,040
S18079A01000005	944	S18079A01000030	1,013
S18079A01000006	1,083		
S18079A01000007	520		
S18079A01000008	878		
S18079A01000009	1,275		
S18079A01000010	925		
S18079A01000011	1,071		
S18079A01000012	485		
S18079A01000013	917		
S18079A01000014	1,063		
S18079A01000015	1,036		
S18079A01000016	875		
S18079A01000017	663		
S18079A01000018	1,083		
S18079A01000019	474		
S18079A01000020	1,083		
S18079A01000021	1,252		
S18079A01000022	744		
S18079A01000023	632		
S18079A01000024	948		
S18079A01000025	1,102		



## FINAL SURVEY RESULTS SUMMARY

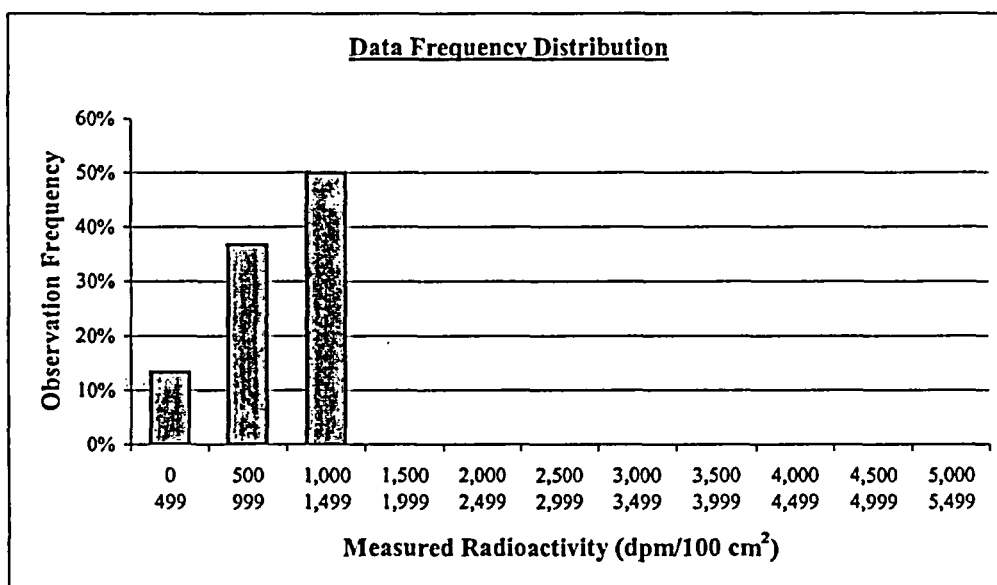
Survey Unit ID Code: S18079A  
 Survey Unit Name: MSSS Cubicle C

Classification: Class 2  
 Size (m<sup>2</sup>): 123

## Measurement Data Statistical Evaluation

Statistical Comparisons				Statistical Quantities	
Test	Calculated Value	Acceptance Criteria	Acceptable?		
Range	863	1,241	Pass	Range:	863
Median	0.272	0.500	Pass	Median:	981
Mean	913	16,800	Pass	Mean:	913
Std Dev	248	4,200	Pass	Std Dev:	248
				Minimum:	412
				Maximum:	1,275
				DCGL:	21,000

All data less than DCGL; Sign statistical test not required.



Plot Parameters		Interval	High End	Low End	Number of Observations	Observation Frequency
# of measurements:	30	1	499	0	4	13%
# of intervals:	11	2	999	500	11	37%
Interval increment:	500	3	1,499	1,000	15	50%
Minimum:	0	4	1,999	1,500	0	0%
Maximum:	5,499	5	2,499	2,000	0	0%
		6	2,999	2,500	0	0%
		7	3,499	3,000	0	0%
		8	3,999	3,500	0	0%
		9	4,499	4,000	0	0%
		10	4,999	4,500	0	0%
		11	5,499	5,000	0	0%
		Total:			30	100%

**Comment:**  
 NONE

**FINAL SURVEY RESULTS SUMMARY**

**Survey Unit ID Code:** S18079A  
**Survey Unit Name:** MSSS Cubicle C

**Classification:** Class 2  
**Size (m<sup>2</sup>):** 123

**Judgmental and Miscellaneous Measurement Data**

**Measurement Type:** Surface Scanning Beta  
**Measurement Units:** dpm/100cm<sup>2</sup>  
**Minimum Value:** 643

**Scan Coverage (%):** 20  
**Investigation Level:** 21,000  
**Maximum Value:** 1,426

**Measurement Type:** Removable Beta  
**Measurement Units:** dpm/100cm<sup>2</sup>  
**Minimum Value:** 2  
**Maximum Value:** 22

**Number of Measurements:** 30  
**Investigation Level:** 2,100  
**Mean:** 10  
**Standard Deviation:** 4

**Discussion of Anomalous Measurement Data**

**Investigation Summary**

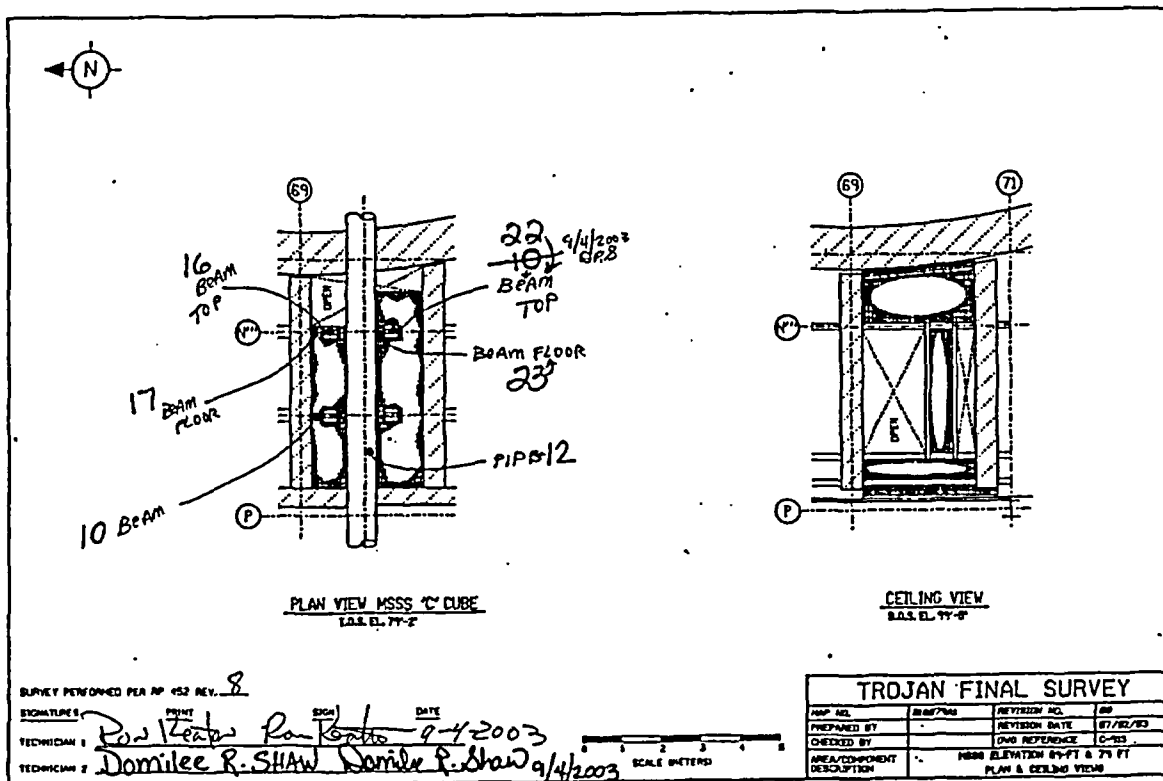
No investigation required for this survey unit. No anomalous measurement data.

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18079A  
Survey Unit Name: MSSS Cubicle C

Classification: Class 2  
Size (m<sup>2</sup>): 123

### Static Measurement Locations Map

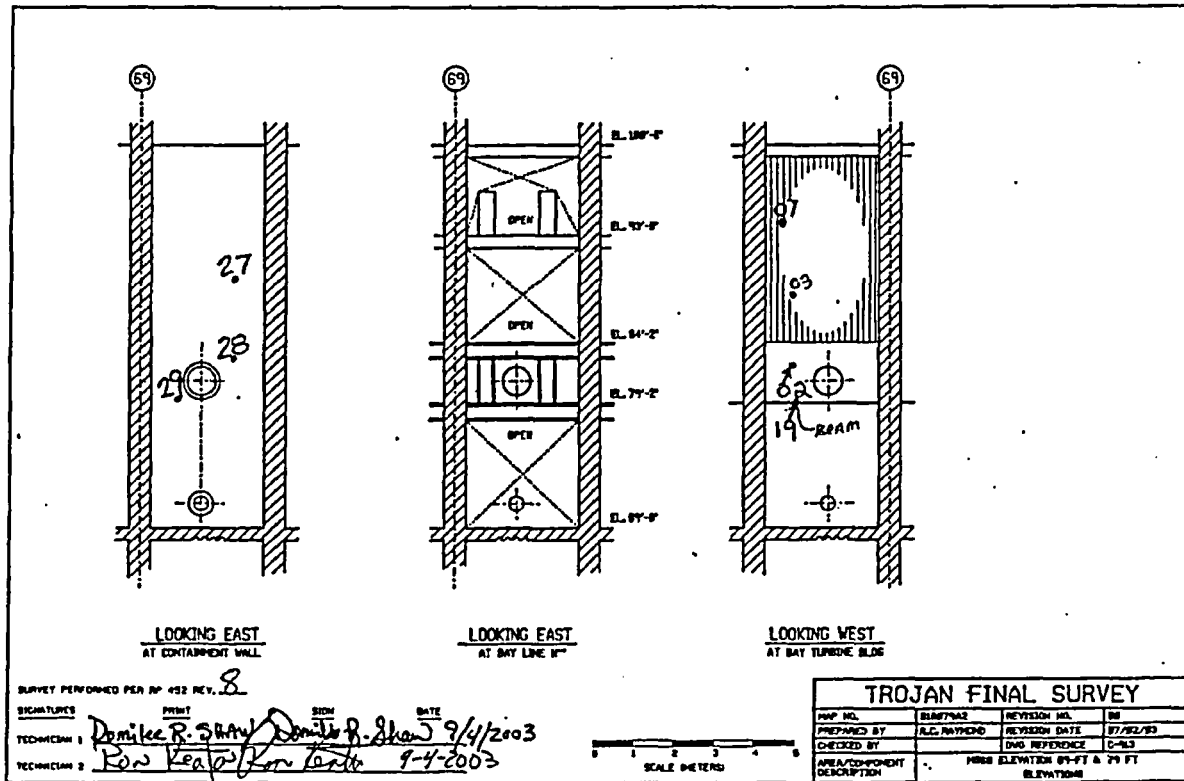


## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18079A  
Survey Unit Name: MSSS Cubicle C

Classification: Class 2  
Size (m<sup>2</sup>): 123

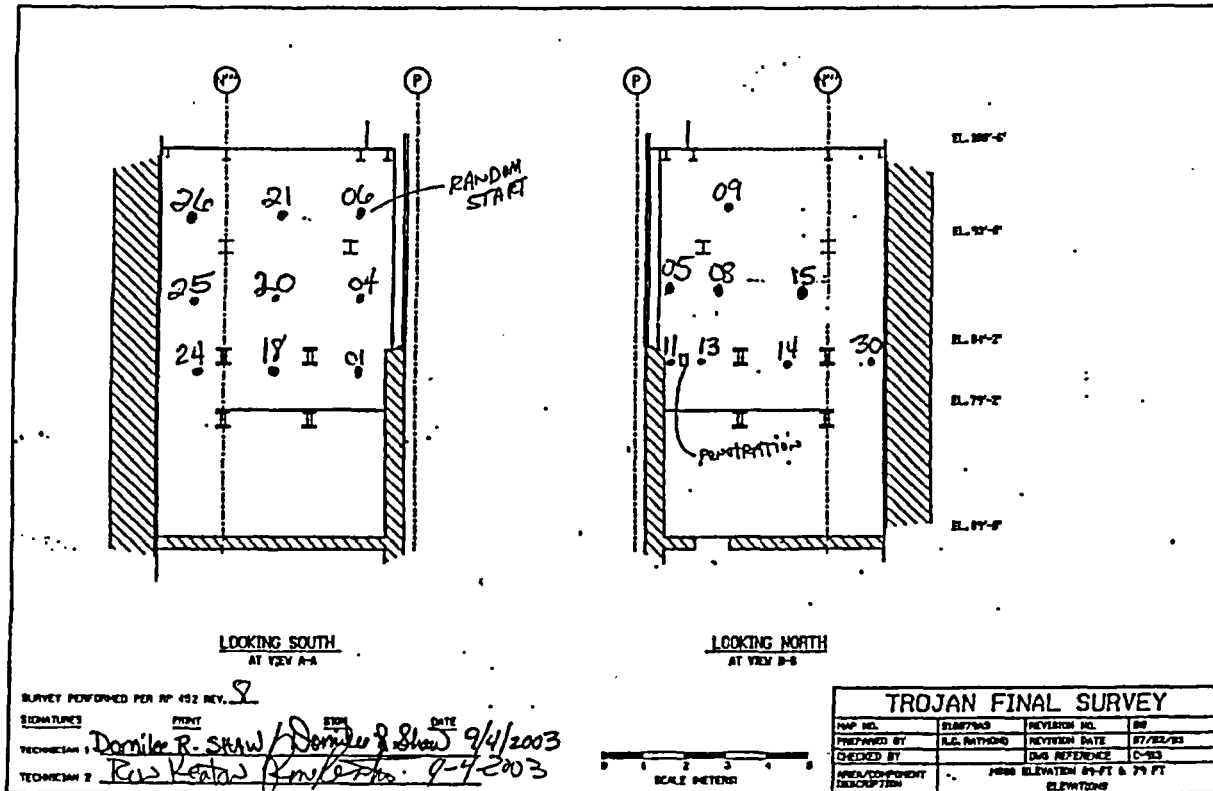
### Static Measurement Locations Map



## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18079A  
 Survey Unit Name: MSSS Cubicle C

Classification: Class 2  
 Size (m<sup>2</sup>): 123

Static Measurement Locations Map

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18100A

Classification: Class 2

Survey Unit Name: MSSS Safety Relief Valve Area

Size (m<sup>2</sup>): 311Data Quality Values

Type 1 Error: 0.05

Type 2 Error: 0.05

Relative Shift: 3.0

Statistical Test: SGN

Statistical Test Results: Sign test not required

Measurement Values

Measurement Type: Static Surface Beta

Number of Measurements: 30

Measurement Units: dpm/100cm<sup>2</sup>

DCGL: 21,000

Location	Value	Location	Value
S18100A01000001	590	S18100A01000026	640
S18100A01000002	628	S18100A01000027	1,067
S18100A01000003	605	S18100A01000028	1,133
S18100A01000004	659	S18100A01000029	871
S18100A01000005	605	S18100A01000030	667
S18100A01000006	439		
S18100A01000007	948		
S18100A01000008	624		
S18100A01000009	1,241		
S18100A01000010	1,052		
S18100A01000011	1,021		
S18100A01000012	1,102		
S18100A01000013	1,202		
S18100A01000014	1,703		
S18100A01000015	1,106		
S18100A01000016	636		
S18100A01000017	482		
S18100A01000018	632		
S18100A01000019	690		
S18100A01000020	539		
S18100A01000021	1,098		
S18100A01000022	1,009		
S18100A01000023	1,133		
S18100A01000024	975		
S18100A01000025	578		

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18100A

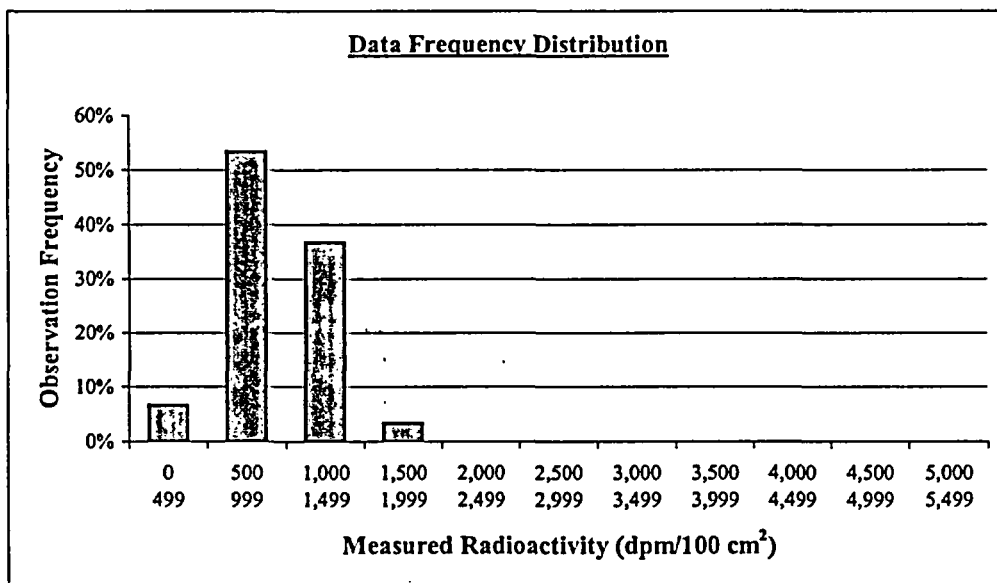
Classification: Class 2

Survey Unit Name: MSSS Safety Relief Valve Area

Size (m<sup>2</sup>): 311

## Measurement Data Statistical Evaluation

Statistical Comparisons				Statistical Quantities	
Test	Calculated Value	Acceptance Criteria	Acceptable?	Range:	1,264
Range	1,264	1,473	Pass	Median:	781
Median	0.256	0.500	Pass	Mean:	856
Mean	856	16,800	Pass	Std Dev:	295
Std Dev	295	4,200	Pass	Minimum:	439
All data less than DCGL; Sign statistical test not required.				Maximum:	1,703
				DCGL:	21,000



Plot Parameters		Interval	High End	Low End	Number of Observations	Observation Frequency
# of measurements:	30	1	499	0	2	7%
# of intervals:	11	2	999	500	16	53%
Interval increment:	500	3	1,499	1,000	11	37%
Minimum:	0	4	1,999	1,500	1	3%
Maximum:	5,499	5	2,499	2,000	0	0%
<b>Comment:</b> NONE		6	2,999	2,500	0	0%
		7	3,499	3,000	0	0%
		8	3,999	3,500	0	0%
		9	4,499	4,000	0	0%
		10	4,999	4,500	0	0%
		11	5,499	5,000	0	0%
		Total:			30	100%

**FINAL SURVEY RESULTS SUMMARY**

**Survey Unit ID Code:** S18100A

**Classification:** Class 2

**Survey Unit Name:** MSSS Safety Relief Valve Area

**Size (m<sup>2</sup>):** 311

**Judgmental and Miscellaneous Measurement Data**

**Measurement Type:** Surface Scanning Beta

**Scan Coverage (%):** 20

**Measurement Units:** dpm/100cm<sup>2</sup>

**Investigation Level:** 21,000

**Minimum Value:** 641

**Maximum Value:** 3,160

**Measurement Type:** Removable Beta

**Number of Measurements:** 30

**Measurement Units:** dpm/100cm<sup>2</sup>

**Investigation Level:** 2,100

**Minimum Value:** 3

**Mean:** 8

**Maximum Value:** 15

**Standard Deviation:** 3

**Discussion of Anomalous Measurement Data**

**Investigation Summary**

No investigation required for this survey unit. No anomalous measurement data.



## FINAL SURVEY RESULTS SUMMARY

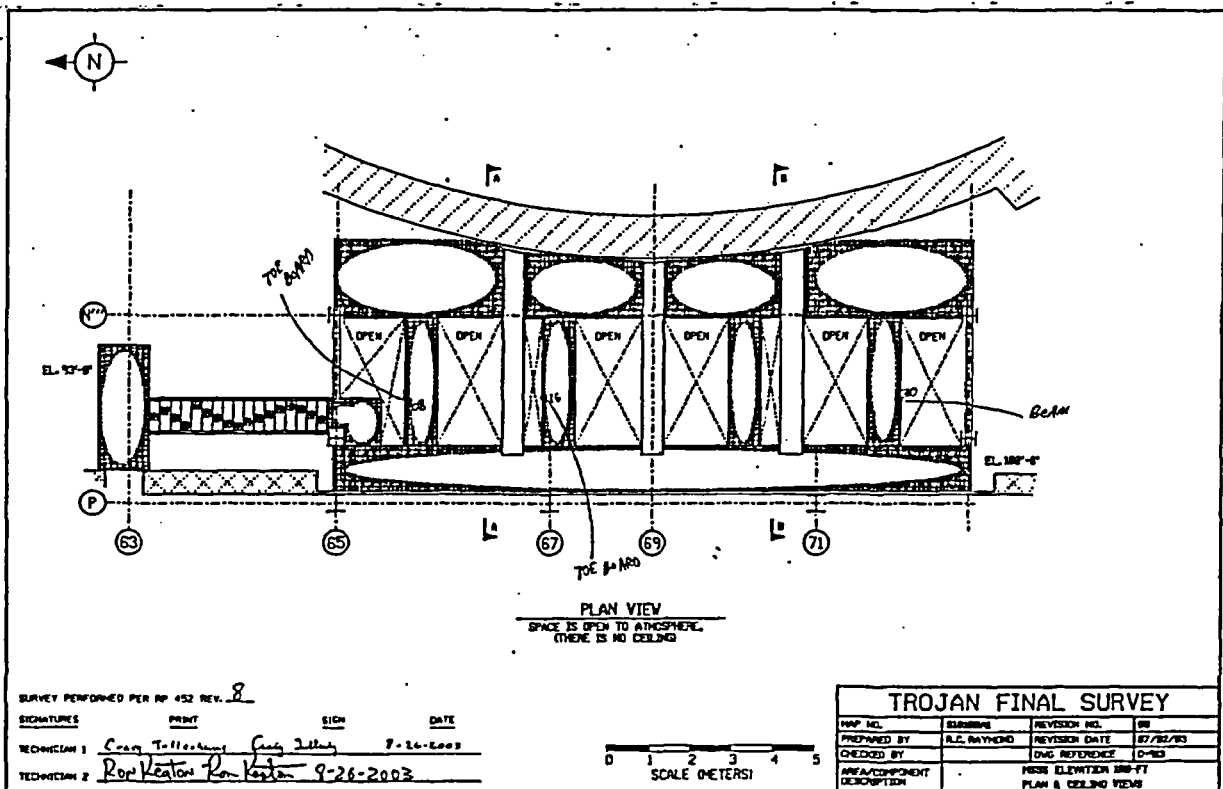
Survey Unit ID Code: S18100A

Survey Unit Name: MSSS Safety Relief Valve Area

Classification: Class 2

Size (m<sup>2</sup>): 311Static Measurement Locations Map

static

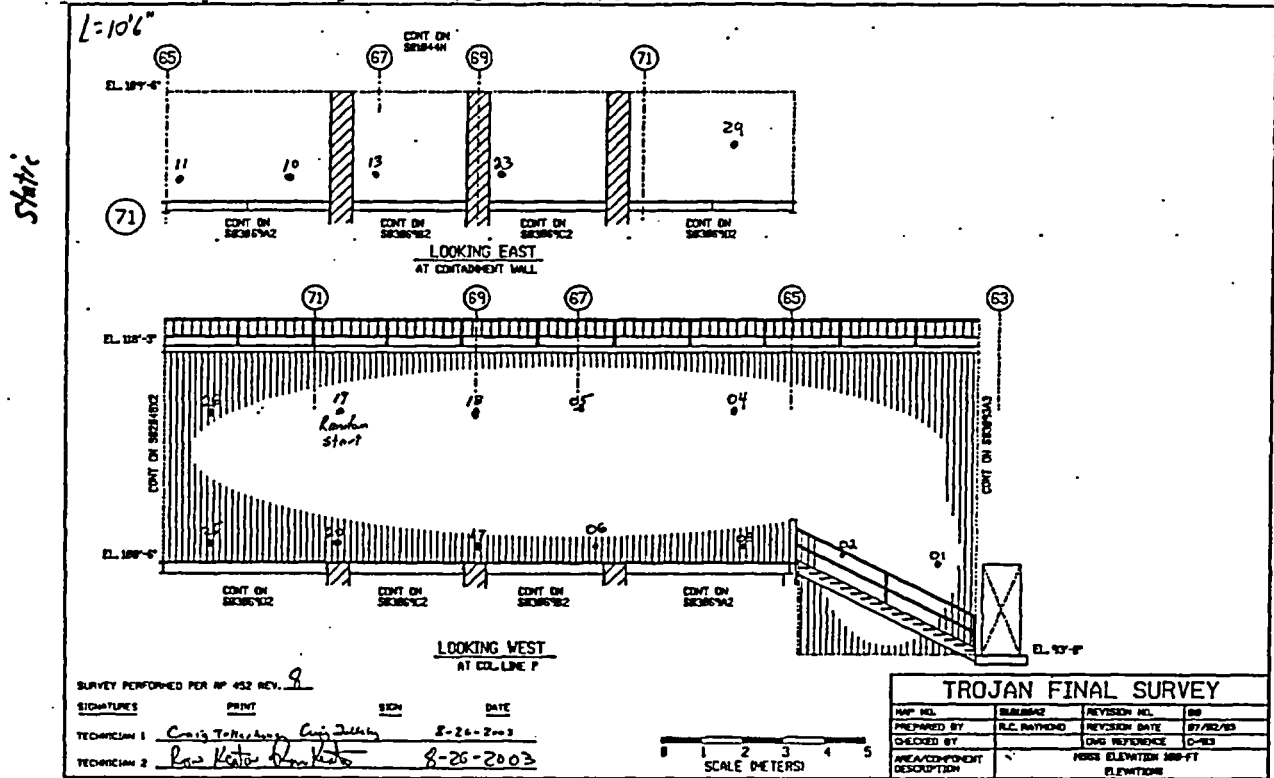


## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18100A

Survey Unit Name: MSSS Safety Relief Valve Area

Classification: Class 2

Size (m<sup>2</sup>): 311Static Measurement Locations Map

# FINAL SURVEY RESULTS SUMMARY

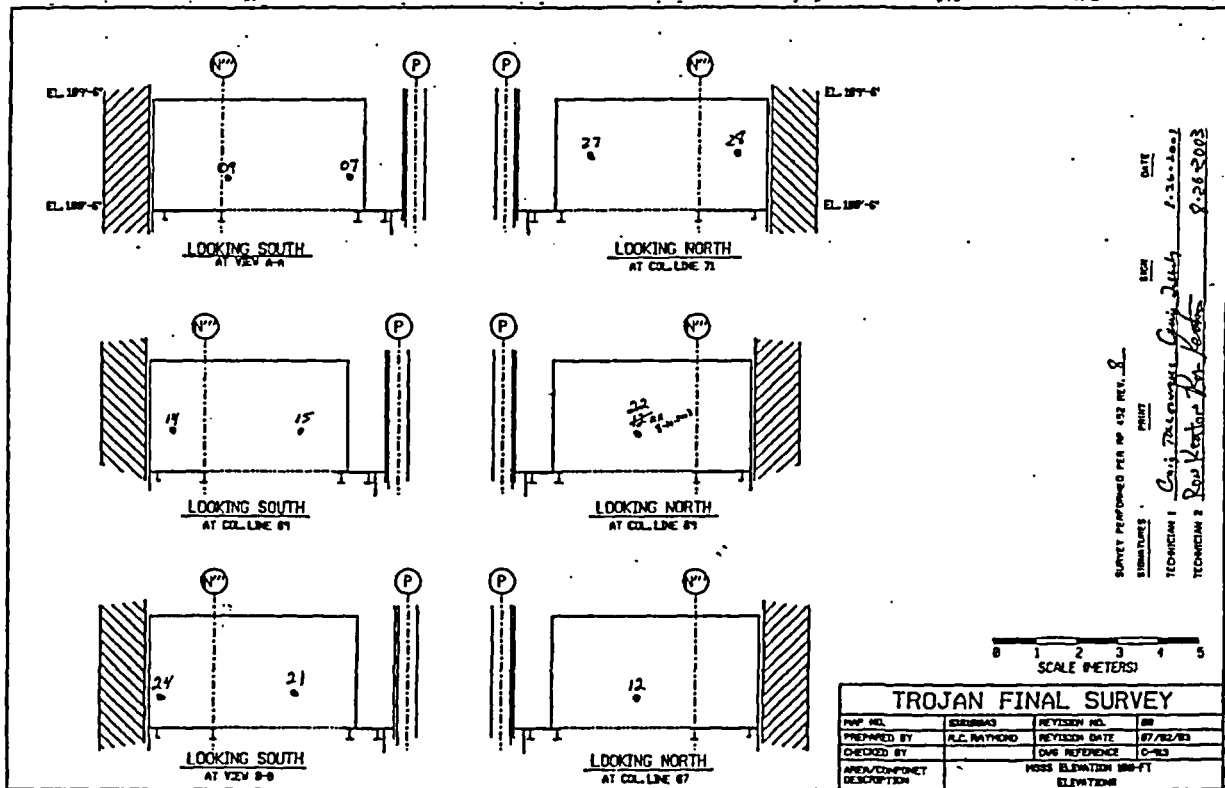
Survey Unit ID Code: S18100A

Survey Unit Name: MSSS Safety Relief Valve Area

Classification: Class 2

Size (m<sup>2</sup>): 311

## Static Measurement Locations Map



APPENDIX D

SURVEY UNIT SUMMARY REPORTS – EPA

<u>Survey Unit ID Code</u>	<u>Page(s)</u>
S18045A .....	D-2 through D-7
S18045B.....	D-8 through D-11
S18045F .....	D-12 through D-15
S18045G .....	D-16 through D-19
S18093A .....	D-20 through D-25

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18045A  
 Survey Unit Name: EPA, Major Portion

Classification: Class 2  
 Size (m<sup>2</sup>): 836

### Data Quality Values

Type 1 Error: 0.05  
 Statistical Test: SGN

Type 2 Error: 0.05      Relative Shift: 3.0  
 Statistical Test Results: Sign test not required

### Measurement Values

Measurement Type: Static Surface Beta  
 Measurement Units: dpm/100cm<sup>2</sup>

Number of Measurements: 30  
 DCGL: 21,000

Location	Value	Location	Value
S18045A01000001	1,080	S18045A01000026	592
S18045A01000002	1,003	S18045A01000027	1,237
S18045A01000003	1,108	S18045A01000028	1,426
S18045A01000004	1,213	S18045A01000029	1,516
S18045A01000005	1,132	S18045A01000030	488
S18045A01000006	616		
S18045A01000007	612		
S18045A01000008	991		
S18045A01000009	1,112		
S18045A01000010	1,120		
S18045A01000011	1,342		
S18045A01000012	1,047		
S18045A01000013	459		
S18045A01000014	600		
S18045A01000015	665		
S18045A01000016	624		
S18045A01000017	1,205		
S18045A01000018	1,209		
S18045A01000019	1,031		
S18045A01000020	1,108		
S18045A01000021	1,144		
S18045A01000022	600		
S18045A01000023	955		
S18045A01000024	1,080		
S18045A01000025	1,132		

## FINAL SURVEY RESULTS SUMMARY

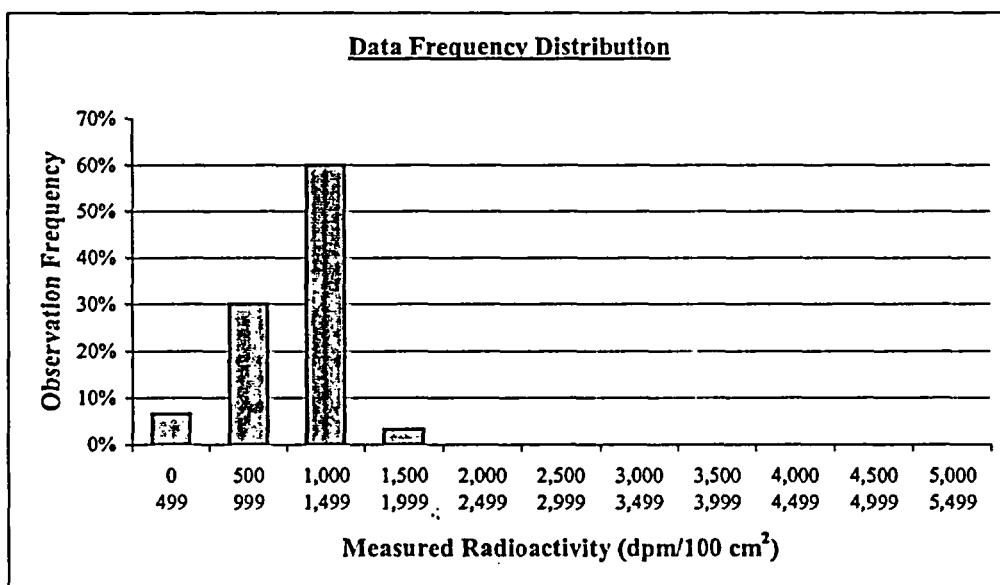
Survey Unit ID Code: S18045A  
 Survey Unit Name: EPA, Major Portion

Classification: Class 2  
 Size (m<sup>2</sup>): 836

## Measurement Data Statistical Evaluation

Statistical Comparisons				Statistical Quantities	
Test	Calculated Value	Acceptance Criteria	Acceptable?		
Range	1,057	1,456	Pass	Range:	1,057
Median	0.338	0.500	Pass	Median:	1,080
Mean	982	21,000	Pass	Mean:	982
Std Dev	291	4,200	Pass	Std Dev:	291
				Minimum:	459
				Maximum:	1,516
				DCGL:	21,000

All data less than DCGL; Sign statistical test not required.



Plot Parameters		Interval	High End	Low End	Number of Observations	Observation Frequency
# of measurements:	30	1	499	0	2	7%
# of intervals:	11	2	999	500	9	30%
Interval increment:	500	3	1,499	1,000	18	60%
Minimum:	0	4	1,999	1,500	1	3%
Maximum:	5,499	5	2,499	2,000	0	0%
		6	2,999	2,500	0	0%
		7	3,499	3,000	0	0%
		8	3,999	3,500	0	0%
		9	4,499	4,000	0	0%
		10	4,999	4,500	0	0%
		11	5,499	5,000	0	0%
		Total:			30	100%

**Comment:**  
 NONE.

**FINAL SURVEY RESULTS SUMMARY**

**Survey Unit ID Code:** S18045A  
**Survey Unit Name:** EPA, Major Portion

**Classification:** Class 2  
**Size (m<sup>2</sup>):** 836

**Judgmental and Miscellaneous Measurement Data**

**Measurement Type:** Surface Scanning Beta  
**Measurement Units:** dpm/100cm<sup>2</sup>  
**Minimum Value:** 705

**Scan Coverage (%):** 20  
**Investigation Level:** 21,000  
**Maximum Value:** 9,488

**Measurement Type:** Removable Beta  
**Measurement Units:** dpm/100cm<sup>2</sup>  
**Minimum Value:** 2  
**Maximum Value:** 18

**Number of Measurements:** 30  
**Investigation Level:** 2,100  
**Mean:** 9  
**Standard Deviation:** 4

**Discussion of Anomalous Measurement Data**

**Investigation Summary**

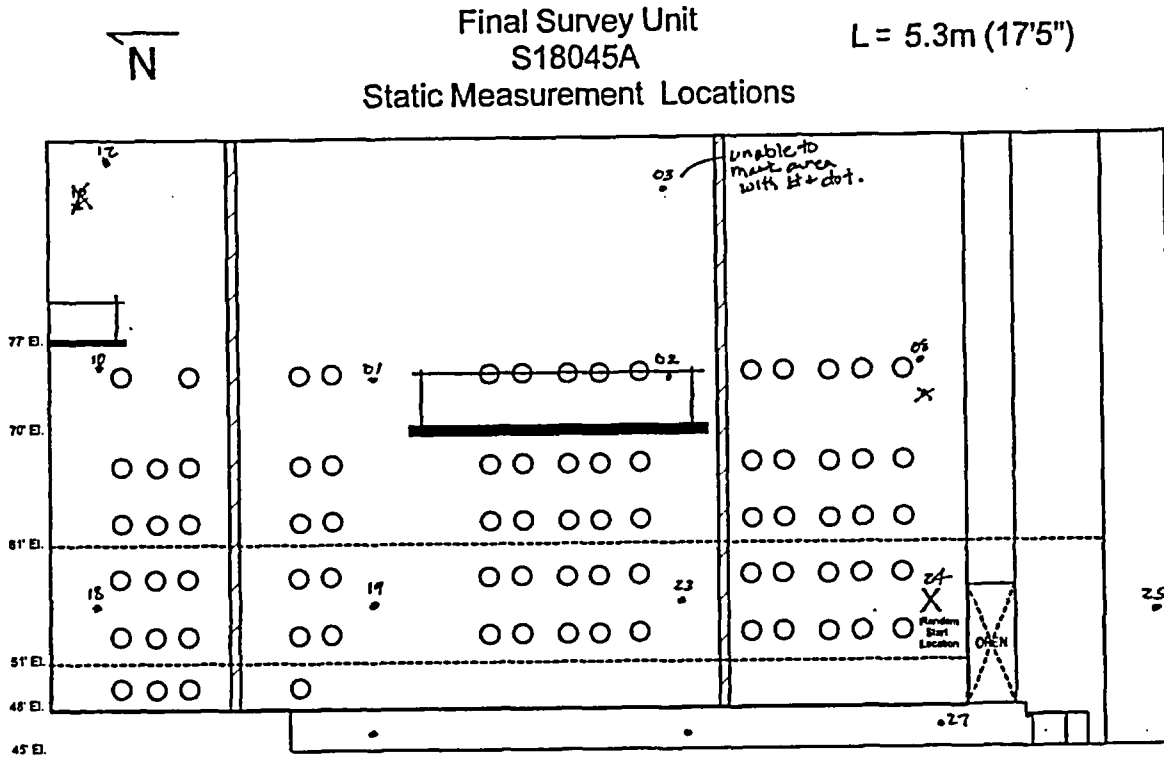
No investigation required for this survey unit. No anomalous measurement data.

# FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18045A  
Survey Unit Name: EPA, Major Portion

Classification: Class 2  
Size (m<sup>2</sup>): 836

## Static Measurement Locations Map



*Jose Libal*  
Survey Technician Date 1/19/2003

*Master M...*  
Survey Technician Date 1/19/2003

Data collection performed IAW  
RP 452 Rev. 8

EPAISaml.cac



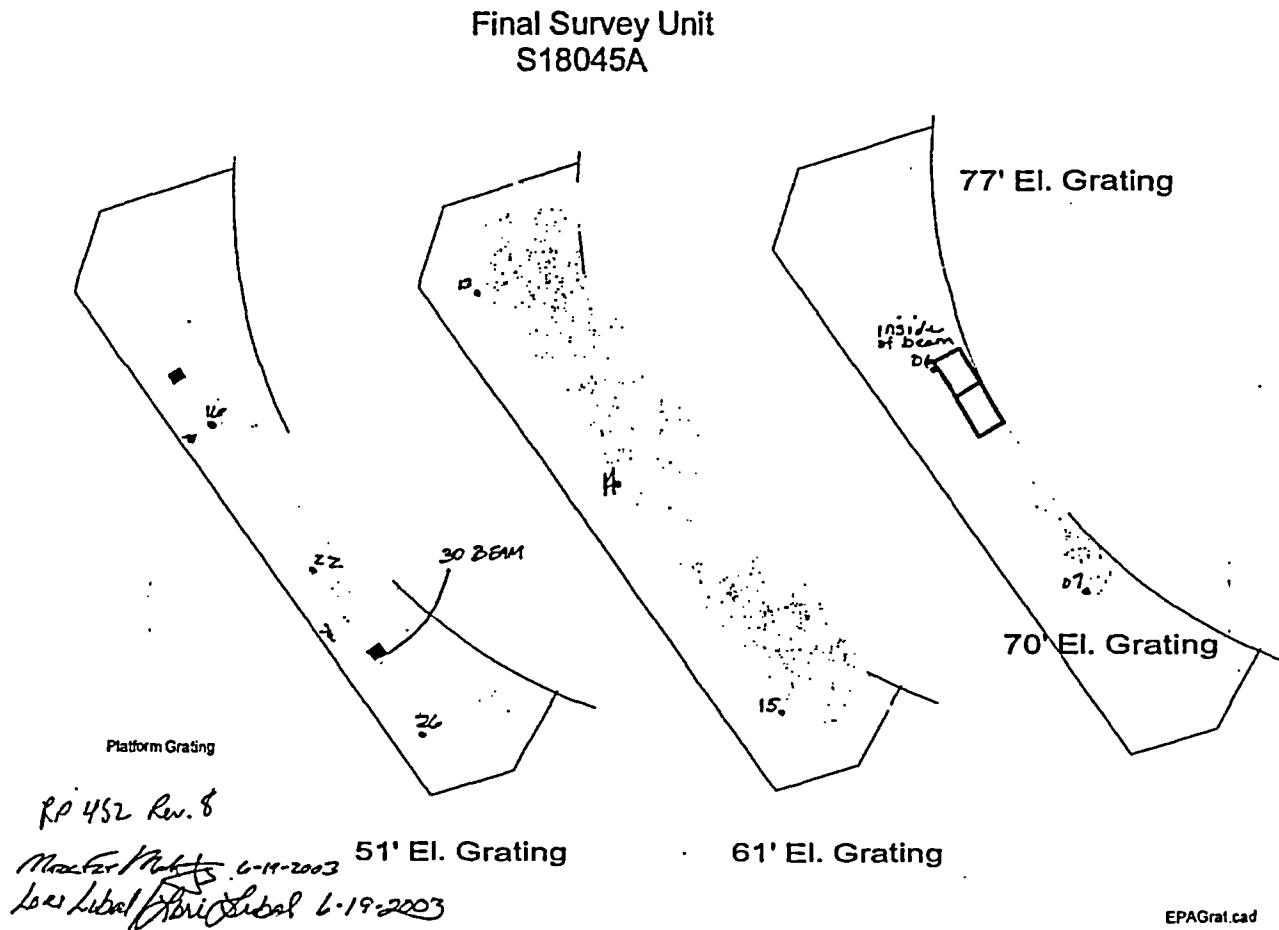


FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18045A  
Survey Unit Name: EPA, Major Portion

Classification: Class 2  
Size (m<sup>2</sup>): 836

Static Measurement Locations Map



## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18045B  
 Survey Unit Name: EPA, Minor Portion

Classification: Class 1  
 Size (m<sup>2</sup>): 74

Data Quality Values

Type 1 Error: 0.05  
 Statistical Test: SGN

Type 2 Error: 0.05      Relative Shift: 3.0  
 Statistical Test Results: Sign test not required

Measurement Values

Measurement Type: Static Surface Beta  
 Measurement Units: dpm/100cm<sup>2</sup>

Number of Measurements: 40  
 DCGL: 22,000

Location	Value	Location	Value
S18045B01000001	5,812	S18045B01000026	2,218
S18045B01000002	3,419	S18045B01000027	1,875
S18045B01000003	4,274	S18045B01000028	1,856
S18045B01000004	3,761	S18045B01000029	2,012
S18045B01000005	3,162	S18045B01000030	1,787
S18045B01000006	3,590	S18045B01000031	1,637
S18045B01000007	4,872	S18045B01000032	2,037
S18045B01000008	3,504	S18045B01000033	2,018
S18045B01000009	3,932	S18045B01000034	2,325
S18045B01000010	5,214	S18045B01000035	2,143
S18045B01000011	4,872	S18045B01000036	1,837
S18045B01000012	3,761	S18045B01000037	1,869
S18045B01000013	3,333	S18045B01000038	1,831
S18045B01000014	2,735	S18045B01000039	1,925
S18045B01000015	4,103	S18045B01000040	1,944
S18045B01000016	3,675		
S18045B01000017	1,875		
S18045B01000018	2,031		
S18045B01000019	1,881		
S18045B01000020	2,231		
S18045B01000021	2,053		
S18045B01000022	1,969		
S18045B01000023	2,006		
S18045B01000024	1,937		
S18045B01000025	2,362		

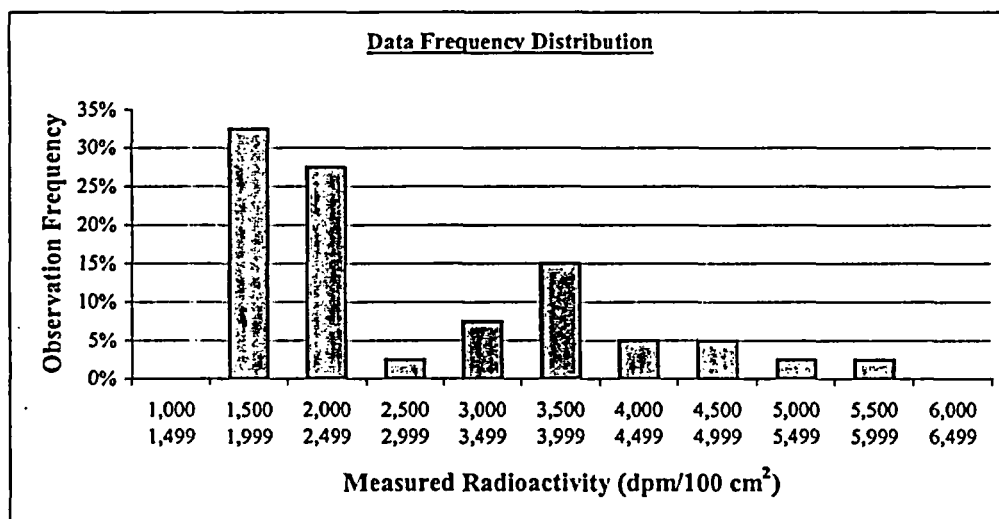
## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18045B  
 Survey Unit Name: EPA, Minor Portion

Classification: Class 1  
 Size (m<sup>2</sup>): 74

## Measurement Data Statistical Evaluation

Statistical Comparisons				Statistical Quantities	
Test	Calculated Value	Acceptance Criteria	Acceptable?	Range:	4,175
Range	4,175	5,648	Pass	Median:	2,181
Median	0.541	0.500	See comment below	Mean:	2,792
Mean	2,792	17,600	Pass	Std Dev:	1,130
Std Dev	1,130	4,400	Pass	Minimum:	1,637
All data less than DCGL; Sign statistical test not required.				Maximum:	5,812
				DCGL:	22,000



Plot Parameters		Interval	High End	Low End	Number of Observations	Observation Frequency
# of measurements:	40	1	1,499	1,000	0	0%
# of intervals:	11	2	1,999	1,500	13	33%
Interval increment:	500	3	2,499	2,000	11	28%
Minimum:	1,000	4	2,999	2,500	1	3%
Maximum:	6,499	5	3,499	3,000	3	8%
		6	3,999	3,500	6	15%
		7	4,499	4,000	2	5%
		8	4,999	4,500	2	5%
		9	5,499	5,000	1	3%
		10	5,999	5,500	1	3%
		11	6,499	6,000	0	0%
Total:					40	100%

**Comment:**

Median failure is a test artifact resulting from data set bimodal distribution due to use of two detector types (Pancake GM & GFPD) for data collection. The GM has relatively low detection efficiency with small active area resulting in values 1.5 to 2.5 times greater than the GFPD. All data are valid & accepted.

**FINAL SURVEY RESULTS SUMMARY**

**Survey Unit ID Code:** S18045B  
**Survey Unit Name:** EPA, Minor Portion

**Classification:** Class 1  
**Size (m<sup>2</sup>):** 74

**Judgmental and Miscellaneous Measurement Data**

**Measurement Type:** Surface Scanning Beta  
**Measurement Units:** dpm/100cm<sup>2</sup>  
**Minimum Value:** 1,945

**Scan Coverage (%):** 100  
**Investigation Level:** 22,000  
**Maximum Value:** 9,836

**Measurement Type:** Removable Beta  
**Measurement Units:** dpm/100cm<sup>2</sup>  
**Minimum Value:** 3  
**Maximum Value:** 17

**Number of Measurements:** 40  
**Investigation Level:** 2,200  
**Mean:** 11  
**Standard Deviation:** 4

**Discussion of Anomalous Measurement Data**

**Investigation Summary**

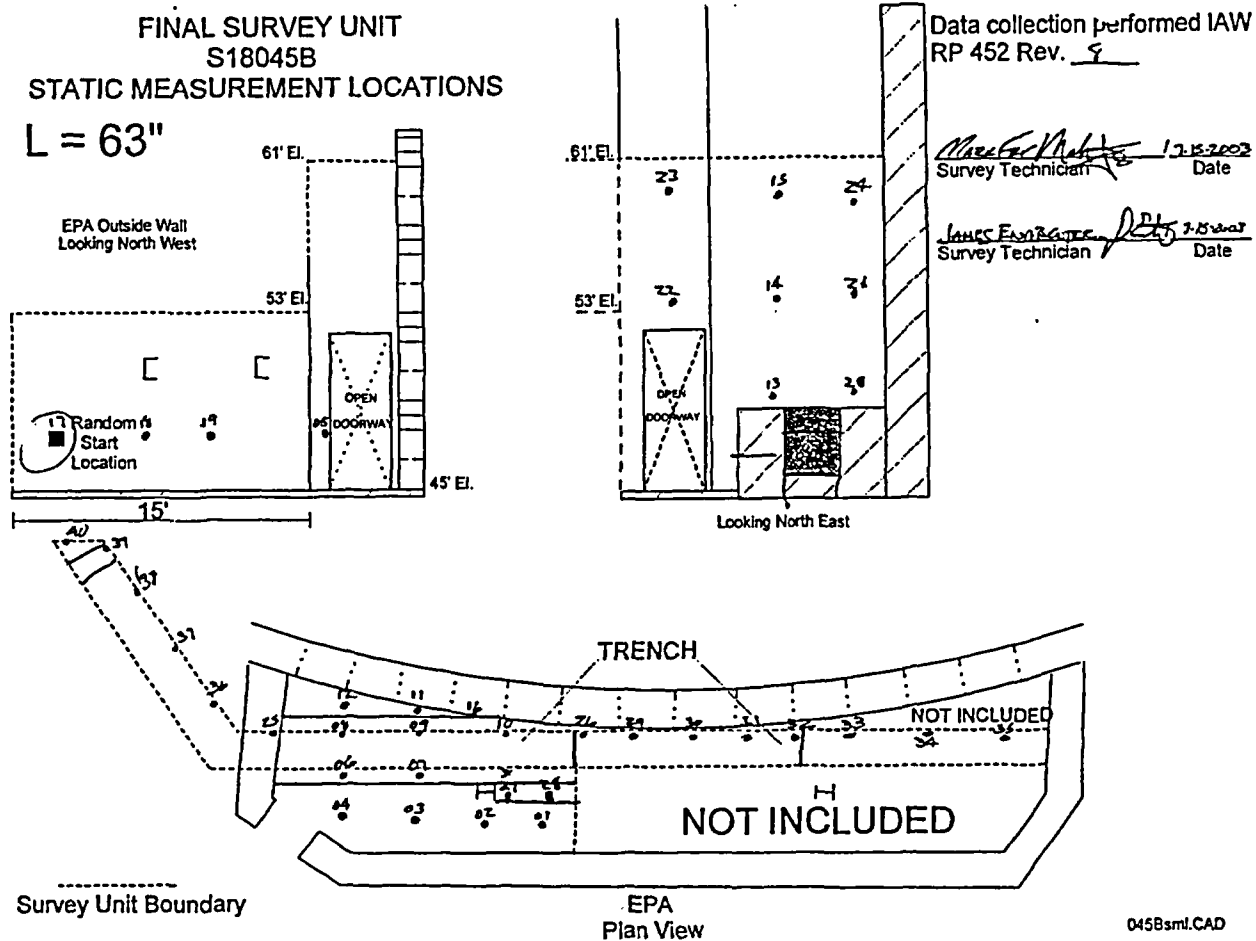
No investigation required for this survey unit. No anomalous measurement data.

# FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18045B  
Survey Unit Name: EPA, Minor Portion

Classification: Class 1  
Size (m<sup>2</sup>): 74

## Static Measurement Locations Map



## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18045F

Classification: Class 3

Survey Unit Name: MSSS/EPA Areas Between  
Containment & Auxiliary BuildingsSize (m<sup>2</sup>): 688Data Quality Values

Type 1 Error: 0.05

Type 2 Error: 0.05

Relative Shift: 3.0

Statistical Test: SGN

Statistical Test Results: Sign test not required

Measurement Values

Measurement Type: Static Surface Beta

Number of Measurements: 30

Measurement Units: dpm/100cm<sup>2</sup>

DCGL: 21,000

Location	Value	Location	Value
S18045F01000001	1,183	S18045F01000026	611
S18045F01000002	1,062	S18045F01000027	1,128
S18045F01000003	1,124	S18045F01000028	1,085
S18045F01000004	1,225	S18045F01000029	1,264
S18045F01000005	1,183	S18045F01000030	1,167
S18045F01000006	1,120		
S18045F01000007	1,187		
S18045F01000008	1,249		
S18045F01000009	642		
S18045F01000010	1,179		
S18045F01000011	1,214		
S18045F01000012	1,362		
S18045F01000013	1,315		
S18045F01000014	1,397		
S18045F01000015	1,050		
S18045F01000016	1,128		
S18045F01000017	1,229		
S18045F01000018	1,471		
S18045F01000019	1,513		
S18045F01000020	1,362		
S18045F01000021	1,580		
S18045F01000022	1,529		
S18045F01000023	1,288		
S18045F01000024	1,179		
S18045F01000025	1,050		

## FINAL SURVEY RESULTS SUMMARY

**Survey Unit ID Code:** S18045F

**Classification:** Class 3

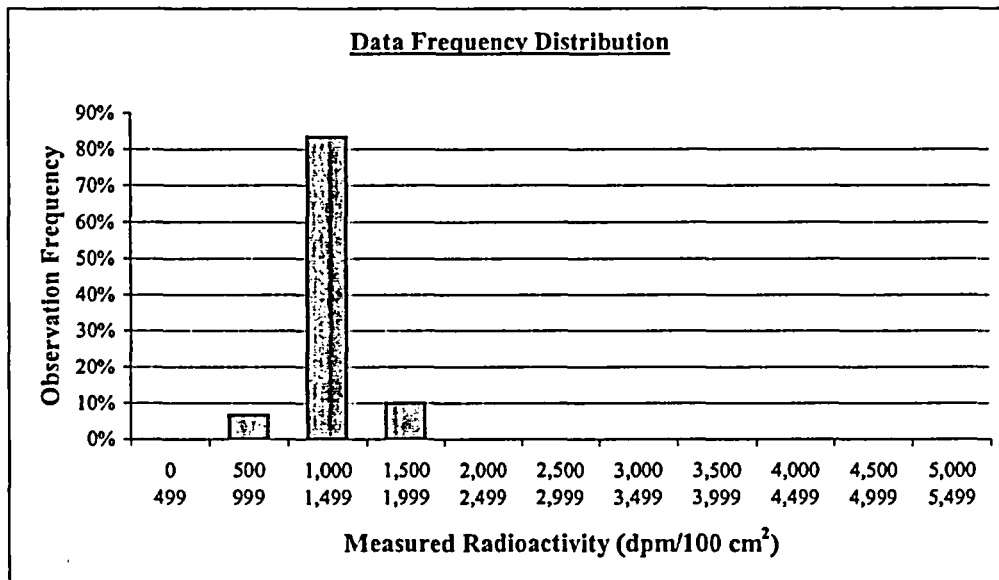
**Survey Unit Name:** MSSS/EPA Areas Between  
Containment & Auxiliary Buildings

**Size (m<sup>2</sup>):** 688

### Measurement Data Statistical Evaluation

Statistical Comparisons				Statistical Quantities	
Test	Calculated Value	Acceptance Criteria	Acceptable?	Range:	969
Range	969	1,061	Pass	Median:	1,185
Median	0.083	0.500	Pass	Mean:	1,203
Mean	1,203	10,500	Pass	Std Dev:	212
Std Dev	212	4,200	Pass	Minimum:	611
				Maximum:	1,580
				DCGL:	21,000

All data less than DCGL; Sign statistical test not required.



Plot Parameters		Interval	High End	Low End	Number of Observations	Observation Frequency
# of measurements:	30	1	499	0	0	0%
# of intervals:	11	2	999	500	2	7%
Interval increment:	500	3	1,499	1,000	25	83%
Minimum:	0	4	1,999	1,500	3	10%
Maximum:	5,499	5	2,499	2,000	0	0%
		6	2,999	2,500	0	0%
		7	3,499	3,000	0	0%
		8	3,999	3,500	0	0%
		9	4,499	4,000	0	0%
		10	4,999	4,500	0	0%
		11	5,499	5,000	0	0%
		Total:			30	100%

**Comment:**



**FINAL SURVEY RESULTS SUMMARY**

**Survey Unit ID Code:** S18045F

**Classification:** Class 3

**Survey Unit Name:** MSSS/EPA Areas Between  
Containment & Auxiliary Buildings

**Size (m<sup>2</sup>):** 688

**Judgmental and Miscellaneous Measurement Data**

**Measurement Type:** Surface Scanning Beta

**Scan Coverage (%):** 5

**Measurement Units:** dpm/100cm<sup>2</sup>

**Investigation Level:** 21,000

**Minimum Value:** 774

**Maximum Value:** 1,890

**Measurement Type:** Removable Beta

**Number of Measurements:** 30

**Measurement Units:** dpm/100cm<sup>2</sup>

**Investigation Level:** 1,050

**Minimum Value:** 5

**Mean:** 11

**Maximum Value:** 17

**Standard Deviation:** 3

**Discussion of Anomalous Measurement Data**

**Investigation Summary**

No investigation required for this survey unit. No anomalous measurement data.

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18045F

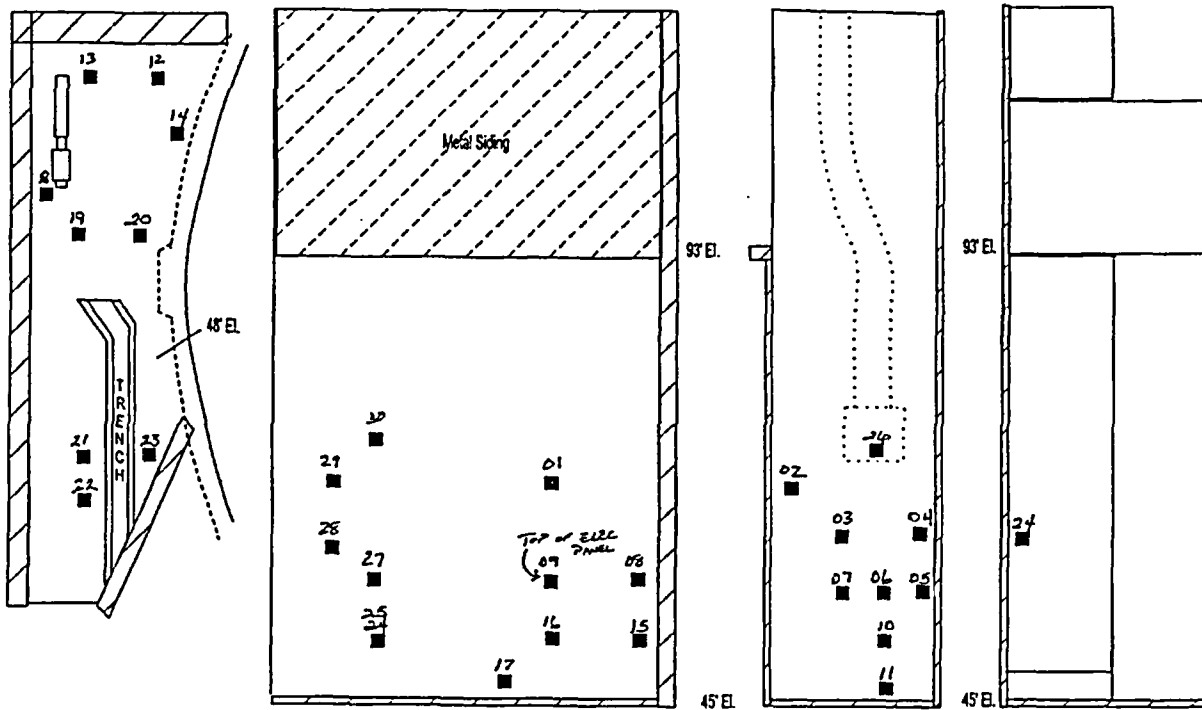
Survey Unit Name: MSSS/EPA Areas Between  
Containment & Auxiliary Buildings

Classification: Class 3

Size (m<sup>2</sup>): 688

### Static Measurement Locations Map

STATIC SURVEY UNIT  
S18045F  
STATIC MEASUREMENT LOCATIONS



Mark For M... 7-1-2003  
Survey Technician Date

Low Libal/... 7-1-2003  
Survey Technician Date

Data collection performed IAW  
RP 452 Rev. 8

045Fsmi.cad

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18045G  
 Survey Unit Name: Areas Between EPA,  
 Control & Turbine Buildings

Classification: Class 3  
 Size (m<sup>2</sup>): 970

Data Quality Values

Type 1 Error: 0.05  
 Statistical Test: SGN

Type 2 Error: 0.05      Relative Shift: 3.0  
 Statistical Test Results: Sign test not required

Measurement Values

Measurement Type: Static Surface Beta  
 Measurement Units: dpm/100cm<sup>2</sup>

Number of Measurements: 30  
 DCGL: 21,000

Location	Value	Location	Value
S18045G01000001	929	S18045G01000026	1,049
S18045G01000002	1,046	S18045G01000027	1,106
S18045G01000003	970	S18045G01000028	564
S18045G01000004	1,049	S18045G01000029	1,192
S18045G01000005	967	S18045G01000030	500
S18045G01000006	1,019		
S18045G01000007	1,324		
S18045G01000008	1,531		
S18045G01000009	1,283		
S18045G01000010	530		
S18045G01000011	1,121		
S18045G01000012	1,076		
S18045G01000013	1,091		
S18045G01000014	1,061		
S18045G01000015	1,091		
S18045G01000016	1,098		
S18045G01000017	576		
S18045G01000018	549		
S18045G01000019	1,012		
S18045G01000020	1,166		
S18045G01000021	1,008		
S18045G01000022	1,211		
S18045G01000023	1,219		
S18045G01000024	959		
S18045G01000025	726		

## FINAL SURVEY RESULTS SUMMARY

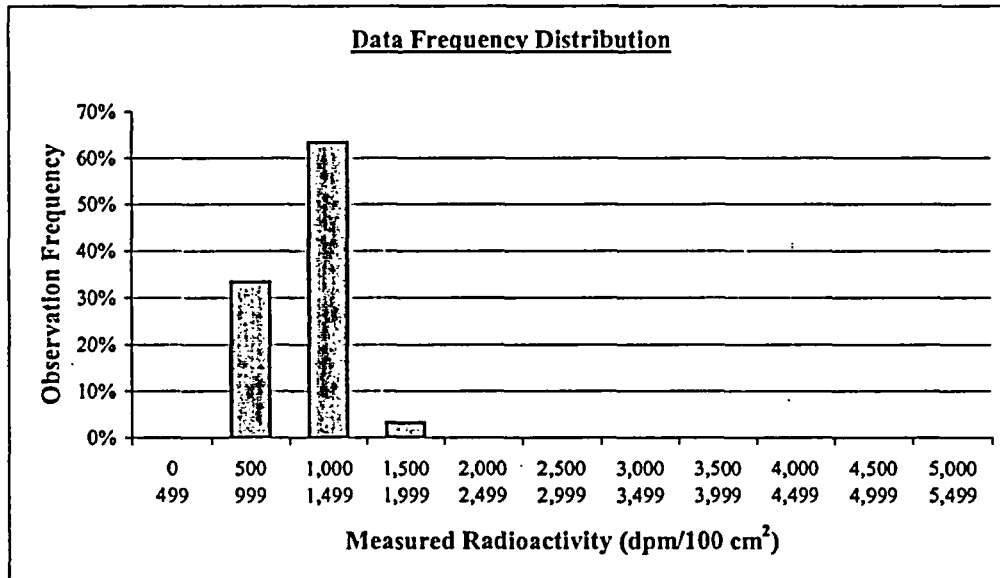
**Survey Unit ID Code:** S18045G  
**Survey Unit Name:** Areas Between EPA,  
 Control & Turbine Buildings

**Classification:** Class 3  
**Size (m<sup>2</sup>):** 970

### Measurement Data Statistical Evaluation

Statistical Comparisons				Statistical Quantities	
Test	Calculated Value	Acceptance Criteria	Acceptable?		
Range	1,031	1,253	Pass	Range:	1,031
Median	0.192	0.500	Pass	Median:	1,049
Mean	1,001	10,500	Pass	Mean:	1,001
Std Dev	251	4,200	Pass	Std Dev:	251
				Minimum:	500
				Maximum:	1,531
				DCGL:	21,000

All data less than DCGL; Sign statistical test not required.



Plot Parameters		Interval	High End	Low End	Number of Observations	Observation Frequency
# of measurements:	30	1	499	0	0	0%
# of intervals:	11	2	999	500	10	33%
Interval increment:	500	3	1,499	1,000	19	63%
Minimum:	0	4	1,999	1,500	1	3%
Maximum:	5,499	5	2,499	2,000	0	0%
		6	2,999	2,500	0	0%
		7	3,499	3,000	0	0%
		8	3,999	3,500	0	0%
		9	4,499	4,000	0	0%
		10	4,999	4,500	0	0%
		11	5,499	5,000	0	0%
<b>Comment:</b>		Total:			30	100%

**FINAL SURVEY RESULTS SUMMARY**

**Survey Unit ID Code:** S18045G  
**Survey Unit Name:** Areas Between EPA,  
Control & Turbine Buildings

**Classification:** Class 3  
**Size (m<sup>2</sup>):** 970

**Judgmental and Miscellaneous Measurement Data**

**Measurement Type:** Surface Scanning Beta  
**Measurement Units:** dpm/100cm<sup>2</sup>  
**Minimum Value:** 704

**Scan Coverage (%):** 5  
**Investigation Level:** 21,000  
**Maximum Value:** 2,164

**Measurement Type:** Removable Beta  
**Measurement Units:** dpm/100cm<sup>2</sup>  
**Minimum Value:** 2  
**Maximum Value:** 18

**Number of Measurements:** 30  
**Investigation Level:** 1,050  
**Mean:** 9  
**Standard Deviation:** 4

**Discussion of Anomalous Measurement Data**

**Investigation Summary**

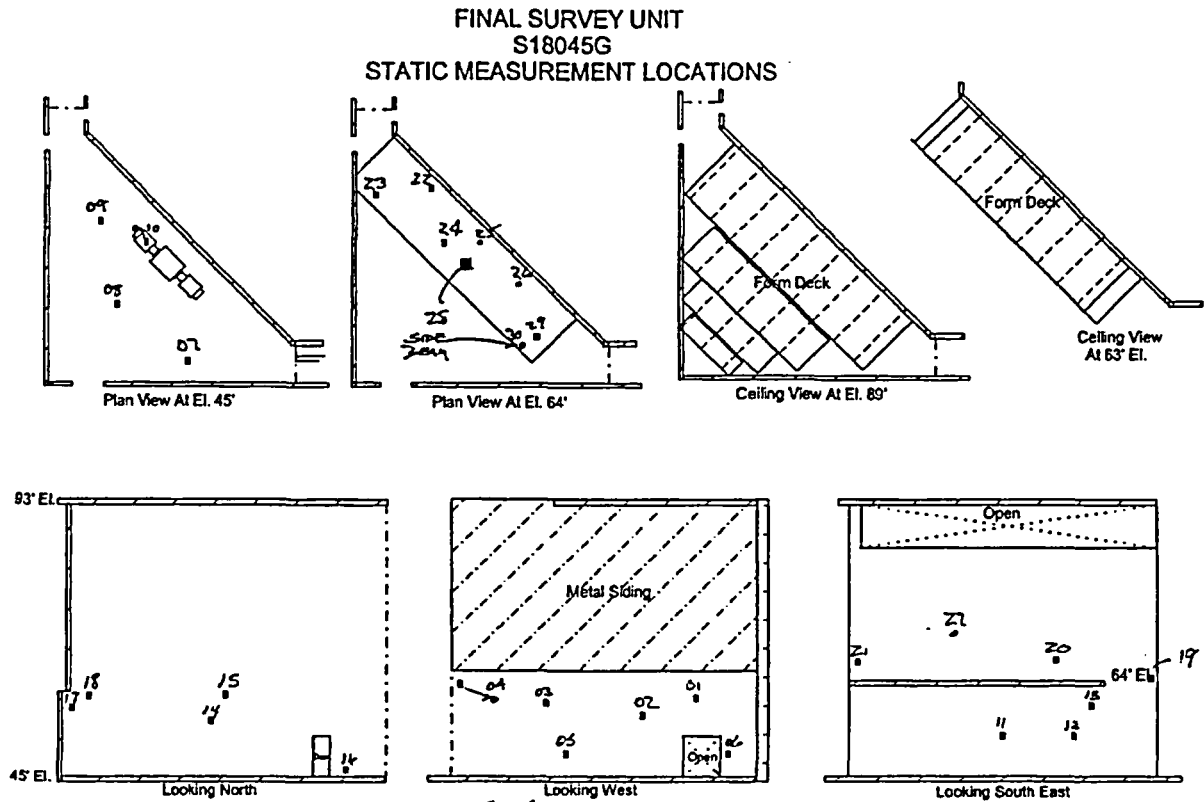
No investigation required for this survey unit. No anomalous measurement data.

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18045G  
 Survey Unit Name: Areas Between EPA,  
 Control & Turbine Buildings

Classification: Class 3  
 Size (m<sup>2</sup>): 970

### Static Measurement Locations Map



Data collection performed  
 IAW RP 452 Rev. 8

*Maxim V. Vich*  
 Survey Technician 1-7-15-2003  
*Wei Li*  
 Survey Technician 7-15-2003

045Gsmf.cad

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18093A

Classification: Class 3

Survey Unit Name: MSSS/EPA

Size (m<sup>2</sup>): 463

Containment Purge Supply Fan Area

### Data Quality Values

Type 1 Error: 0.05

Type 2 Error: 0.05

Relative Shift: 3.0

Statistical Test: SGN

Statistical Test Results: Sign test not required

### Measurement Values

Measurement Type: Static Surface Beta

Number of Measurements: 30

Measurement Units: dpm/100cm<sup>2</sup>

DCGL: 21,000

Location	Value	Location	Value
S18093A01000001	978	S18093A01000026	700
S18093A01000002	1,064	S18093A01000027	651
S18093A01000003	1,155	S18093A01000028	643
S18093A01000004	1,279	S18093A01000029	624
S18093A01000005	632	S18093A01000030	718
S18093A01000006	1,294		
S18093A01000007	1,283		
S18093A01000008	1,301		
S18093A01000009	952		
S18093A01000010	940		
S18093A01000011	944		
S18093A01000012	1,072		
S18093A01000013	929		
S18093A01000014	891		
S18093A01000015	884		
S18093A01000016	1,068		
S18093A01000017	1,384		
S18093A01000018	1,392		
S18093A01000019	677		
S18093A01000020	1,422		
S18093A01000021	1,339		
S18093A01000022	1,143		
S18093A01000023	718		
S18093A01000024	801		
S18093A01000025	647		

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18093A

Classification: Class 3

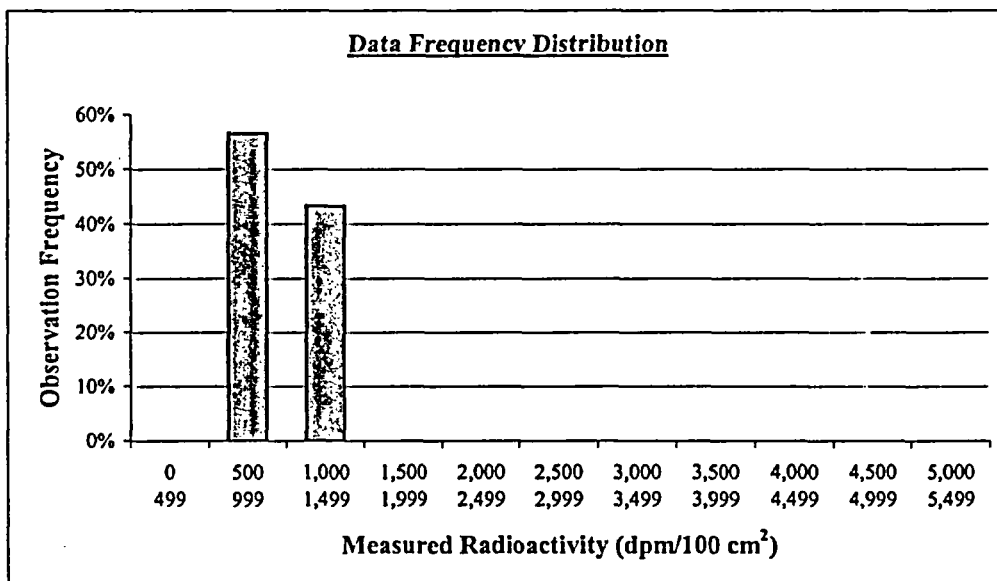
Survey Unit Name: MSSS/EPA

Size (m<sup>2</sup>): 463

Containment Purge Supply Fan Area

### Measurement Data Statistical Evaluation

Statistical Comparisons				Statistical Quantities	
Test	Calculated Value	Acceptance Criteria	Acceptable?	Range:	798
Range	798	1,334	Pass	Median:	948
Median	0.136	0.500	Pass	Mean:	984
Mean	984	10,500	Pass	Std Dev:	267
Std Dev	267	4,200	Pass	Minimum:	624
All data less than DCGL; Sign statistical test not required.				Maximum:	1,422
				DCGL:	21,000



Plot Parameters		Interval	High End	Low End	Number of Observations	Observation Frequency
# of measurements:	30	1	499	0	0	0%
# of intervals:	11	2	999	500	17	57%
Interval increment:	500	3	1,499	1,000	13	43%
Minimum:	0	4	1,999	1,500	0	0%
Maximum:	5,499	5	2,499	2,000	0	0%
		6	2,999	2,500	0	0%
		7	3,499	3,000	0	0%
		8	3,999	3,500	0	0%
		9	4,499	4,000	0	0%
		10	4,999	4,500	0	0%
		11	5,499	5,000	0	0%
		Total:			30	100%

Comment:



**FINAL SURVEY RESULTS SUMMARY**

**Survey Unit ID Code:** S18093A

**Classification:** Class 3

**Survey Unit Name:** MSSS/EPA

**Size (m<sup>2</sup>):** 463

Containment Purge Supply Fan Area

**Judgmental and Miscellaneous Measurement Data**

**Measurement Type:** Surface Scanning Beta

**Scan Coverage (%):** 5

**Measurement Units:** dpm/100cm<sup>2</sup>

**Investigation Level:** 21,000

**Minimum Value:** 752

**Maximum Value:** 1,623

**Measurement Type:** Removable Beta

**Number of Measurements:** 30

**Measurement Units:** dpm/100cm<sup>2</sup>

**Investigation Level:** 1,050

**Minimum Value:** 3

**Mean:** 10

**Maximum Value:** 18

**Standard Deviation:** 4

**Discussion of Anomalous Measurement Data**

**Investigation Summary**

No investigation required for this survey unit. No anomalous measurement data.

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18093A

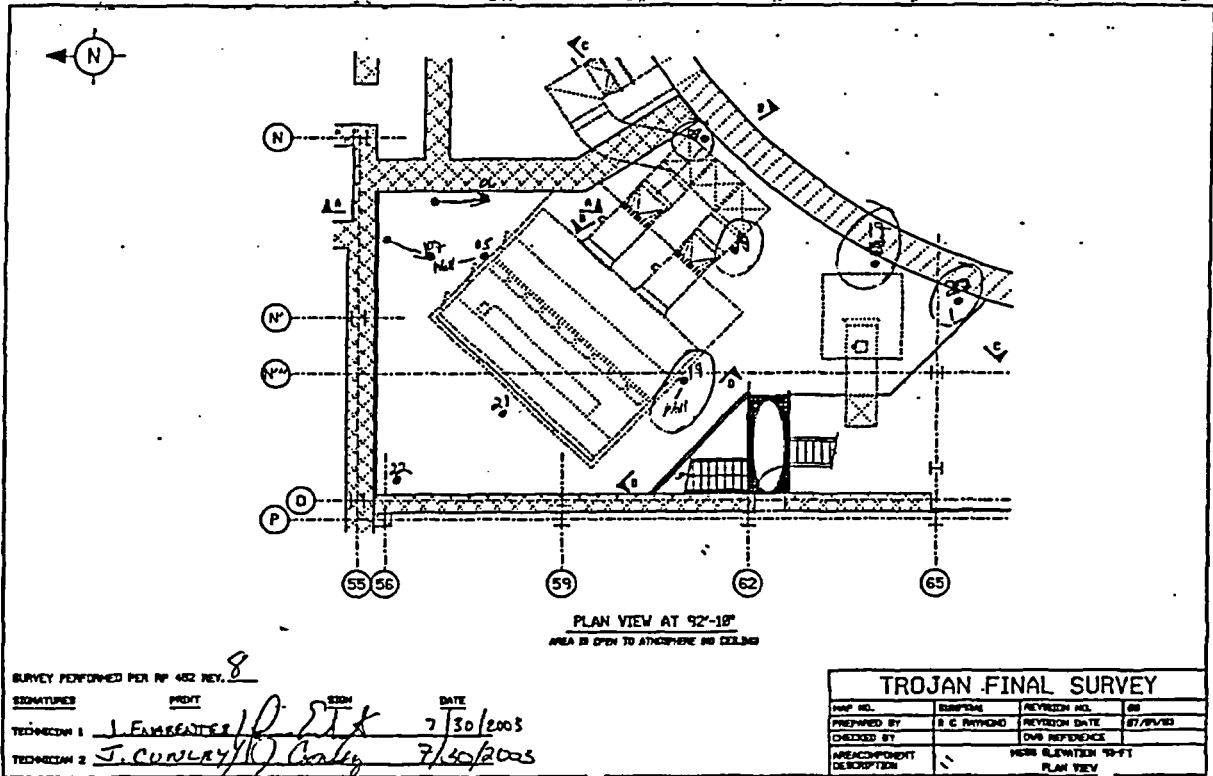
Survey Unit Name: MSSS/EPA

Containment Purge Supply Fan Area

Classification: Class 3

Size (m<sup>2</sup>): 463

### Static Measurement Locations Map



# FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18093A

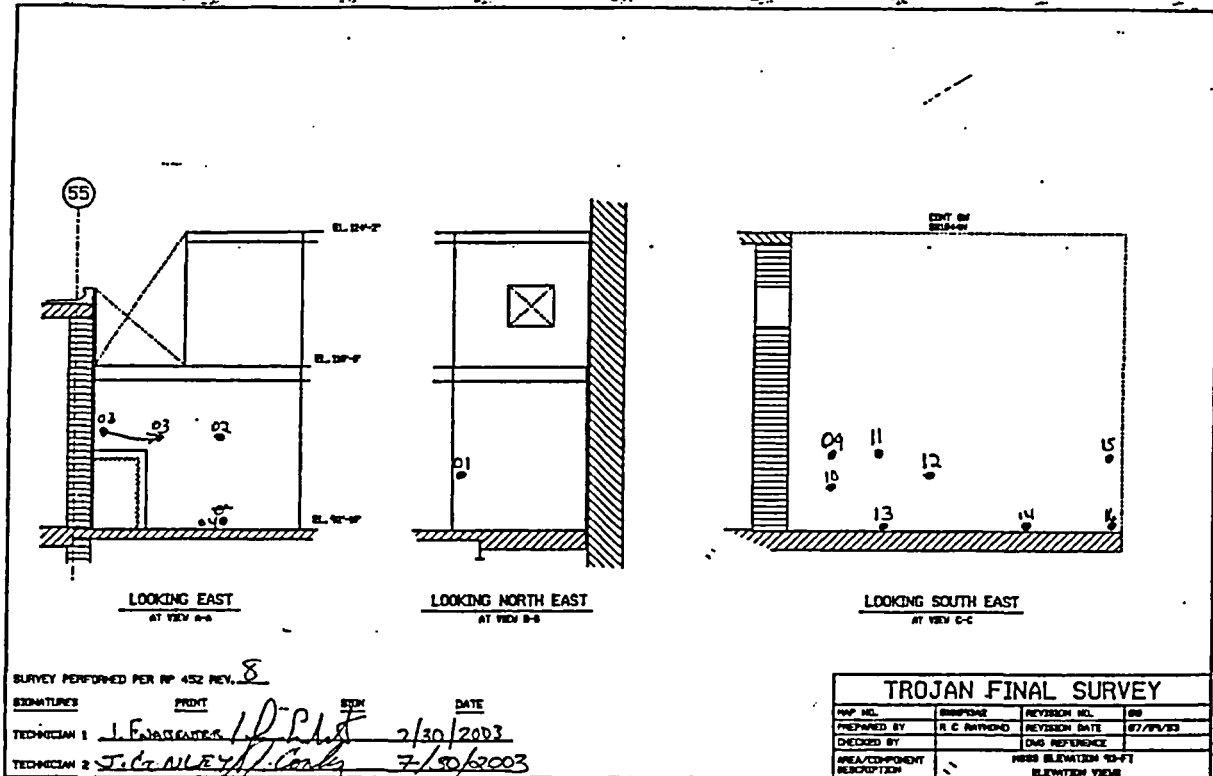
Classification: Class 3

Survey Unit Name: MSSS/EPA

Size (m<sup>2</sup>): 463

Containment Purge Supply Fan Area

## Static Measurement Locations Map



# FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18093A

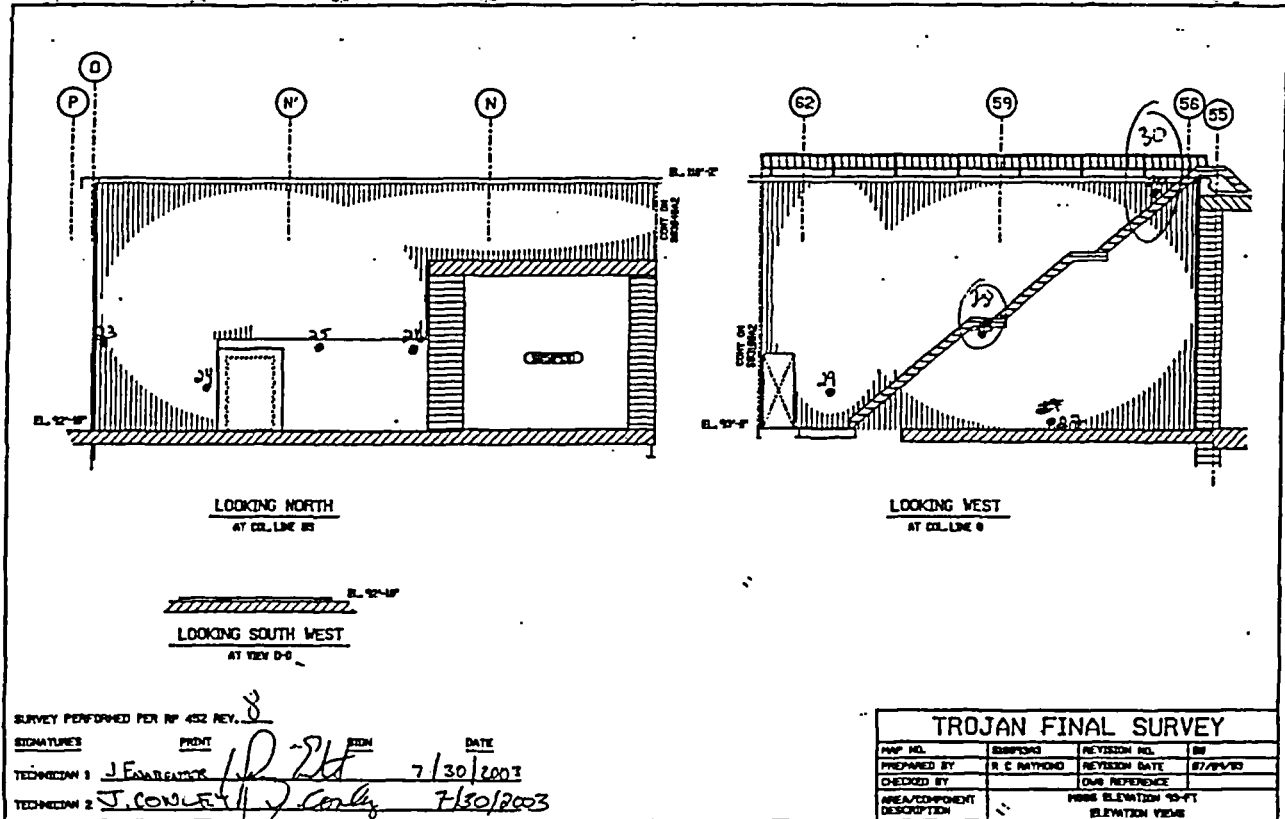
Survey Unit Name: MSSS/EPA

Containment Purge Supply Fan Area

Classification: Class 3

Size (m<sup>2</sup>): 463

## Static Measurement Locations Map



**APPENDIX E**

**SURVEY UNIT SUMMARY REPORTS – SGBB**

**Survey Unit ID Code**

**Page(s)**

S18045C.....	E-2 through E-5
S18045D .....	E-6 through E-10

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18045C  
 Survey Unit Name: SGBB Interior

Classification: Class 2  
 Size (m<sup>2</sup>): 134

Data Quality Values

Type 1 Error: 0.05  
 Statistical Test: SGN

Type 2 Error: 0.05  
 Statistical Test Results: Sign test not required

Relative Shift: 3.0

Measurement Values

Measurement Type: Static Surface Beta  
 Measurement Units: dpm/100cm<sup>2</sup>

Number of Measurements: 34  
 DCGL: 21,000

Location	Value	Location	Value
S18045C01000001	1,323	S18045C01000026	1,174
S18045C01000002	1,086	S18045C01000027	926
S18045C01000003	990	S18045C01000028	950
S18045C01000004	1,138	S18045C01000029	986
S18045C01000005	1,042	S18045C01000030	1,006
S18045C01000006	1,170	S18045C01000031	950
S18045C01000007	1,142	S18045C01000032	954
S18045C01000008	914	S18045C01000033	974
S18045C01000009	1,002	S18045C01000034	886
S18045C01000010	1,102		
S18045C01000011	1,058		
S18045C01000012	1,018		
S18045C01000013	1,190		
S18045C01000014	998		
S18045C01000015	1,070		
S18045C01000016	1,050		
S18045C01000017	1,022		
S18045C01000018	1,118		
S18045C01000019	1,038		
S18045C01000020	1,038		
S18045C01000021	1,114		
S18045C01000022	942		
S18045C01000023	786		
S18045C01000024	938		
S18045C01000025	1,102		

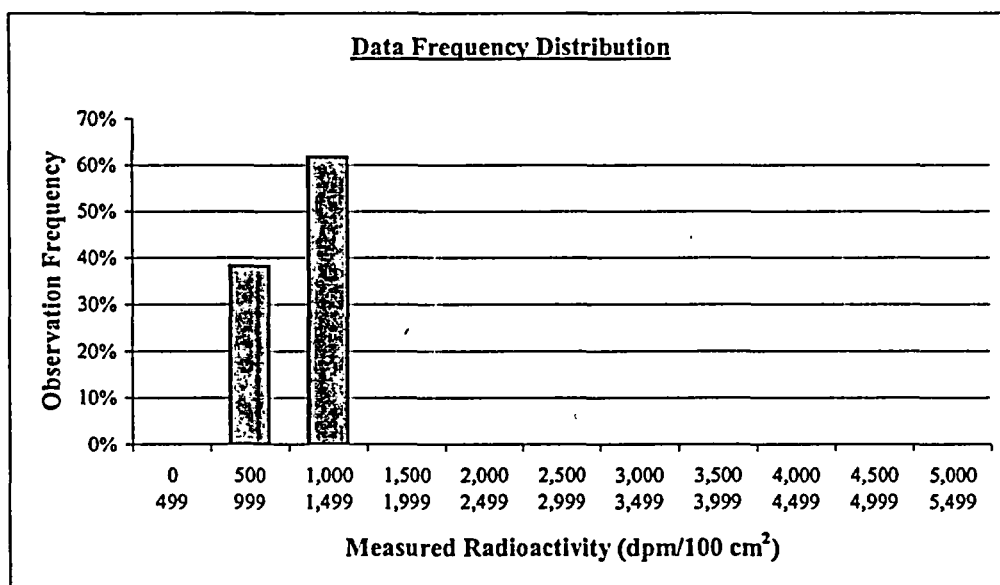
## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18045C  
 Survey Unit Name: SGBB Interior

Classification: Class 2  
 Size (m<sup>2</sup>): 134

## Measurement Data Statistical Evaluation

Statistical Comparisons				Statistical Quantities	
Test	Calculated Value	Acceptance Criteria	Acceptable?	Range:	537
Range	537	519	See comment below	Median:	1,030
Median	0.050	0.500	Pass	Mean:	1,035
Mean	1,035	21,000	Pass	Std Dev:	104
Std Dev	104	4,200	Pass	Minimum:	786
All data less than DCGL; Sign statistical test not required.				Maximum:	1,323
				DCGL:	21,000



Plot Parameters		Interval	High End	Low End	Number of Observations	Observation Frequency
# of measurements:	34	1	499	0	0	0%
# of intervals:	11	2	999	500	13	38%
Interval increment:	500	3	1,499	1,000	21	62%
Minimum:	0	4	1,999	1,500	0	0%
Maximum:	5,499	5	2,499	2,000	0	0%
		6	2,999	2,500	0	0%
		7	3,499	3,000	0	0%
		8	3,999	3,500	0	0%
		9	4,499	4,000	0	0%
		10	4,999	4,500	0	0%
		11	5,499	5,000	0	0%
		Total:			34	100%

**Comment:**

Range failure is a test artifact resulting from a very small standard deviation. All values are valid and accepted.

**FINAL SURVEY RESULTS SUMMARY**

**Survey Unit ID Code:** S18045C  
**Survey Unit Name:** SGBB Interior

**Classification:** Class 2  
**Size (m<sup>2</sup>):** 134

**Judgmental and Miscellaneous Measurement Data**

**Measurement Type:** Surface Scanning Beta  
**Measurement Units:** dpm/100cm<sup>2</sup>  
**Minimum Value:** 1,043

**Scan Coverage (%):** 20  
**Investigation Level:** 21,000  
**Maximum Value:** 1,818

**Measurement Type:** Removable Beta  
**Measurement Units:** dpm/100cm<sup>2</sup>  
**Minimum Value:** 5  
**Maximum Value:** 17

**Number of Measurements:** 34  
**Investigation Level:** 2,100  
**Mean:** 11  
**Standard Deviation:** 3

**Discussion of Anomalous Measurement Data**

**Investigation Summary**

No investigation required for this survey unit. No anomalous measurement data.

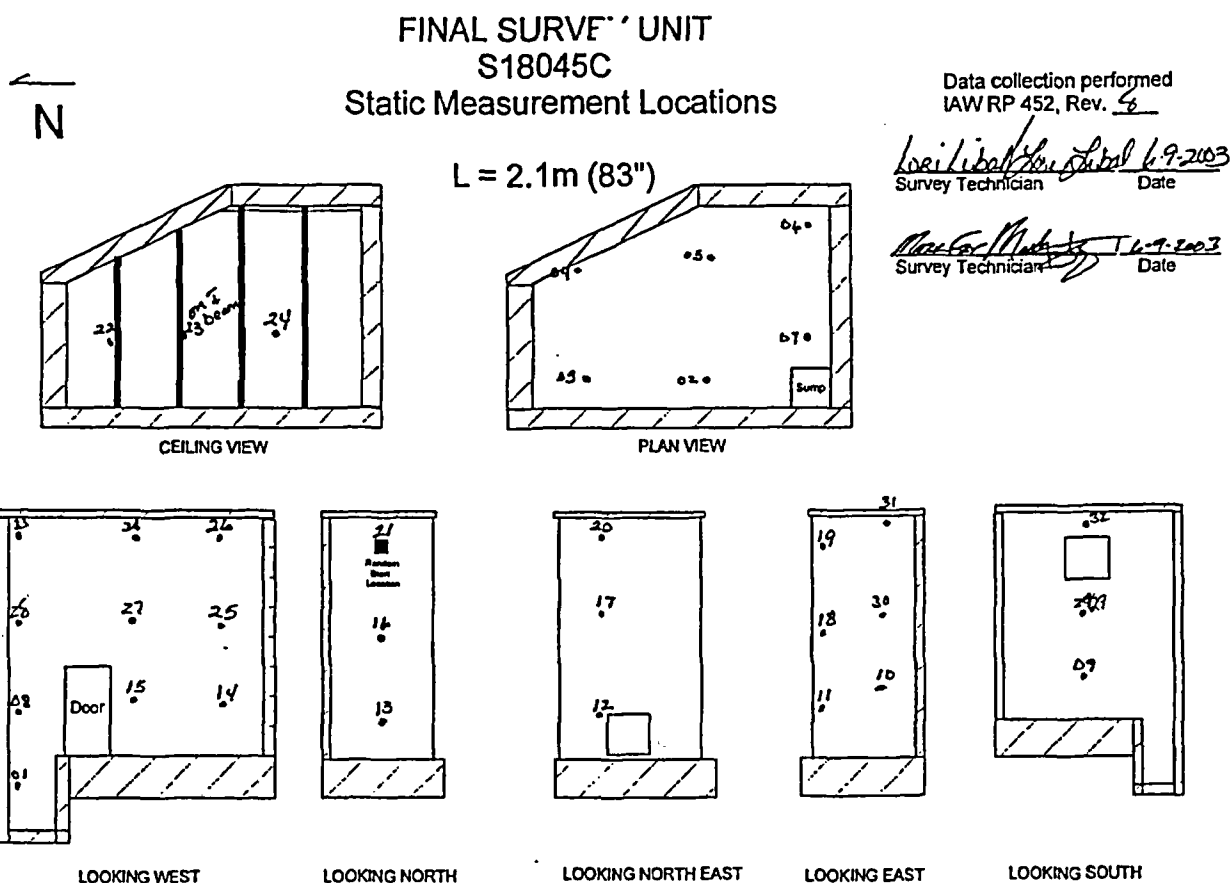


## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18045C  
Survey Unit Name: SGBB Interior

Classification: Class 2  
Size (m<sup>2</sup>): 134

### Static Measurement Locations Map



## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18045D  
 Survey Unit Name: SGBB Exterior

Classification: Class 3  
 Size (m<sup>2</sup>): 151

Data Quality Values

Type 1 Error: 0.05  
 Statistical Test: SGN

Type 2 Error: 0.05  
 Statistical Test Results: Sign test not required

Relative Shift: 3.0

Measurement Values

Measurement Type: Static Surface Beta  
 Measurement Units: dpm/100cm<sup>2</sup>

Number of Measurements: 33  
 DCGL: 21,000

Location	Value	Location	Value
S18045D01000001	1,219	S18045D01000026	1,194
S18045D01000002	1,243	S18045D01000027	1,259
S18045D01000003	1,271	S18045D01000028	1,174
S18045D01000004	1,058	S18045D01000029	1,134
S18045D01000005	1,223	S18045D01000030	1,231
S18045D01000006	1,194	S18045D01000031	1,207
S18045D01000007	1,070	S18045D01000032	938
S18045D01000008	994	S18045D01000033	982
S18045D01000009	1,022		
S18045D01000010	645		
S18045D01000011	1,150		
S18045D01000012	834		
S18045D01000013	1,106		
S18045D01000014	1,154		
S18045D01000015	1,066		
S18045D01000016	1,030		
S18045D01000017	1,010		
S18045D01000018	1,239		
S18045D01000019	1,307		
S18045D01000020	1,303		
S18045D01000021	982		
S18045D01000022	1,295		
S18045D01000023	1,211		
S18045D01000024	1,227		
S18045D01000025	1,227		

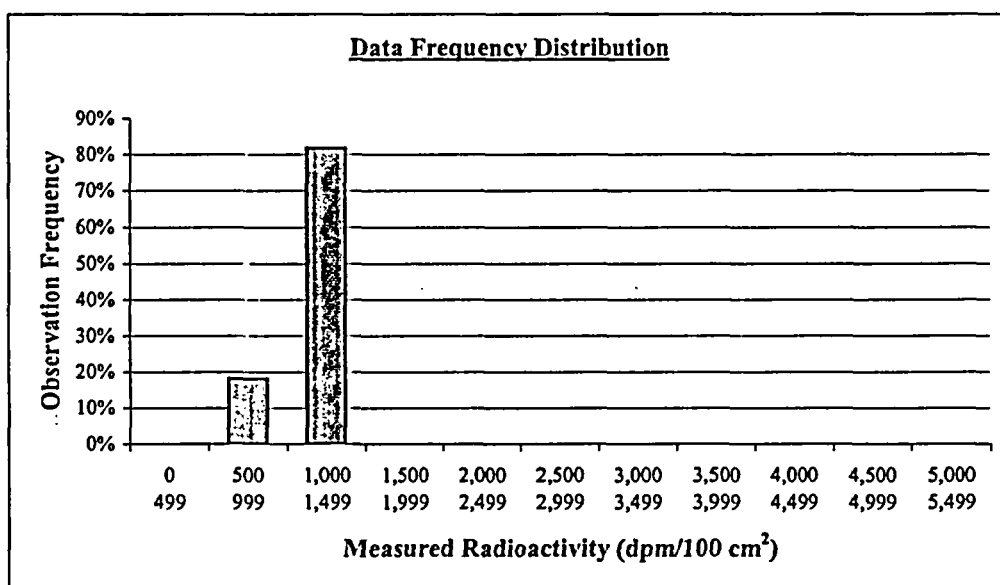
## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18045D  
 Survey Unit Name: SGBB Exterior

Classification: Class 3  
 Size (m<sup>2</sup>): 151

## Measurement Data Statistical Evaluation

Statistical Comparisons				Statistical Quantities	
Test	Calculated Value	Acceptance Criteria	Acceptable?	Range:	662
Range	662	734	Pass	Median:	1,174
Median	0.318	0.500	Pass	Mean:	1,127
Mean	1,127	10,500	Pass	Std Dev:	147
Std Dev	147	4,200	Pass	Minimum:	645
All data less than DCGL; Sign statistical test not required.				Maximum:	1,307
				DCGL:	21,000



Plot Parameters		Interval	High End	Low End	Number of Observations	Observation Frequency
# of measurements:	33	1	499	0	0	0%
# of intervals:	11	2	999	500	6	18%
Interval increment:	500	3	1,499	1,000	27	82%
Minimum:	0	4	1,999	1,500	0	0%
Maximum:	5,499	5	2,499	2,000	0	0%
<b>Comment:</b> NONE.		6	2,999	2,500	0	0%
		7	3,499	3,000	0	0%
		8	3,999	3,500	0	0%
		9	4,499	4,000	0	0%
		10	4,999	4,500	0	0%
		11	5,499	5,000	0	0%
		Total:			33	100%

**FINAL SURVEY RESULTS SUMMARY**

**Survey Unit ID Code:** S18045D  
**Survey Unit Name:** SGBB Exterior

**Classification:** Class 3  
**Size (m<sup>2</sup>):** 151

**Judgmental and Miscellaneous Measurement Data**

**Measurement Type:** Surface Scanning Beta  
**Measurement Units:** dpm/100cm<sup>2</sup>  
**Minimum Value:** 1,302

**Scan Coverage (%):** 10  
**Investigation Level:** 21,000  
**Maximum Value:** 1,672

**Measurement Type:** Removable Beta  
**Measurement Units:** dpm/100cm<sup>2</sup>  
**Minimum Value:** 3  
**Maximum Value:** 20

**Number of Measurements:** 33  
**Investigation Level:** 1,050  
**Mean:** 9  
**Standard Deviation:** 4

**Discussion of Anomalous Measurement Data**

**Investigation Summary**

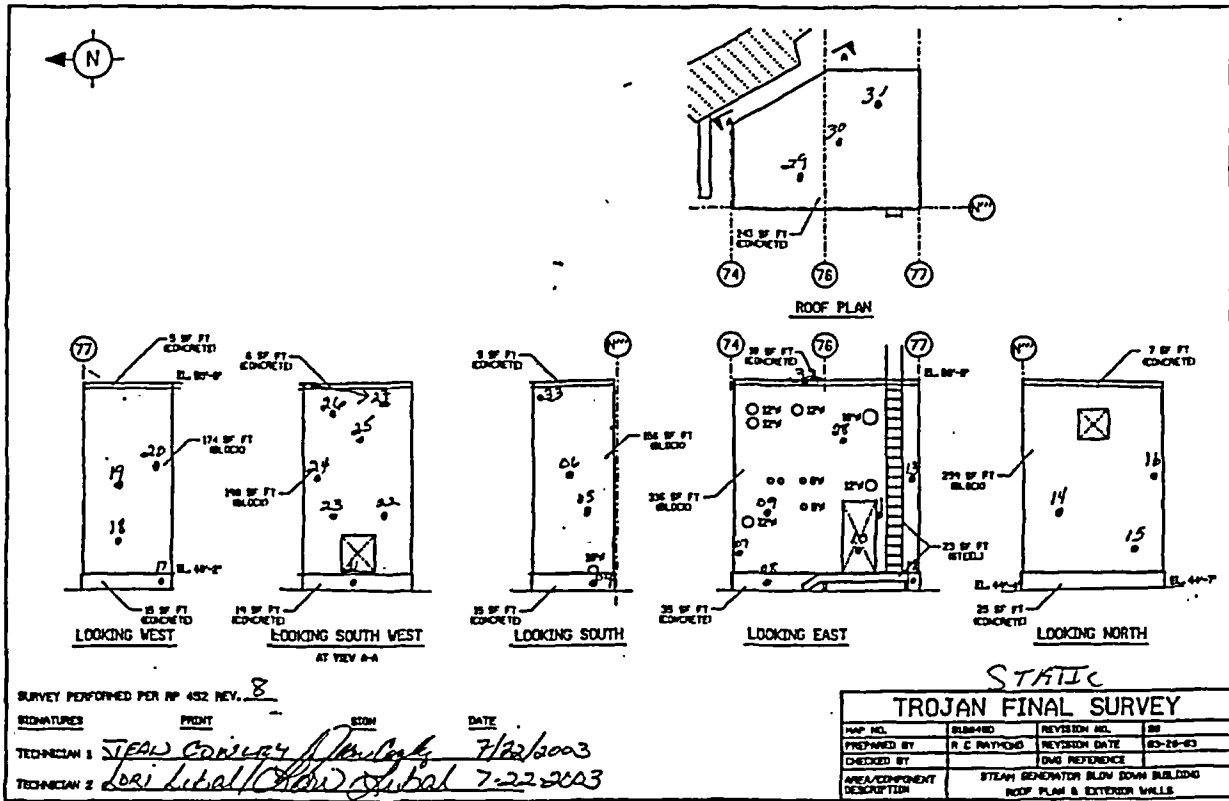
No investigation required for this survey unit. No anomalous measurement data.

# FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18045D  
Survey Unit Name: SGBB Exterior

Classification: Class 3  
Size (m<sup>2</sup>): 151

## Static Measurement Locations Map



FINAL SURVEY RESULTS SUMMARY

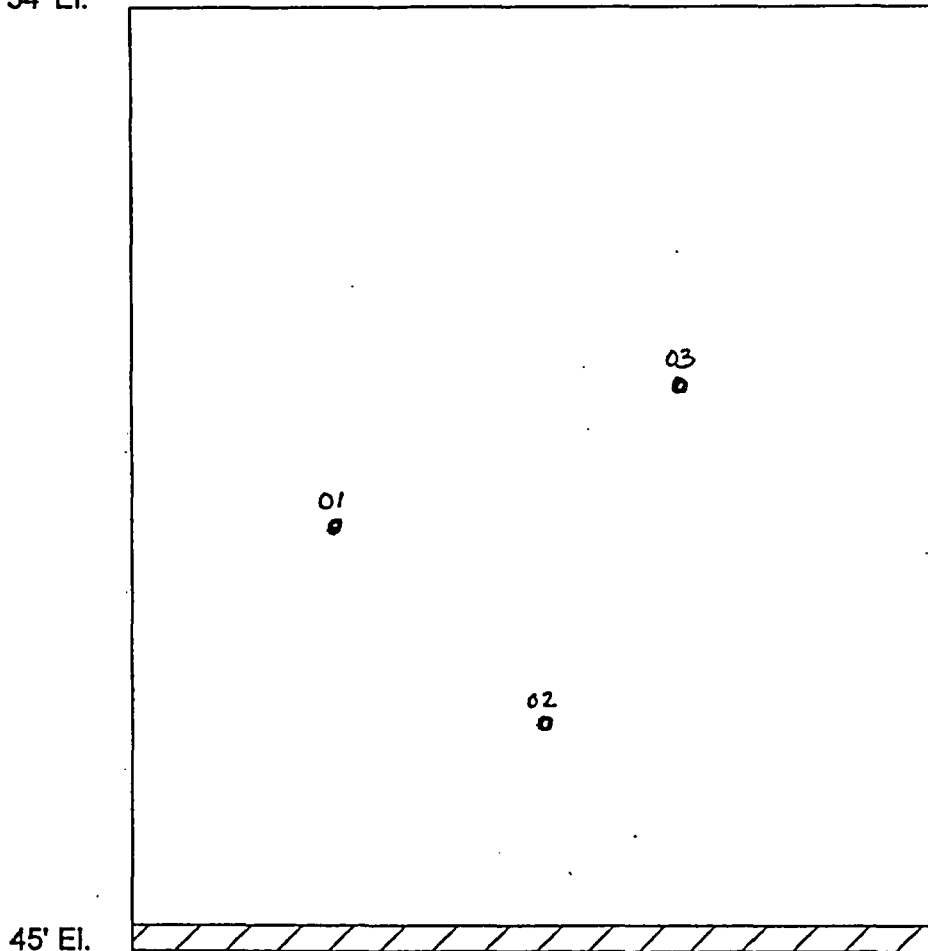
Survey Unit ID Code: S18045D  
Survey Unit Name: SGBB Exterior

Classification: Class 3  
Size (m<sup>2</sup>): 151

Static Measurement Locations Map

Exterior South End Wall  
Of MSSS Access  
(7 m<sup>2</sup>)

54' El.



STATIC

Looking North

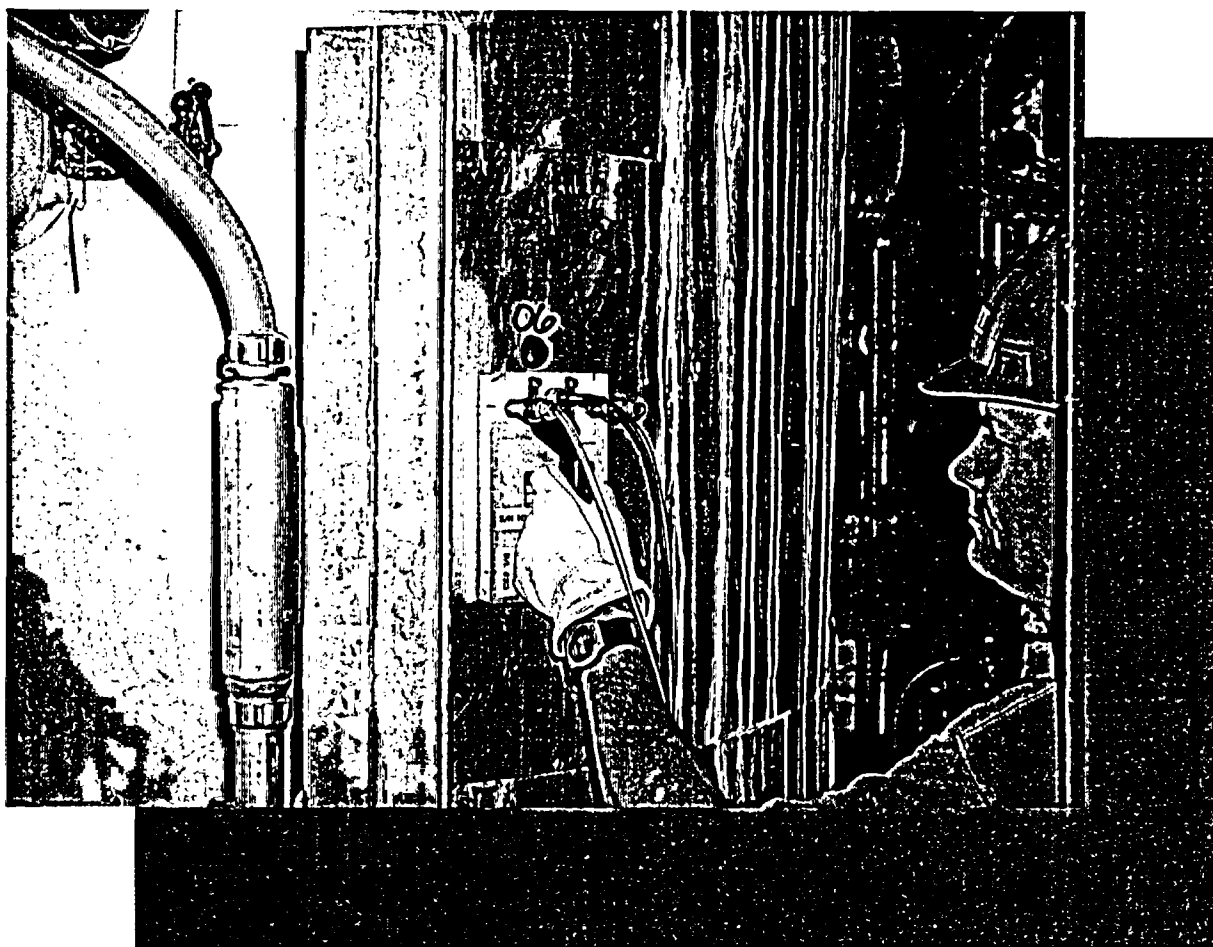
JEAN CONLEY 7/22/2003  
Survey Technician Date

Les Libal 7-22-2003  
Survey Technician Date

S18045D2

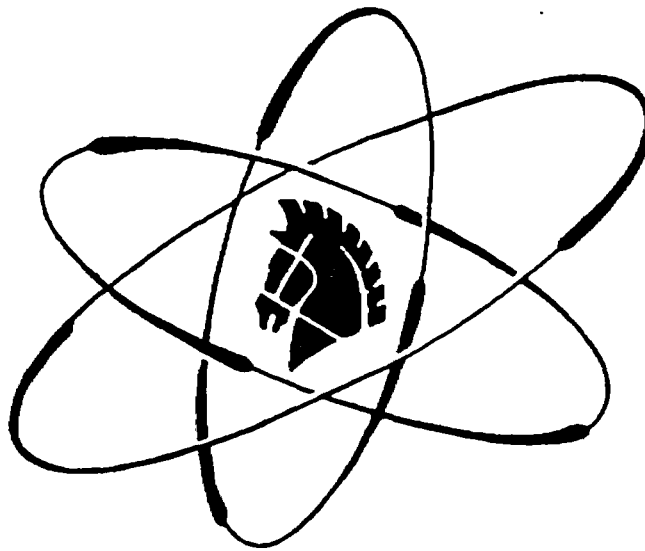
# **Trojan Nuclear Plant**

**Supplement to Final Survey Report  
MSSS/EPA/SGBB  
Volume 2 of 2**



# **Final Survey Report**

## **Supplement to the Main Steam Support Structure Electrical Penetration Area Steam Generator Blowdown Building**



**Portland General Electric**



## INTRODUCTION

This document is a supplement to the Trojan Final Survey Report – Main Steam Support Structure (MSSS), Electrical Penetration Area (EPA), and Steam Generator Blowdown Building (SGBB). This supplement contains the scan measurement data values and the survey maps that document the locations in each survey unit where scan measurements were performed. Scan measurements were typically performed over areas of 1 m<sup>2</sup> in size. For each area scanned, the peak integrated count rate value experienced by the detector over the scan interval was captured. Once the area was scanned, the captured or “latched” value was electronically entered into the data logger memory. The data were downloaded and electronically converted to recording units. A three-digit number on the survey map identifies each scanned area and corresponds to the last three digits of the unique 15-digit code that identifies each survey measurement.

**SUPPLEMENT TO APPENDIX C**

**SURVEY UNIT SUMMARY REPORTS – MSSS**

<b><u>Survey Unit ID Code</u></b>	<b><u>Page(s)</u></b>
S18044A .....	C-2 through C-9
S18044B.....	C-10 through C-12
S18044C.....	C-13 and C-14
S18044D .....	C-15 and C-16
S18045E.....	C-17 through C-19
S18059A .....	C-20 through C-23
S18059B.....	C-24 through C-26
S18069A .....	C-27 through C-32
S18069B.....	C-33 through C-36
S18069C.....	C-37 through C-40
S18069D .....	C-41 through C-48
S18079A .....	C-49 through C-52
S18100A .....	C-53 through C-56

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18044A  
 Survey Unit Name: MSSS Access Area

Classification: Class 1  
 Size (m<sup>2</sup>): 310

Scan Measurement Data

Measurement Type: Surface Scanning Beta

Scan Coverage (%): 100

Measurement Units: dpm/100cm<sup>2</sup>

Investigation Level: 21,000

Minimum Value: 1,621

Maximum Value: 12,800

Location	Value	Location	Value	Location	Value
S18044A08000001	2,636	S18044A080000035	3,899	S18044A080000069	2,046
S18044A080000002	2,185	S18044A080000036	3,618	S18044A080000070	2,099
S18044A080000003	3,892	S18044A080000037	3,148	S18044A080000071	2,286
S18044A080000004	2,197	S18044A080000038	2,818	S18044A080000072	2,696
S18044A080000005	3,136	S18044A080000039	2,761	S18044A080000073	2,568
S18044A080000006	3,350	S18044A080000040	2,984	S18044A080000074	3,878
S18044A080000007	2,333	S18044A080000041	2,951	S18044A080000075	2,973
S18044A080000008	6,562	S18044A080000042	2,915	S18044A080000076	2,115
S18044A080000009	2,276	S18044A080000043	2,992	S18044A080000077	2,343
S18044A080000010	2,412	S18044A080000044	3,096	S18044A080000078	2,783
S18044A080000011	2,253	S18044A080000045	2,708	S18044A080000079	2,477
S18044A080000012	2,824	S18044A080000046	4,990	S18044A080000080	2,370
S18044A080000013	2,276	S18044A080000047	3,729	S18044A080000081	2,225
S18044A080000014	12,270	S18044A080000048	2,393	S18044A080000082	2,276
S18044A080000015	1,995	S18044A080000049	2,313	S18044A080000083	2,631
S18044A080000016	2,168	S18044A080000050	2,459	S18044A080000084	2,723
S18044A080000017	2,242	S18044A080000051	2,395	S18044A080000085	2,853
S18044A080000018	2,308	S18044A080000052	2,217	S18044A080000086	2,866
S18044A080000019	2,198	S18044A080000053	2,291	S18044A080000087	3,127
S18044A080000020	2,102	S18044A080000054	2,201	S18044A080000088	2,956
S18044A080000021	2,248	S18044A080000055	2,543	S18044A080000089	3,865
S18044A080000022	2,802	S18044A080000056	2,131	S18044A080000090	2,789
S18044A080000023	2,409	S18044A080000057	2,200	S18044A080000091	2,300
S18044A080000024	3,774	S18044A080000058	1,908	S18044A080000092	3,881
S18044A080000025	2,348	S18044A080000059	1,907	S18044A080000093	2,891
S18044A080000026	1,851	S18044A080000060	2,187	S18044A080000094	2,710
S18044A080000027	2,282	S18044A080000061	2,114	S18044A080000095	2,846
S18044A080000028	2,827	S18044A080000062	2,118	S18044A080000096	3,196
S18044A080000029	2,446	S18044A080000063	2,261	S18044A080000097	4,012
S18044A080000030	3,293	S18044A080000064	2,319	S18044A080000098	4,097
S18044A080000031	2,497	S18044A080000065	2,172	S18044A080000099	5,159
S18044A080000032	2,748	S18044A080000066	2,260	S18044A08000100	3,561
S18044A080000033	3,335	S18044A080000067	2,197	S18044A08000101	2,790
S18044A080000034	3,634	S18044A080000068	2,210	S18044A08000102	3,517

## FINAL SURVEY RESULTS SUMMARY

**Survey Unit ID Code:** S18044A  
**Survey Unit Name:** MSSS Access Area

**Classification:** Class 1  
**Size (m<sup>2</sup>):** 310

Location	Value	Location	Value	Location	Value
S18044A08000103	3,088	S18044A08000143	2,264	S18044A08000183	2,231
S18044A08000104	3,452	S18044A08000144	2,310	S18044A08000184	2,973
S18044A08000105	3,914	S18044A08000145	2,529	S18044A08000185	2,679
S18044A08000106	3,786	S18044A08000146	2,348	S18044A08000186	2,502
S18044A08000107	3,524	S18044A08000147	2,461	S18044A08000187	2,184
S18044A08000108	3,758	S18044A08000148	2,431	S18044A08000188	3,102
S18044A08000109	4,242	S18044A08000149	2,200	S18044A08000189	2,241
S18044A08000110	3,051	S18044A08000150	3,347	S18044A08000190	3,044
S18044A08000111	3,058	S18044A08000151	2,384	S18044A08000191	2,248
S18044A08000112	3,585	S18044A08000152	2,737	S18044A08000192	2,267
S18044A08000113	3,322	S18044A08000153	3,276	S18044A08000193	2,137
S18044A08000114	2,568	S18044A08000154	3,729	S18044A08000194	2,108
S18044A08000115	6,509	S18044A08000155	4,886	S18044A08000195	2,196
S18044A08000116	3,215	S18044A08000156	3,574	S18044A08000196	2,122
S18044A08000117	2,906	S18044A08000157	2,904	S18044A08000197	2,326
S18044A08000118	5,996	S18044A08000158	2,357	S18044A08000198	2,374
S18044A08000119	3,496	S18044A08000159	3,088	S18044A08000199	2,298
S18044A08000120	3,263	S18044A08000160	2,840	S18044A08000200	2,317
S18044A08000121	4,034	S18044A08000161	2,638	S18044A08000201	2,197
S18044A08000122	3,410	S18044A08000162	2,796	S18044A08000202	1,949
S18044A08000123	3,394	S18044A08000163	2,590	S18044A08000203	2,094
S18044A08000124	3,019	S18044A08000164	2,384	S18044A08000204	1,698
S18044A08000125	3,890	S18044A08000165	2,938	S18044A08000205	1,894
S18044A08000126	3,647	S18044A08000166	2,469	S18044A08000206	1,923
S18044A08000127	2,803	S18044A08000167	2,362	S18044A08000207	2,225
S18044A08000128	4,042	S18044A08000168	3,395	S18044A08000208	1,809
S18044A08000129	2,710	S18044A08000169	2,238	S18044A08000209	1,886
S18044A08000130	2,392	S18044A08000170	2,256	S18044A08000210	2,070
S18044A08000131	6,462	S18044A08000171	2,059	S18044A08000211	2,042
S18044A08000132	3,537	S18044A08000172	1,917	S18044A08000212	2,081
S18044A08000133	3,829	S18044A08000173	2,169	S18044A08000213	1,908
S18044A08000134	4,387	S18044A08000174	2,086	S18044A08000214	2,266
S18044A08000135	2,629	S18044A08000175	2,106	S18044A08000215	2,680
S18044A08000136	2,300	S18044A08000176	2,245	S18044A08000216	2,209
S18044A08000137	2,332	S18044A08000177	2,978	S18044A08000217	2,141
S18044A08000138	2,090	S18044A08000178	2,764	S18044A08000218	2,109
S18044A08000139	2,094	S18044A08000179	2,090	S18044A08000219	2,598
S18044A08000140	3,123	S18044A08000180	1,935	S18044A08000220	2,759
S18044A08000141	3,000	S18044A08000181	2,027	S18044A08000221	2,316
S18044A08000142	2,212	S18044A08000182	2,295	S18044A08000222	2,503

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18044A  
 Survey Unit Name: MSSS Access Area

Classification: Class 1  
 Size (m<sup>2</sup>): 310

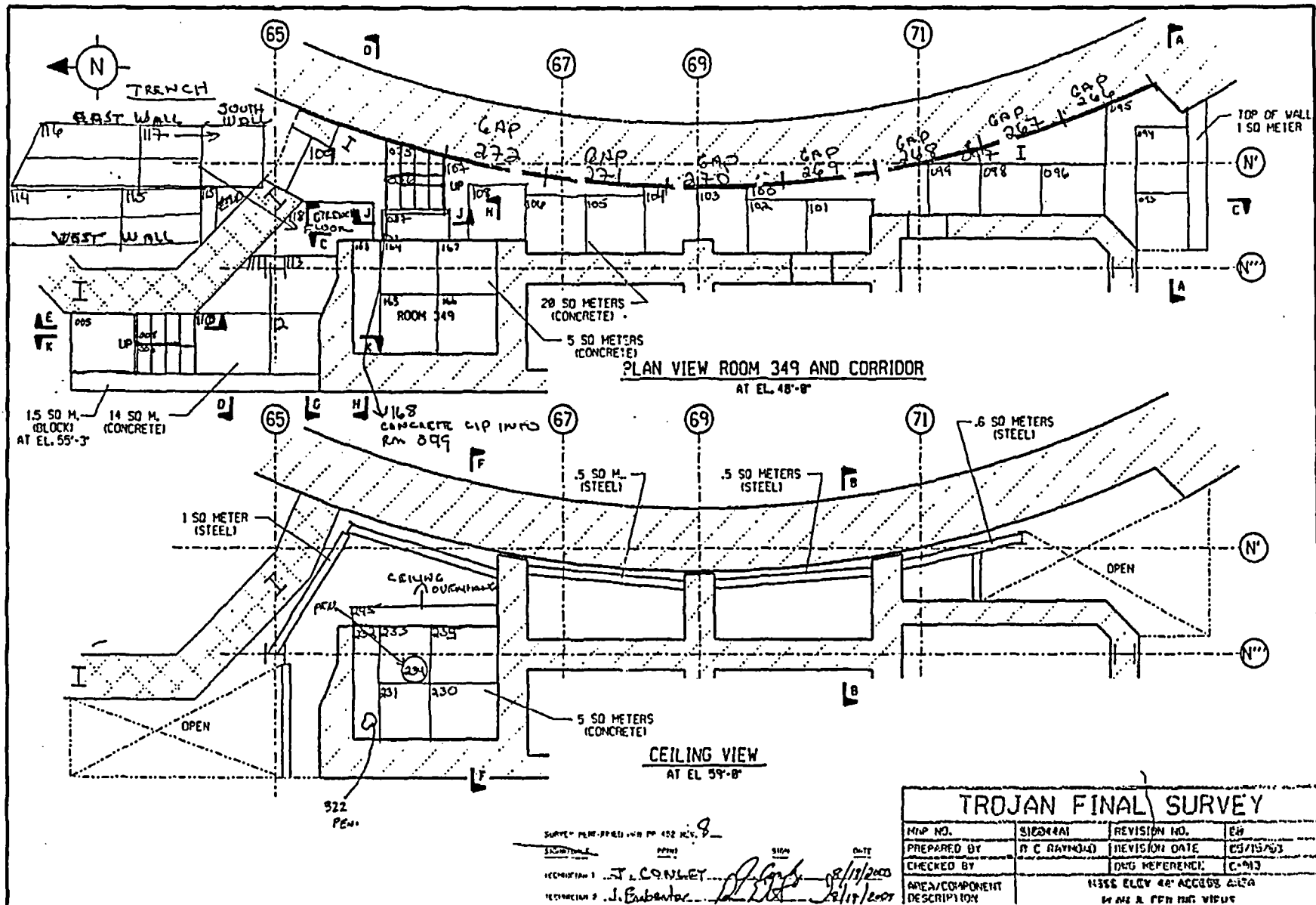
Location	Value	Location	Value	Location	Value
S18044A08000223	3,354	S18044A08000263	4,091	S18044A08000304	11,600
S18044A08000224	2,294	S18044A08000264	2,287	S18044A08000305	6,721
S18044A08000225	2,948	S18044A08000265	2,286	S18044A08000306	6,871
S18044A08000226	2,412	S18044A08000266	2,128	S18044A08000307	6,175
S18044A08000227	2,313	S18044A08000267	2,220	S18044A08000308	5,422
S18044A08000228	2,824	S18044A08000268	2,266	S18044A08000309	6,834
S18044A08000229	3,758	S18044A08000269	2,228	S18044A08000310	5,215
S18044A08000230	2,418	S18044A08000270	2,217	S18044A08000311	6,118
S18044A08000231	3,187	S18044A08000271	2,147	S18044A08000312	6,250
S18044A08000232	2,628	S18044A08000272	3,074	S18044A08000313	5,516
S18044A08000233	3,637	S18044A08000273	4,631	S18044A08000314	6,871
S18044A08000234	1,621	S18044A08000274	2,472	S18044A08000315	9,601
S18044A08000235	2,913	S18044A08000275	3,776	S18044A08000316	6,796
S18044A08000236	2,556	S18044A08000276	3,137	S18044A08000317	11,140
S18044A08000237	3,233	S18044A08000277	2,357	S18044A08000318	6,514
S18044A08000238	3,556	S18044A08000278	2,103	S18044A08000319	7,135
S18044A08000239	3,211	S18044A08000279	2,150	S18044A08000321	8,697
S18044A08000240	2,456	S18044A08000280	2,157	S18044A08000322	8,227
S18044A08000241	4,085	S18044A08000281	1,824	S18044A08000323	8,133
S18044A08000242	2,307	S18044A08000282	1,938	S18044A08000324	6,005
S18044A08000243	3,534	S18044A08000283	1,703	S18044A08000325	8,980
S18044A08000244	2,585	S18044A08000284	2,843	S18044A08000326	7,342
S18044A08000245	3,889	S18044A08000285	2,094	S18044A08000327	8,340
S18044A08000246	3,780	S18044A08000286	1,822	S18044A08000328	8,038
S18044A08000247	3,449	S18044A08000287	1,979	S18044A08000329	12,800
S18044A08000248	2,907	S18044A08000288	1,979	S18044A08000330	8,791
S18044A08000249	2,557	S18044A08000289	3,082	S18044A08000331	3,290
S18044A08000250	4,330	S18044A08000290	3,191	S18044A08000332	2,764
S18044A08000251	3,158	S18044A08000291	3,479	S18044A08000333	2,669
S18044A08000252	2,846	S18044A08000292	2,037	S18044A08000334	2,891
S18044A08000253	2,650	S18044A08000293	1,969	S18044A08000335	2,541
S18044A08000254	3,449	S18044A08000294	2,979	S18044A08000336	2,415
S18044A08000255	4,967	S18044A08000295	3,341	S18044A08000337	2,327
S18044A08000256	5,942	S18044A08000296	2,062	S18044A08000338	2,270
S18044A08000257	5,461	S18044A08000297	1,933	S18044A08000339	2,494
S18044A08000258	3,488	S18044A08000298	1,974	S18044A08000340	2,314
S18044A08000259	3,874	S18044A08000299	2,087	S18044A08000341	2,105
S18044A08000260	12,790	S18044A08000300	3,414	S18044A08000342	2,209
S18044A08000261	2,323	S18044A08000301	7,154	S18044A08000343	2,370
S18044A08000262	2,107	S18044A08000303	10,130	S18044A08000344	2,116

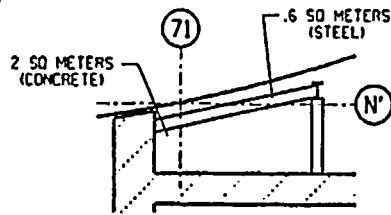
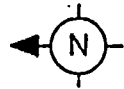
### FINAL SURVEY RESULTS SUMMARY

**Survey Unit ID Code:** S18044A  
**Survey Unit Name:** MSSS Access Area

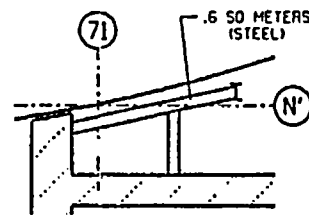
**Classification:** Class 1  
**Size (m<sup>2</sup>):** 310

Location	Value	Location	Value	Location	Value
S18044A08000345	2,661	S18044A08000356	1,963	S18044A08000367	2,163
S18044A08000346	2,364	S18044A08000357	2,109	S18044A08000368	2,200
S18044A08000347	2,115	S18044A08000358	2,241	S18044A08000369	2,143
S18044A08000348	2,380	S18044A08000359	1,969	S18044A08000370	2,068
S18044A08000349	2,692	S18044A08000360	2,140	S18044A08000371	1,853
S18044A08000350	2,360	S18044A08000361	2,036	S18044A08000372	2,285
S18044A08000351	2,292	S18044A08000362	2,096	S18044A08000373	2,138
S18044A08000352	2,114	S18044A08000363	2,276	S18044A08000379	3,991
S18044A08000353	2,455	S18044A08000364	2,089	S18044A08000380	6,212
S18044A08000354	2,033	S18044A08000365	2,153	S18044A08000381	5,252
S18044A08000355	2,040	S18044A08000366	2,203		

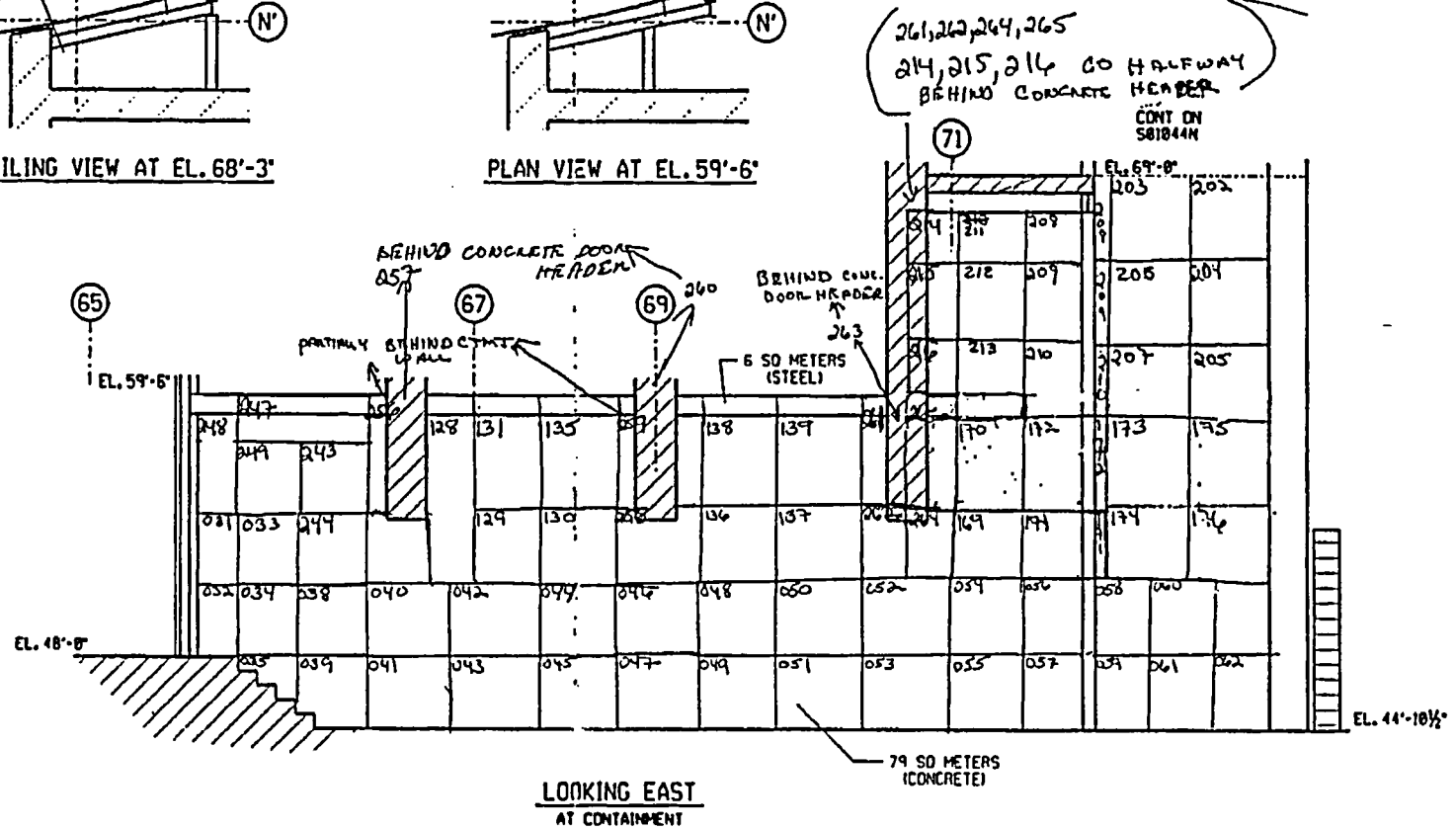




CEILING VIEW AT EL. 68'-3"



PLAN VIEW AT EL. 59'-6"

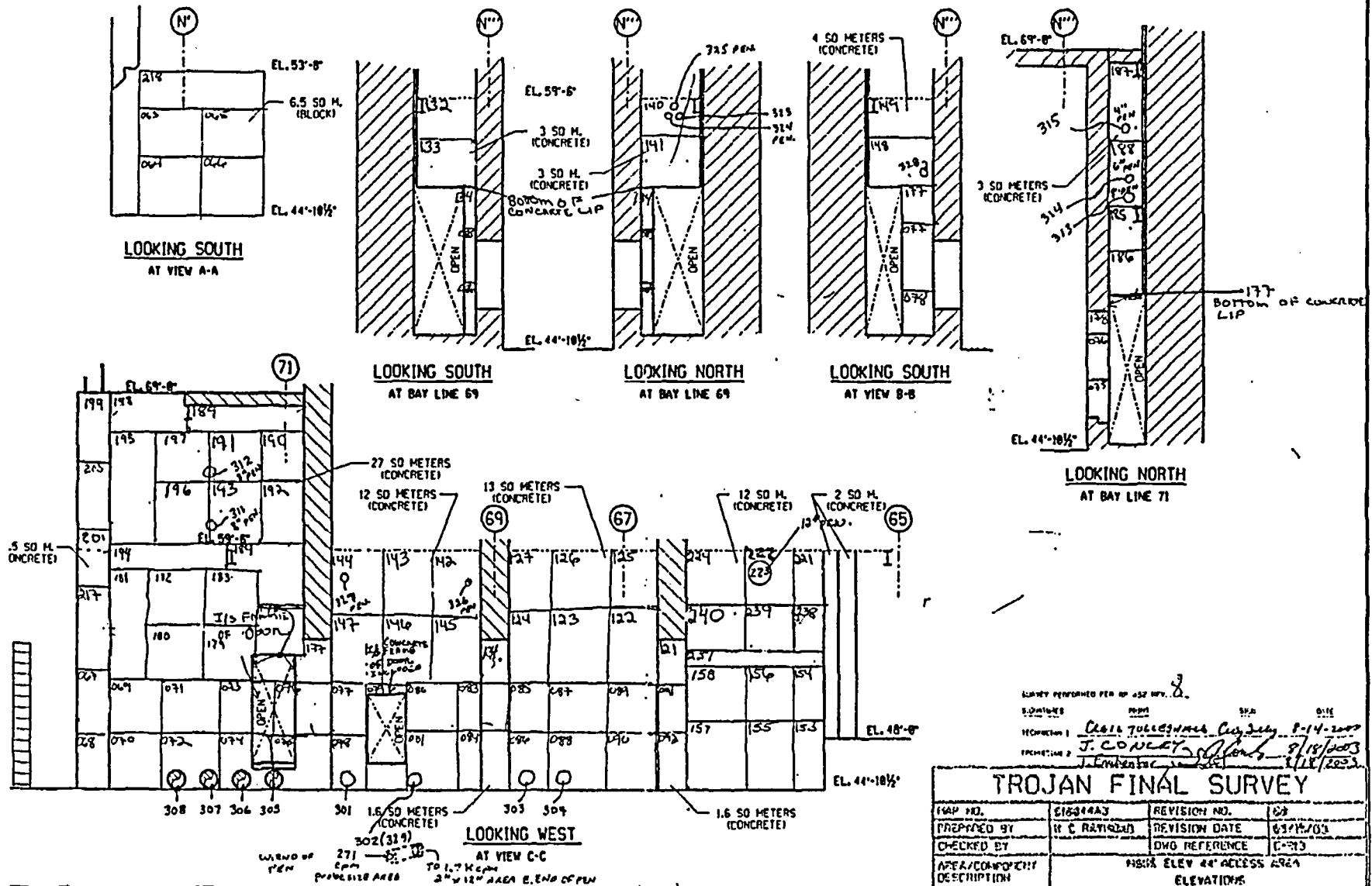


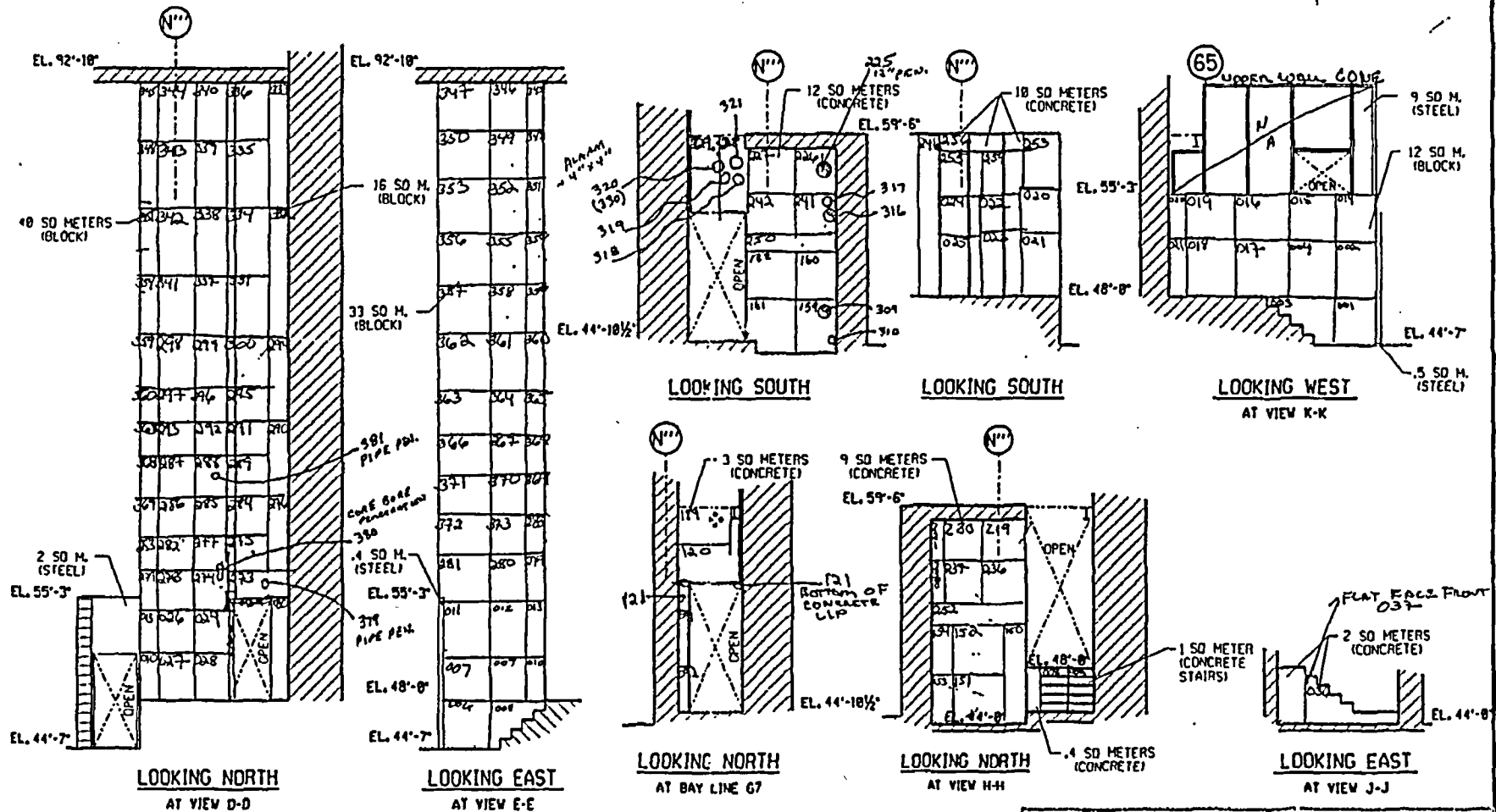
LOOKING EAST  
AT CONTAINMENT

SURVEY METHOD: 1/4" AP 450 RES. 8  
 DRAWN BY: J. COWLEY  
 CHECKED BY: J. Enabonta  
 DATE: 8/18/2003

TROJAN FINAL SURVEY			
MAP NO.	5152442	REVISION NO.	07
PREPARED BY	R. E. JAMES	REVISION DATE	05/15/03
CHECKED BY		DWG REFERENCE	C-913
AREA/COMPONENT	MSSS ELEV 44' ACCESS AREA		
DESCRIPTION	ELEVATIONS & PLANS		







TROJAN FINAL SURVEY			
MAP NO.	5109444	REVISION NO.	00
PREPARED BY	H C RATHBON	REVISION DATE	85/11/83
CHECKED BY		ONG REFERENCE	C-913
AREA/COMPONENT DESCRIPTION	MSSS FLEV 44' ACCESS AREA ELEVATIONS		

## FINAL SURVEY RESULTS SUMMARY

**Survey Unit ID Code:** S18044B

**Classification:** Class 1

**Survey Unit Name:** Room Below B AFW Line

**Size (m<sup>2</sup>):** 99

### Scan Measurement Data

**Measurement Type:** Surface Scanning Beta

**Scan Coverage (%):** 100

**Measurement Units:** dpm/100cm<sup>2</sup>

**Investigation Level:** 21,000

**Minimum Value:** 1,045

**Maximum Value:** 9,356

Location	Value	Location	Value	Location	Value
S18044B08000001	2,424	S18044B080000037	2,065	S18044B080000071	1,915
S18044B080000002	1,906	S18044B080000038	2,171	S18044B080000072	1,747
S18044B080000003	1,994	S18044B080000039	1,961	S18044B080000073	1,952
S18044B080000004	2,019	S18044B080000040	2,177	S18044B080000074	1,879
S18044B080000005	2,089	S18044B080000041	2,521	S18044B080000075	1,769
S18044B080000006	2,030	S18044B080000042	2,659	S18044B080000076	1,753
S18044B080000007	2,579	S18044B080000043	1,882	S18044B080000077	1,824
S18044B080000008	2,385	S18044B080000044	1,887	S18044B080000078	1,791
S18044B080000009	2,488	S18044B080000045	1,994	S18044B080000079	2,041
S18044B080000010	2,748	S18044B080000046	1,777	S18044B080000080	2,052
S18044B080000011	2,193	S18044B080000047	2,092	S18044B080000081	1,876
S18044B080000012	2,451	S18044B080000048	2,045	S18044B080000082	2,054
S18044B080000013	2,319	S18044B080000049	1,983	S18044B080000083	3,325
S18044B080000014	2,965	S18044B080000050	2,084	S18044B080000084	1,937
S18044B080000015	2,415	S18044B080000051	1,922	S18044B080000085	2,122
S18044B080000016	2,218	S18044B080000052	1,457	S18044B080000086	2,065
S18044B080000017	2,699	S18044B080000053	1,974	S18044B080000087	2,043
S18044B080000018	2,478	S18044B080000054	1,813	S18044B080000088	1,654
S18044B080000019	2,713	S18044B080000055	2,070	S18044B080000089	2,034
S18044B080000020	2,286	S18044B080000056	1,955	S18044B080000090	2,199
S18044B080000021	2,237	S18044B080000057	1,745	S18044B080000091	1,611
S18044B080000022	2,325	S18044B080000058	1,851	S18044B080000092	1,510
S18044B080000023	2,087	S18044B080000059	1,490	S18044B080000093	1,471
S18044B080000024	8,377	S18044B080000060	1,045	S18044B080000094	1,515
S18044B080000025	4,170	S18044B080000061	2,261	S18044B080000095	1,490
S18044B080000026	2,891	S18044B080000062	2,019	S18044B080000096	1,559
S18044B080000029	2,749	S18044B080000063	2,007	S18044B080000097	1,712
S18044B080000030	2,051	S18044B080000064	2,231	S18044B080000098	1,632
S18044B080000031	1,843	S18044B080000065	1,941	S18044B080000099	2,125
S18044B080000032	1,843	S18044B080000066	2,075	S18044B080000100	7,737
S18044B080000033	1,857	S18044B080000067	1,900	S18044B080000101	7,492
S18044B080000034	2,168	S18044B080000068	1,953	S18044B080000102	7,304
S18044B080000035	2,175	S18044B080000069	1,859	S18044B080000103	7,643
S18044B080000036	1,936	S18044B080000070	1,803	S18044B080000104	6,306

**FINAL SURVEY RESULTS SUMMARY**

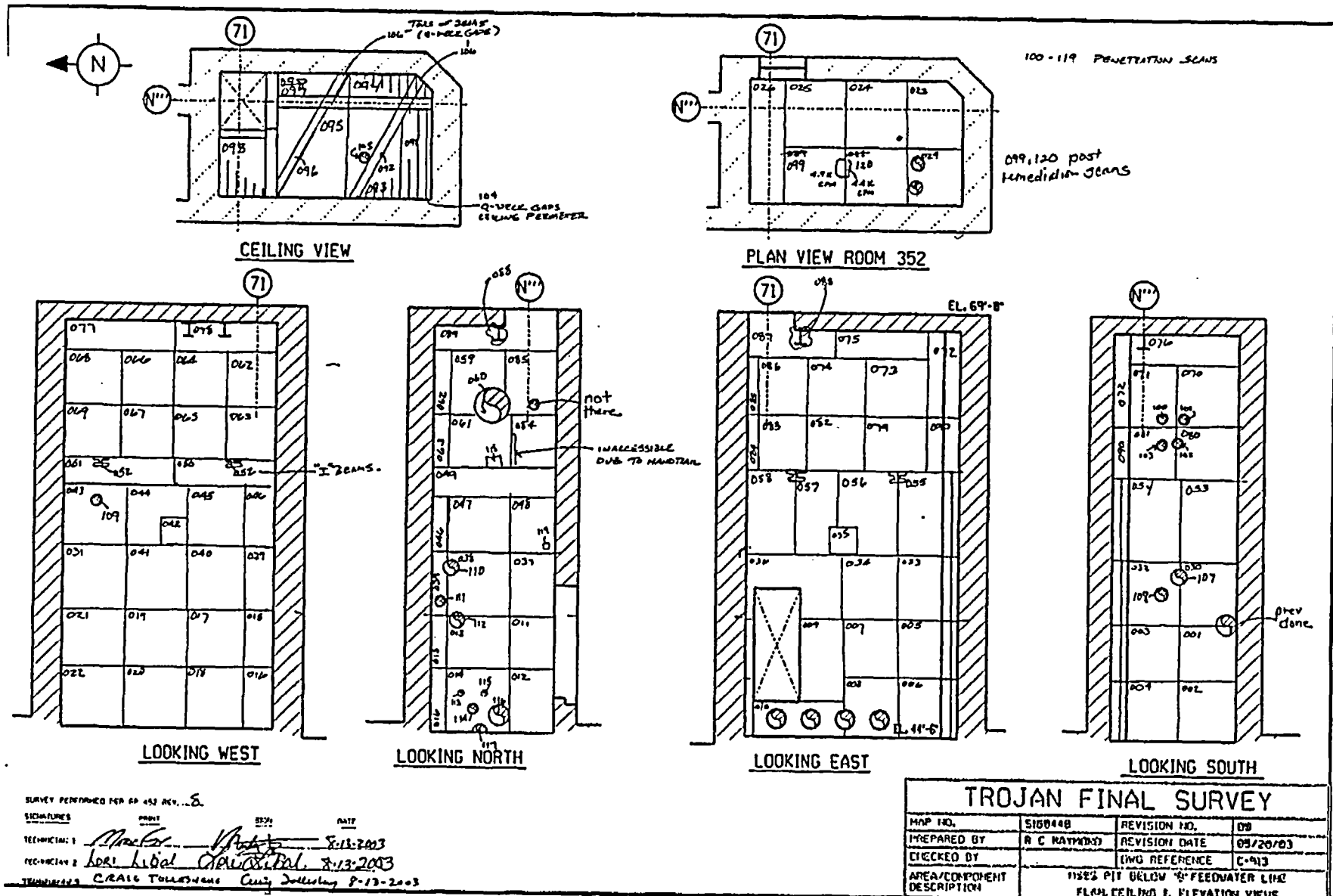
**Survey Unit ID Code:** S18044B

**Classification:** Class 1

**Survey Unit Name:** Room Below B AFW Line

**Size (m<sup>2</sup>):** 99

Location	Value	Location	Value	Location	Value
S18044B08000105	6,645				
S18044B08000106	8,509				
S18044B08000107	5,949				
S18044B08000108	8,170				
S18044B08000109	6,965				
S18044B08000110	6,721				
S18044B08000111	4,838				
S18044B08000112	4,631				
S18044B08000113	6,401				
S18044B08000114	5,328				
S18044B08000115	4,631				
S18044B08000116	9,356				
S18044B08000117	8,151				
S18044B08000118	8,227				
S18044B08000119	8,434				
S18044B08000120	2,388				



## FINAL SURVEY RESULTS SUMMARY

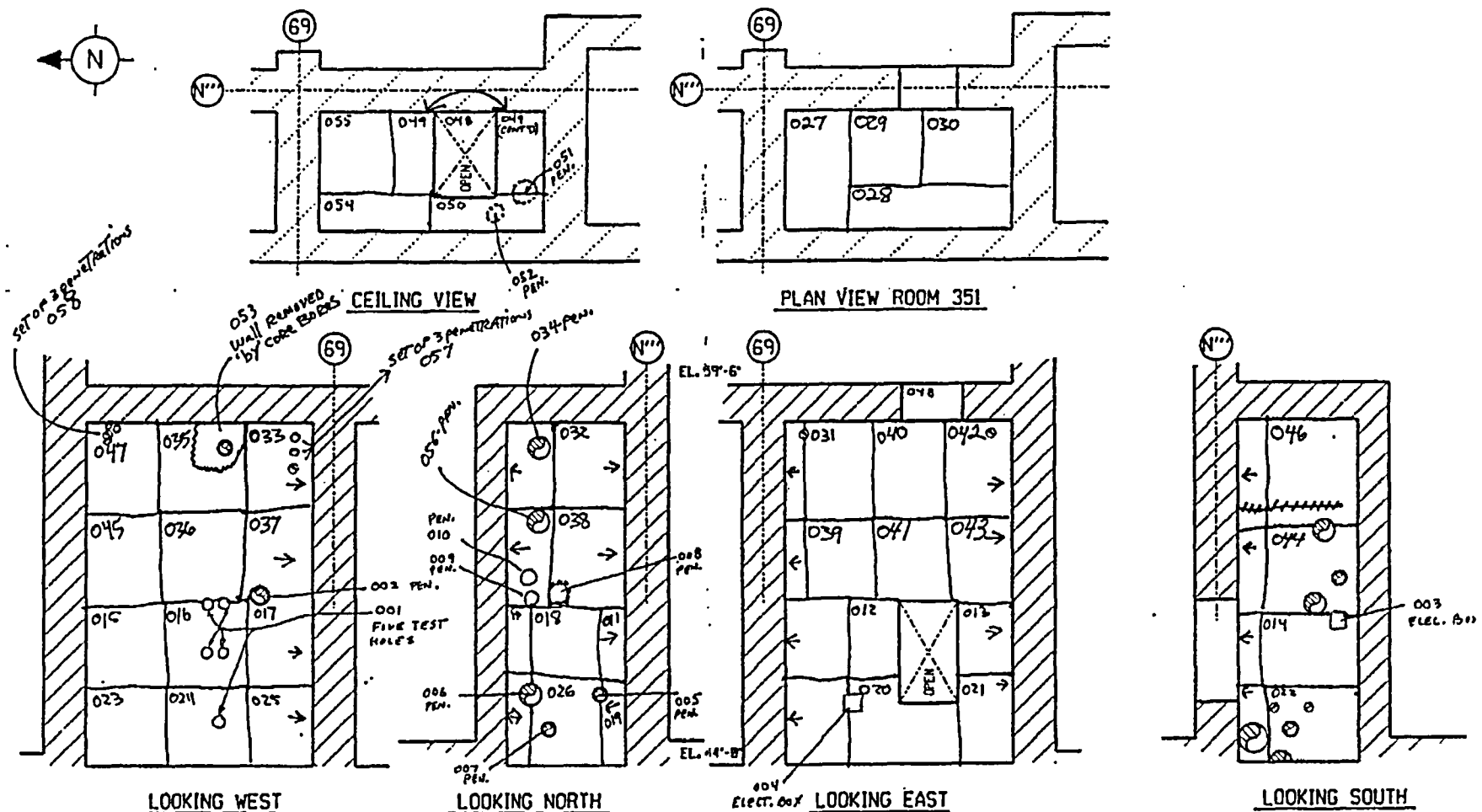
**Survey Unit ID Code:** S18044C  
**Survey Unit Name:** Room Below C AFW Line

**Classification:** Class 1  
**Size (m<sup>2</sup>):** 45

### Scan Measurement Data

**Measurement Type:** Surface Scanning Beta      **Scan Coverage (%):** 100  
**Measurement Units:** dpm/100cm<sup>2</sup>      **Investigation Level:** 21,000  
**Minimum Value:** 2,087      **Maximum Value:** 13,220

Location	Value	Location	Value	Location	Value
S18044C08000001	5,836	S18044C080000035	2,560		
S18044C080000002	6,005	S18044C080000036	4,413		
S18044C080000003	5,083	S18044C080000037	2,837		
S18044C080000004	6,514	S18044C080000038	2,424		
S18044C080000005	12,050	S18044C080000039	2,368		
S18044C080000006	4,989	S18044C080000040	2,303		
S18044C080000007	13,220	S18044C080000041	2,231		
S18044C080000008	6,081	S18044C080000042	2,482		
S18044C080000009	7,718	S18044C080000043	2,371		
S18044C080000010	6,495	S18044C080000044	2,303		
S18044C080000011	3,037	S18044C080000045	2,202		
S18044C080000012	5,444	S18044C080000046	2,241		
S18044C080000013	2,087	S18044C080000047	2,302		
S18044C080000014	2,529	S18044C080000048	4,426		
S18044C080000015	2,349	S18044C080000049	2,795		
S18044C080000016	2,597	S18044C080000050	3,158		
S18044C080000017	3,268	S18044C080000051	2,374		
S18044C080000018	2,961	S18044C080000052	2,621		
S18044C080000019	4,151	S18044C080000053	2,364		
S18044C080000020	9,475	S18044C080000054	2,394		
S18044C080000021	2,946	S18044C080000055	2,270		
S18044C080000022	2,424				
S18044C080000023	6,054				
S18044C080000024	3,368				
S18044C080000025	6,111				
S18044C080000026	3,610				
S18044C080000027	4,743				
S18044C080000028	9,198				
S18044C080000029	8,767				
S18044C080000030	3,198				
S18044C080000031	2,161				
S18044C080000032	2,402				
S18044C080000033	2,473				
S18044C080000034	2,547				



SURVEY PERFORMED PER DP 432 REV. 8  
 SIGNATURES: CRAIG TOLLESON Aug 8/14/2003  
 TECHNICIAN 1: Row Keston 8/19/2003  
 TECHNICIAN 2: Row Keston 8/19/2003

2350 #147791 10/3/2003  
 44-9 #180812 10/4/2003  
 2350 #147794 10/3/2003  
 2350 #180788 3-5-2004  
 43-68 #161413S 9-17-2003  
 44-9 #180812 10-2-2003

TROJAN FINAL SURVEY			
MAP NO.	513044C	REVISION NO.	03
PREPARED BY	R C RAYMOND	REVISION DATE	05/29/03
CHECKED BY		DWG REFERENCE	C-913
AREA/COMPONENT DESCRIPTION	MESS PIT BELOW C FEEDWATER LINE PLAN & ELEVATION		

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18044D

Classification: Class 1

Survey Unit Name: Room Below D AFW Line

Size (m<sup>2</sup>): 46Scan Measurement Data

Measurement Type: Surface Scanning Beta

Scan Coverage (%): 100

Measurement Units: dpm/100cm<sup>2</sup>

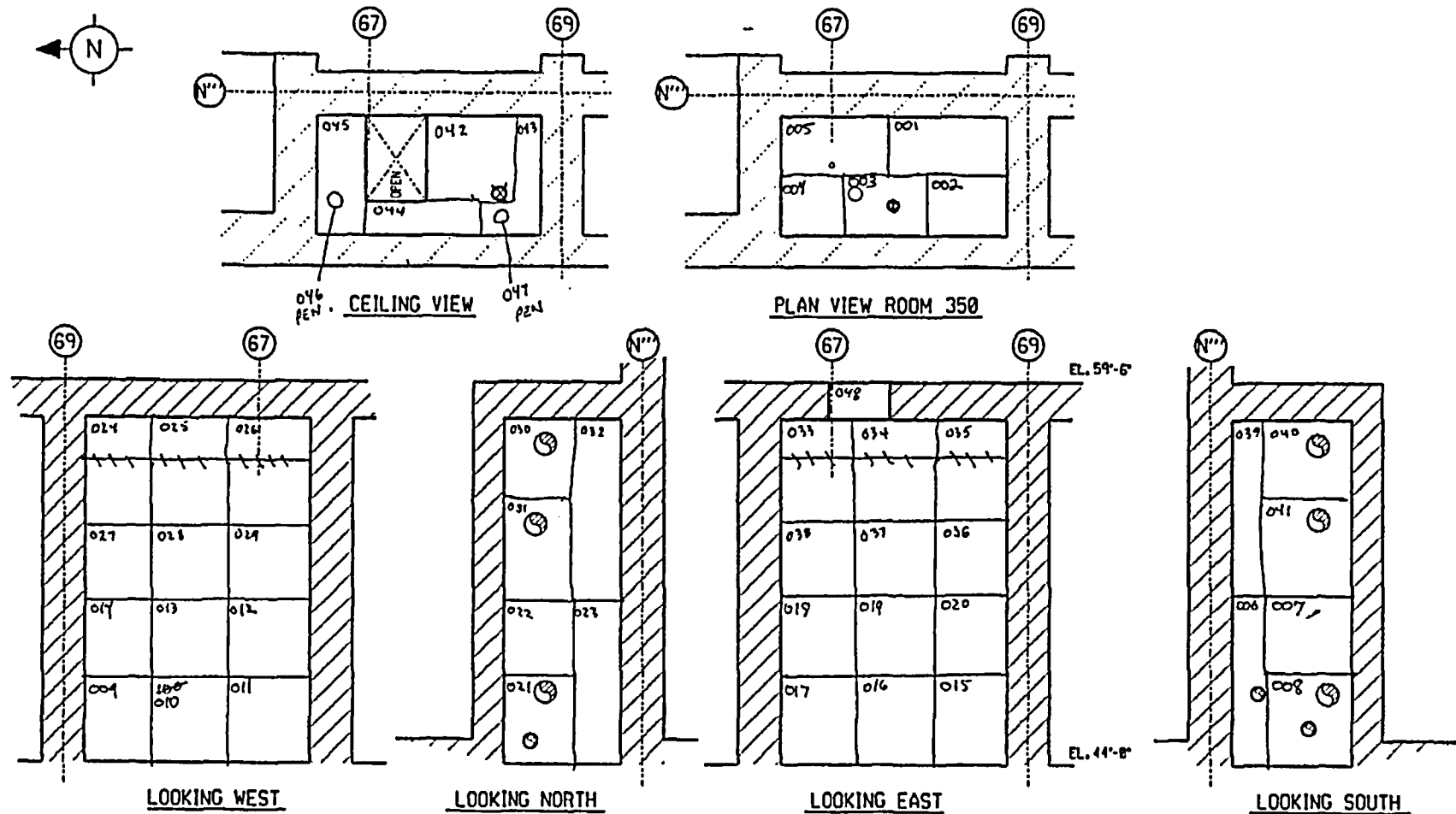
Investigation Level: 21,000

Minimum Value: 2,117

Maximum Value: 6,581

Location	Value	Location	Value	Location	Value
S18044D08000001	2,355	S18044D08000034	2,745		
S18044D08000002	2,267	S18044D08000035	2,432		
S18044D08000003	2,976	S18044D08000036	2,855		
S18044D08000004	2,152	S18044D08000037	3,498		
S18044D08000005	2,386	S18044D08000038	3,239		
S18044D08000006	2,647	S18044D08000039	2,287		
S18044D08000007	2,509	S18044D08000040	2,117		
S18044D08000008	2,358	S18044D08000041	2,380		
S18044D08000009	2,637	S18044D08000042	3,059		
S18044D08000010	3,211	S18044D08000043	2,438		
S18044D08000011	3,407	S18044D08000044	3,005		
S18044D08000012	3,493	S18044D08000045	3,170		
S18044D08000013	4,420	S18044D08000046	4,092		
S18044D08000014	2,619	S18044D08000047	3,914		
S18044D08000015	2,976	S18044D08000048	5,243		
S18044D08000016	4,101				
S18044D08000017	4,541				
S18044D08000018	4,448				
S18044D08000019	5,233				
S18044D08000020	3,206				
S18044D08000021	4,762				
S18044D08000022	6,445				
S18044D08000023	4,410				
S18044D08000024	2,501				
S18044D08000025	2,515				
S18044D08000026	5,276				
S18044D08000027	2,188				
S18044D08000028	2,975				
S18044D08000029	6,581				
S18044D08000030	2,849				
S18044D08000031	3,283				
S18044D08000032	2,804				
S18044D08000033	2,855				





SURVEY PLANNED PER NO. 452 REV. 2

SIGNATURES: *CAALG TOLLEMAN* (Aug 2003), *R. C. RAYMOND* (8-20-2003), *James R. ...* (8-20-2003)

DATE: 8-20-2003

TROJAN FINAL SURVEY			
HAP NO.	S180440	REVISION NO.	83
PREPARED BY	R C RAYMOND	REVISION DATE	5/17/83
CHECKED BY		DWG REFERENCE	C-113
AREA/COMPONENT DESCRIPTION	MSSS PIT BELOW D FREQUENTLY LING PLANS & ELEVATIONS		

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18045E  
 Survey Unit Name: MSSS Passageway

Classification: Class 1  
 Size (m<sup>2</sup>): 219

Scan Measurement Data

Measurement Type: Surface Scanning Beta  
 Measurement Units: dpm/100cm<sup>2</sup>  
 Minimum Value: 1,327

Scan Coverage (%): 100  
 Investigation Level: 21,000  
 Maximum Value: 17,530

Location	Value	Location	Value	Location	Value
S18045E08000001	2,365	S18045E080000035	2,165	S18045E080000069	2,238
S18045E080000002	2,411	S18045E080000036	2,045	S18045E080000070	2,310
S18045E080000003	2,414	S18045E080000037	2,102	S18045E080000071	2,275
S18045E080000004	2,376	S18045E080000038	1,935	S18045E080000072	2,601
S18045E080000005	2,423	S18045E080000039	2,043	S18045E080000073	2,302
S18045E080000006	2,494	S18045E080000040	2,250	S18045E080000074	2,298
S18045E080000007	2,655	S18045E080000041	1,834	S18045E080000075	2,282
S18045E080000008	2,360	S18045E080000042	2,062	S18045E080000076	2,324
S18045E080000009	2,436	S18045E080000043	2,409	S18045E080000077	2,890
S18045E080000010	2,239	S18045E080000044	2,494	S18045E080000078	2,541
S18045E080000011	2,114	S18045E080000045	1,974	S18045E080000079	2,513
S18045E080000012	2,048	S18045E080000046	2,193	S18045E080000080	2,874
S18045E080000013	2,144	S18045E080000047	2,431	S18045E080000081	3,029
S18045E080000014	2,263	S18045E080000048	2,433	S18045E080000082	3,244
S18045E080000015	2,447	S18045E080000049	2,133	S18045E080000083	3,773
S18045E080000016	2,365	S18045E080000050	2,305	S18045E080000084	3,659
S18045E080000017	2,809	S18045E080000051	3,353	S18045E080000085	3,670
S18045E080000018	3,525	S18045E080000052	2,880	S18045E080000086	3,747
S18045E080000019	2,862	S18045E080000053	2,342	S18045E080000087	4,573
S18045E080000020	3,118	S18045E080000054	2,515	S18045E080000088	3,525
S18045E080000021	2,834	S18045E080000055	3,366	S18045E080000089	3,440
S18045E080000022	3,328	S18045E080000056	3,493	S18045E080000090	3,780
S18045E080000023	2,581	S18045E080000057	2,547	S18045E080000091	3,212
S18045E080000024	2,437	S18045E080000058	3,356	S18045E080000092	2,595
S18045E080000025	2,302	S18045E080000059	2,442	S18045E080000093	2,877
S18045E080000026	2,291	S18045E080000060	2,972	S18045E080000094	2,776
S18045E080000027	2,295	S18045E080000061	2,084	S18045E080000095	2,655
S18045E080000028	2,453	S18045E080000062	2,326	S18045E080000096	2,815
S18045E080000029	2,368	S18045E080000063	2,257	S18045E080000097	2,751
S18045E080000030	2,406	S18045E080000064	2,512	S18045E080000098	2,850
S18045E080000031	2,244	S18045E080000065	2,153	S18045E080000099	2,994
S18045E080000032	2,291	S18045E080000066	2,442	S18045E080000100	3,660
S18045E080000033	2,012	S18045E080000067	2,411	S18045E080000101	3,900
S18045E080000034	2,021	S18045E080000068	2,206	S18045E080000102	4,977

### FINAL SURVEY RESULTS SUMMARY

**Survey Unit ID Code:** S18045E

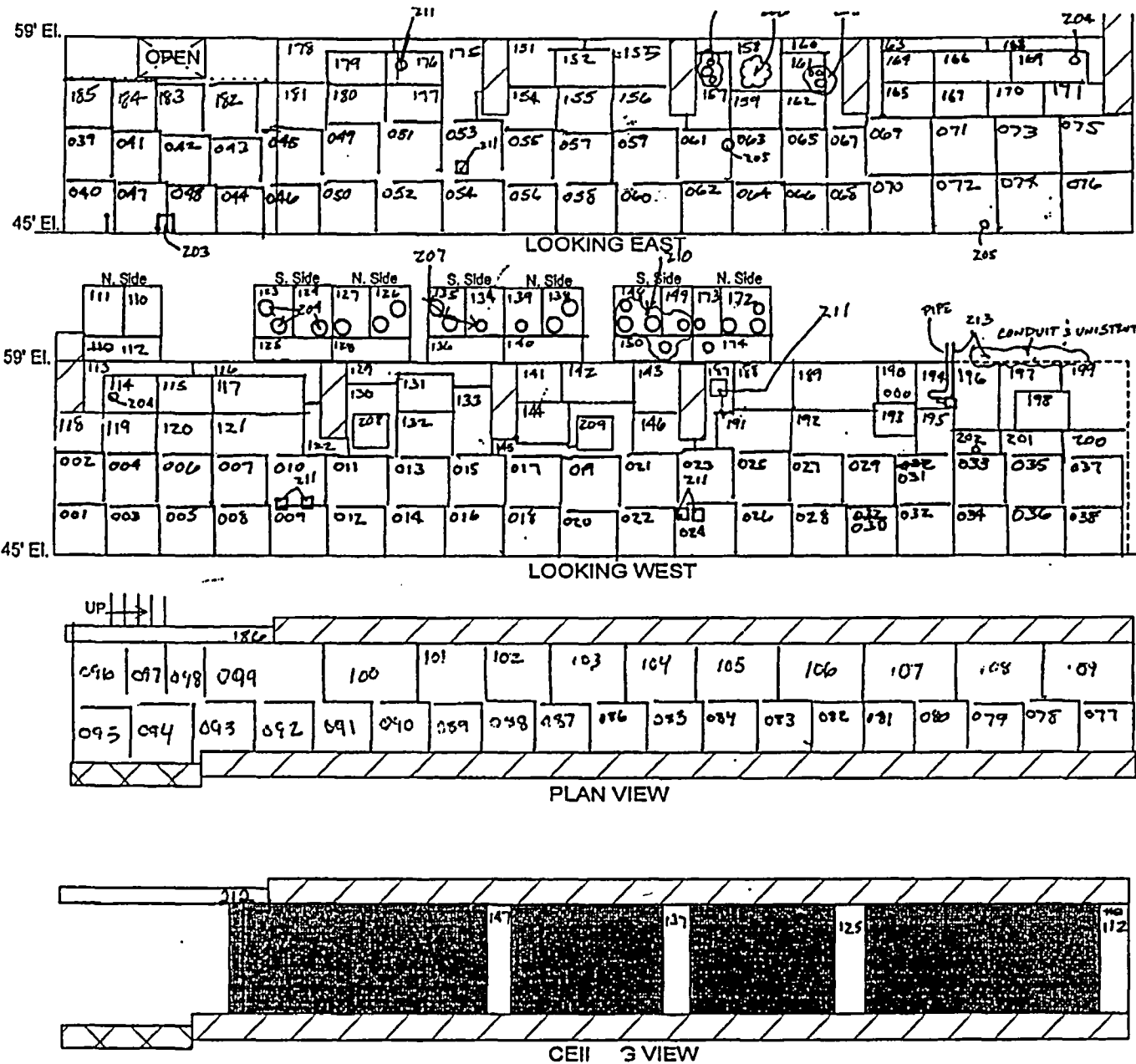
**Classification:** Class 1

**Survey Unit Name:** MSSS Passageway

**Size (m<sup>2</sup>):** 219

Location	Value	Location	Value	Location	Value
S18045E08000103	4,428	S18045E08000142	2,298	S18045E08000181	2,323
S18045E08000104	4,453	S18045E08000143	2,828	S18045E08000182	2,982
S18045E08000105	4,530	S18045E08000144	2,768	S18045E08000183	2,321
S18045E08000106	4,040	S18045E08000145	2,808	S18045E08000184	1,829
S18045E08000107	4,551	S18045E08000146	3,517	S18045E08000185	2,036
S18045E08000108	3,533	S18045E08000147	2,888	S18045E08000186	2,992
S18045E08000109	3,121	S18045E08000148	3,405	S18045E08000187	2,174
S18045E08000110	2,301	S18045E08000149	4,003	S18045E08000188	2,439
S18045E08000111	2,341	S18045E08000150	3,745	S18045E08000189	2,342
S18045E08000112	2,468	S18045E08000151	4,694	S18045E08000190	2,368
S18045E08000113	2,286	S18045E08000152	3,397	S18045E08000191	2,251
S18045E08000114	2,329	S18045E08000153	2,979	S18045E08000192	2,298
S18045E08000115	2,264	S18045E08000154	5,186	S18045E08000193	1,327
S18045E08000116	2,541	S18045E08000155	4,076	S18045E08000194	2,143
S18045E08000117	2,418	S18045E08000156	2,834	S18045E08000195	2,200
S18045E08000118	2,244	S18045E08000157	2,298	S18045E08000196	1,971
S18045E08000119	2,447	S18045E08000158	3,079	S18045E08000197	1,892
S18045E08000120	2,610	S18045E08000159	2,921	S18045E08000198	1,427
S18045E08000121	2,534	S18045E08000160	2,440	S18045E08000199	1,802
S18045E08000122	2,493	S18045E08000161	2,389	S18045E08000200	1,958
S18045E08000123	2,628	S18045E08000162	2,538	S18045E08000201	2,004
S18045E08000124	2,182	S18045E08000163	2,401	S18045E08000202	2,007
S18045E08000125	2,238	S18045E08000164	2,412	S18045E08000203	4,114
S18045E08000126	2,307	S18045E08000165	2,259	S18045E08000204	8,634
S18045E08000127	2,305	S18045E08000166	2,425	S18045E08000205	7,512
S18045E08000128	2,251	S18045E08000167	2,313	S18045E08000206	8,113
S18045E08000129	2,357	S18045E08000168	2,704	S18045E08000207	5,669
S18045E08000130	2,341	S18045E08000169	2,474	S18045E08000208	6,110
S18045E08000131	2,447	S18045E08000170	2,421	S18045E08000209	7,071
S18045E08000132	2,512	S18045E08000171	2,434	S18045E08000210	7,352
S18045E08000133	2,447	S18045E08000172	2,865	S18045E08000211	17,530
S18045E08000134	2,465	S18045E08000173	2,913	S18045E08000212	4,547
S18045E08000135	3,101	S18045E08000174	2,959	S18045E08000213	5,288
S18045E08000136	2,922	S18045E08000175	4,469		
S18045E08000137	2,465	S18045E08000176	4,675		
S18045E08000138	2,727	S18045E08000177	4,649		
S18045E08000139	3,379	S18045E08000178	2,808		
S18045E08000140	2,891	S18045E08000179	2,355		
S18045E08000141	2,597	S18045E08000180	2,535		

FINAL SURVEY UNIT S18045E, SCAN LOCATIONS



Data collection performed  
IAW RP 452 Rev. 8

*James Embrey* 17-28-2003 Date  
Survey Technician  
*James Embrey* 17-28-2003 Date  
Survey Technician

045escn.cad

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18059A

Classification: Class 1

Survey Unit Name: MSSS Cubicles A &amp; D

Size (m<sup>2</sup>): 156Scan Measurement Data

Measurement Type: Surface Scanning Beta

Scan Coverage (%): 100

Measurement Units: dpm/100cm<sup>2</sup>

Investigation Level: 21,000

Minimum Value: 1,046

Maximum Value: 20,090

Location	Value	Location	Value	Location	Value
S18059A08000001	2,311	S18059A080000035	2,786	S18059A080000069	1,472
S18059A080000002	2,946	S18059A080000036	2,929	S18059A080000070	1,086
S18059A080000003	2,173	S18059A080000037	4,359	S18059A080000071	1,147
S18059A080000004	2,426	S18059A080000038	3,659	S18059A080000072	1,046
S18059A080000005	2,326	S18059A080000039	3,080	S18059A080000073	1,275
S18059A080000006	2,789	S18059A080000040	3,679	S18059A080000074	1,368
S18059A080000007	2,534	S18059A080000041	3,013	S18059A080000075	1,260
S18059A080000008	2,743	S18059A080000042	2,668	S18059A080000076	1,313
S18059A080000009	2,661	S18059A080000043	5,750	S18059A080000077	1,952
S18059A080000010	2,792	S18059A080000044	3,098	S18059A080000078	2,609
S18059A080000011	3,000	S18059A080000045	2,615	S18059A080000079	2,388
S18059A080000012	4,701	S18059A080000046	2,734	S18059A080000080	2,888
S18059A080000013	2,844	S18059A080000047	3,271	S18059A080000081	4,036
S18059A080000014	3,360	S18059A080000048	3,439	S18059A080000082	4,103
S18059A080000015	3,357	S18059A080000049	2,921	S18059A080000083	4,528
S18059A080000016	2,757	S18059A080000050	2,533	S18059A080000084	3,399
S18059A080000017	2,414	S18059A080000051	2,871	S18059A080000085	20,090
S18059A080000018	3,820	S18059A080000052	2,671	S18059A080000086	3,978
S18059A080000019	3,051	S18059A080000053	2,765	S18059A080000087	2,615
S18059A080000020	2,716	S18059A080000054	2,607	S18059A080000088	5,693
S18059A080000021	2,423	S18059A080000055	4,372	S18059A080000089	3,012
S18059A080000022	2,664	S18059A080000056	2,664	S18059A080000090	3,103
S18059A080000023	2,519	S18059A080000057	2,790	S18059A080000091	2,774
S18059A080000024	2,548	S18059A080000058	2,546	S18059A080000092	2,446
S18059A080000025	3,348	S18059A080000059	3,939	S18059A080000093	2,057
S18059A080000026	2,750	S18059A080000060	4,734	S18059A080000094	5,097
S18059A080000027	2,783	S18059A080000061	4,421	S18059A080000095	3,710
S18059A080000028	3,519	S18059A080000062	2,426	S18059A080000096	2,618
S18059A080000029	2,658	S18059A080000063	2,497	S18059A080000097	3,577
S18059A080000030	2,551	S18059A080000064	2,332	S18059A080000098	5,534
S18059A080000031	4,162	S18059A080000065	2,607	S18059A080000099	5,626
S18059A080000032	2,926	S18059A080000066	2,333	S18059A08000100	7,098
S18059A080000033	3,789	S18059A080000067	2,650	S18059A08000101	5,126
S18059A080000034	2,874	S18059A080000068	1,915	S18059A08000102	1,912

### FINAL SURVEY RESULTS SUMMARY

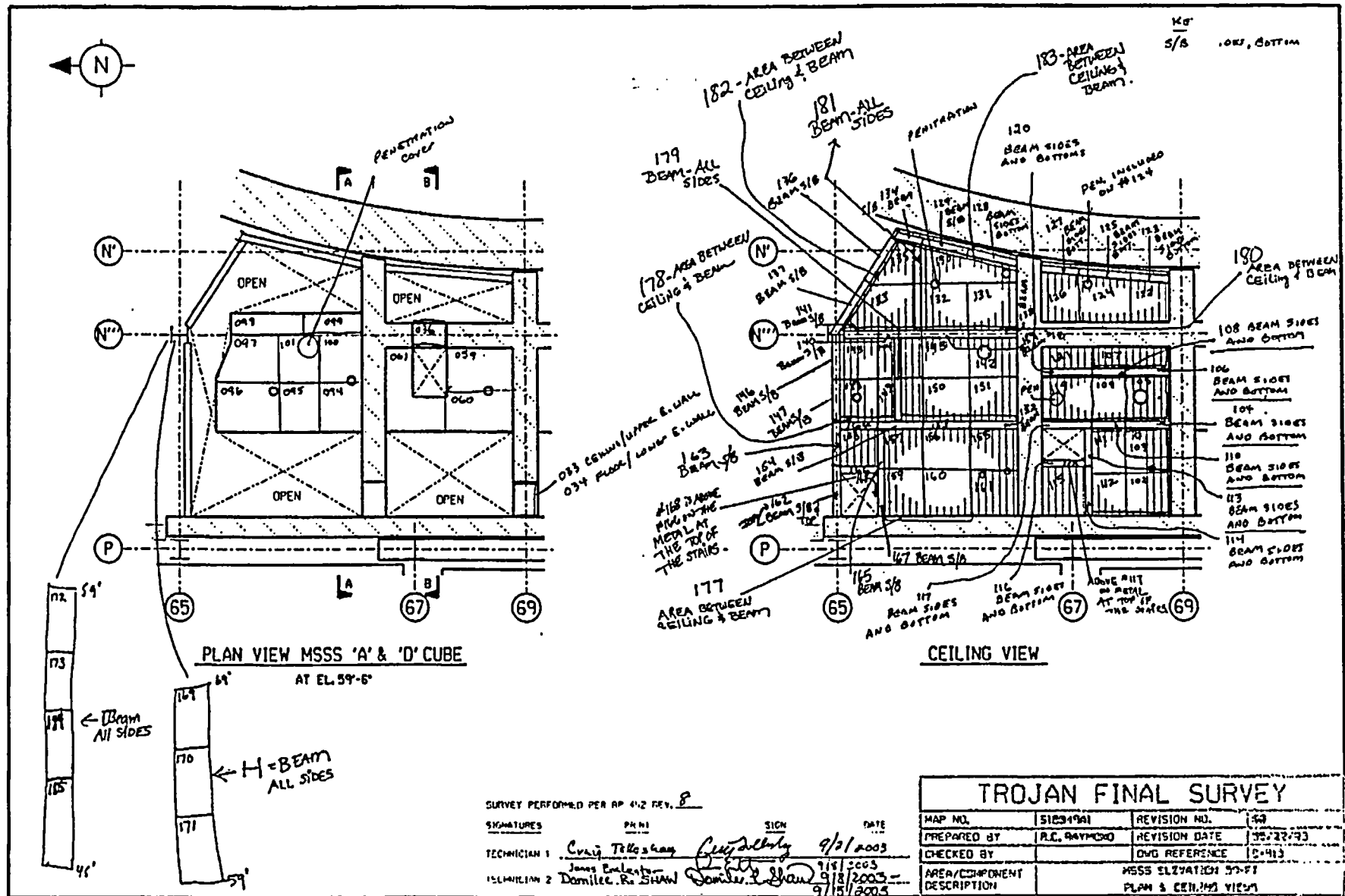
**Survey Unit ID Code:** S18059A

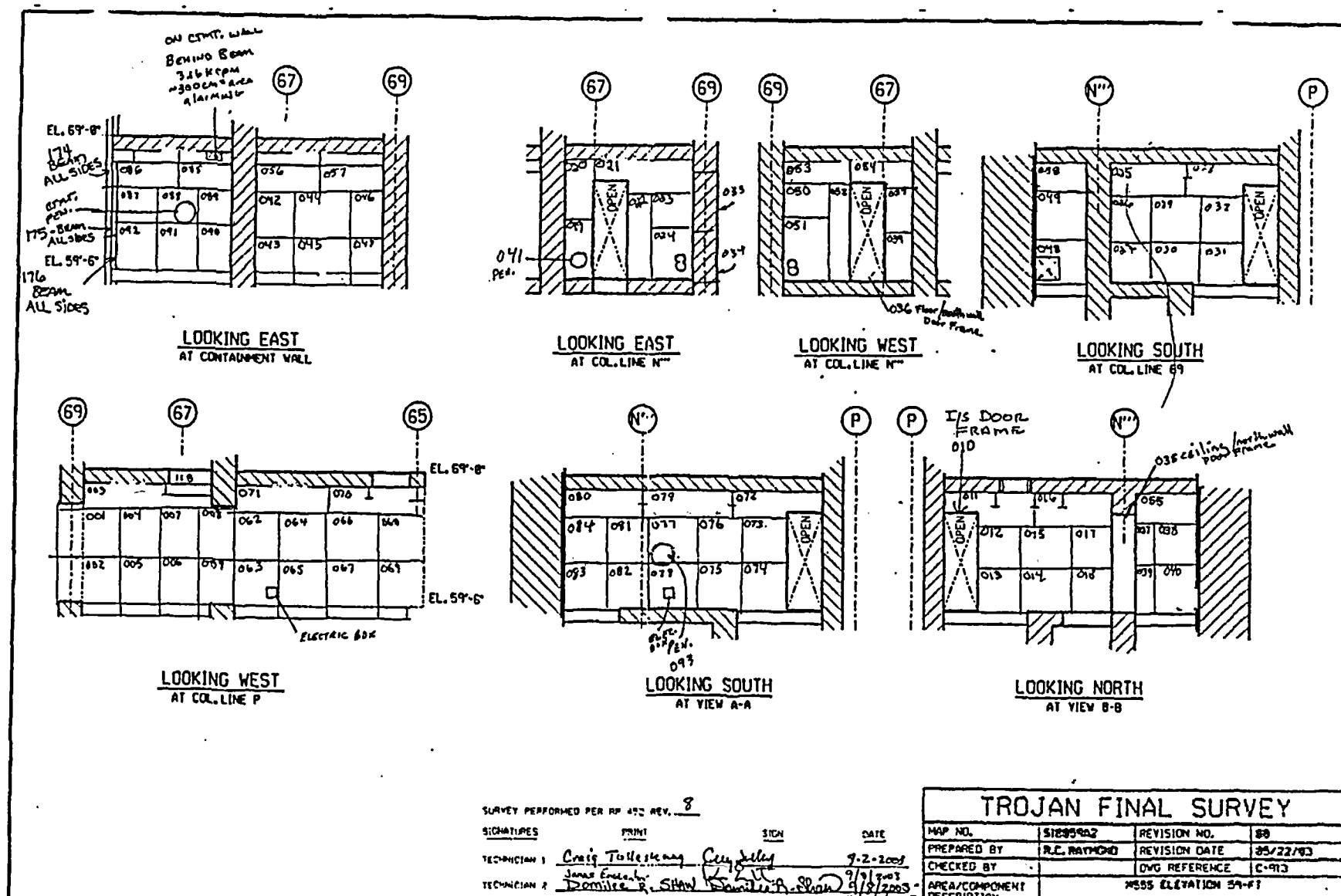
**Classification:** Class 1

**Survey Unit Name:** MSSS Cubicles A & D

**Size (m<sup>2</sup>):** 156

Location	Value	Location	Value	Location	Value
S18059A08000103	2,004	S18059A08000142	3,609	S18059A08000181	5,764
S18059A08000104	1,905	S18059A08000143	2,051	S18059A08000182	8,233
S18059A08000105	2,283	S18059A08000144	1,808	S18059A08000183	7,131
S18059A08000106	1,690	S18059A08000145	1,750	S18059A08000184	4,527
S18059A08000107	2,054	S18059A08000146	2,074	S18059A08000185	4,688
S18059A08000108	2,060	S18059A08000147	1,743		
S18059A08000109	1,756	S18059A08000148	3,134		
S18059A08000110	1,842	S18059A08000149	1,990		
S18059A08000111	1,777	S18059A08000150	2,161		
S18059A08000112	1,808	S18059A08000151	2,097		
S18059A08000113	2,933	S18059A08000152	1,719		
S18059A08000114	1,991	S18059A08000153	1,921		
S18059A08000115	1,963	S18059A08000154	1,631		
S18059A08000116	4,863	S18059A08000155	1,997		
S18059A08000117	5,923	S18059A08000156	1,766		
S18059A08000118	2,638	S18059A08000157	1,866		
S18059A08000119	2,771	S18059A08000158	1,688		
S18059A08000120	1,789	S18059A08000159	1,753		
S18059A08000121	1,741	S18059A08000160	1,844		
S18059A08000122	2,220	S18059A08000161	1,960		
S18059A08000123	2,204	S18059A08000162	1,539		
S18059A08000124	3,501	S18059A08000163	1,552		
S18059A08000125	3,043	S18059A08000164	1,430		
S18059A08000126	1,938	S18059A08000165	1,625		
S18059A08000127	2,067	S18059A08000166	1,641		
S18059A08000128	3,384	S18059A08000167	1,637		
S18059A08000129	2,775	S18059A08000168	1,610		
S18059A08000130	1,933	S18059A08000169	1,400		
S18059A08000131	2,382	S18059A08000170	1,588		
S18059A08000132	1,967	S18059A08000171	1,522		
S18059A08000133	1,784	S18059A08000172	1,689		
S18059A08000134	2,256	S18059A08000173	1,838		
S18059A08000135	1,921	S18059A08000174	5,890		
S18059A08000136	4,554	S18059A08000175	5,225		
S18059A08000137	2,707	S18059A08000176	4,915		
S18059A08000138	2,475	S18059A08000177	7,559		
S18059A08000139	1,835	S18059A08000178	6,060		
S18059A08000140	1,795	S18059A08000179	7,306		
S18059A08000141	1,728	S18059A08000180	4,920		







## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18059B  
 Survey Unit Name: MSSS Cubicles B & C

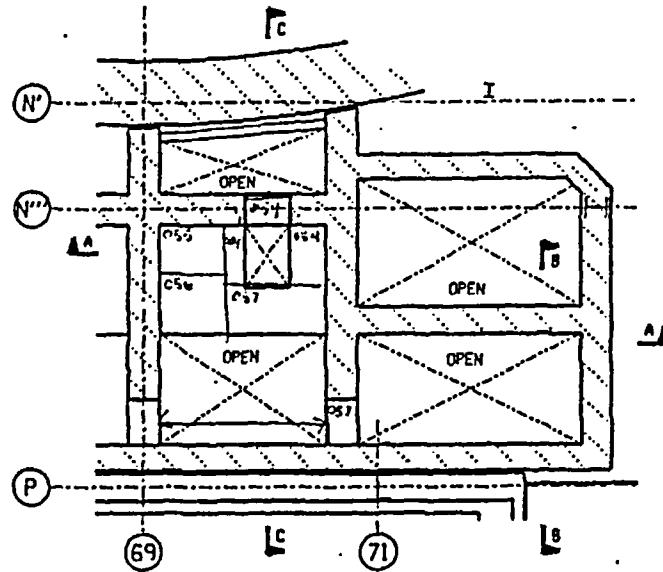
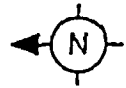
Classification: Class 1  
 Size (m<sup>2</sup>): 109

Scan Measurement Data

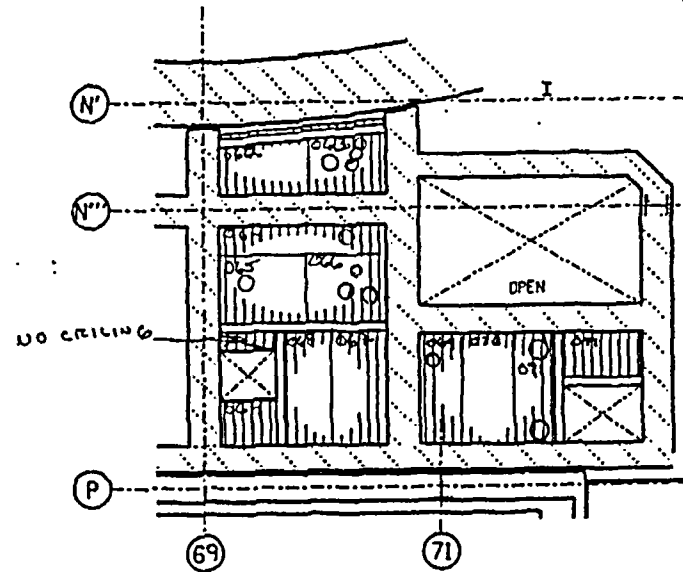
Measurement Type: Surface Scanning Beta  
 Measurement Units: dpm/100cm<sup>2</sup>  
 Minimum Value: 1,690

Scan Coverage (%): 100  
 Investigation Level: 21,000  
 Maximum Value: 7,312

Location	Value	Location	Value	Location	Value
S18059B08000001	1,980	S18059B080000035	2,507	S18059B080000069	5,970
S18059B080000002	2,193	S18059B080000036	2,529	S18059B080000070	5,188
S18059B080000003	2,253	S18059B080000037	2,582	S18059B080000071	5,148
S18059B080000004	2,292	S18059B080000038	2,633	S18059B080000072	1,832
S18059B080000005	2,639	S18059B080000039	2,360	S18059B080000073	2,301
S18059B080000006	2,264	S18059B080000040	2,301	S18059B080000074	2,001
S18059B080000007	2,421	S18059B080000041	2,178	S18059B080000075	2,365
S18059B080000008	2,584	S18059B080000042	2,600	S18059B080000076	2,503
S18059B080000009	3,922	S18059B080000043	2,184	S18059B080000077	1,976
S18059B080000010	2,179	S18059B080000044	2,182	S18059B080000078	2,124
S18059B080000011	2,229	S18059B080000045	2,762	S18059B080000079	2,157
S18059B080000012	2,239	S18059B080000046	1,895	S18059B080000080	2,068
S18059B080000013	2,313	S18059B080000047	2,157	S18059B080000081	2,146
S18059B080000014	2,335	S18059B080000048	2,565	S18059B080000082	2,016
S18059B080000015	2,256	S18059B080000049	2,401	S18059B080000083	1,719
S18059B080000016	2,216	S18059B080000050	2,314	S18059B080000084	2,195
S18059B080000017	2,326	S18059B080000051	2,210	S18059B080000085	2,202
S18059B080000018	2,317	S18059B080000052	2,137	S18059B080000086	2,045
S18059B080000019	2,130	S18059B080000053	1,959	S18059B080000087	2,204
S18059B080000020	2,263	S18059B080000054	2,964	S18059B080000088	1,852
S18059B080000021	2,314	S18059B080000055	3,401	S18059B080000089	1,835
S18059B080000022	2,206	S18059B080000056	4,241	S18059B080000090	1,991
S18059B080000023	2,585	S18059B080000057	3,862	S18059B080000091	2,196
S18059B080000024	2,317	S18059B080000058	6,410	S18059B080000092	2,010
S18059B080000025	2,540	S18059B080000059	7,312	S18059B080000093	2,013
S18059B080000026	2,358	S18059B080000060	6,350	S18059B080000094	1,854
S18059B080000027	2,103	S18059B080000061	4,287	S18059B080000095	1,730
S18059B080000028	2,228	S18059B080000062	6,250	S18059B080000096	1,690
S18059B080000029	2,109	S18059B080000063	5,889	S18059B080000097	2,116
S18059B080000030	2,260	S18059B080000064	6,270	S18059B080000098	1,852
S18059B080000031	2,339	S18059B080000065	6,010	S18059B080000099	2,299
S18059B080000032	2,461	S18059B080000066	6,270	S18059B080000100	1,962
S18059B080000033	2,316	S18059B080000067	4,788	S18059B080000101	2,143
S18059B080000034	2,557	S18059B080000068	5,048		



PLAN VIEW MSSS 'C' & 'B' CUBE  
AT EL. 59'-6"



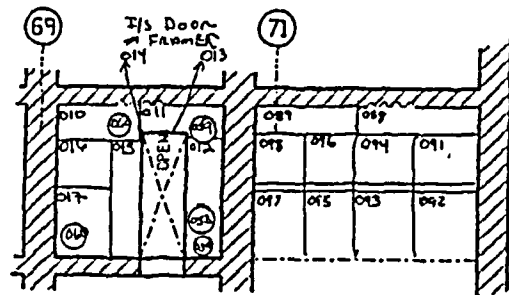
CEILING VIEW

59' B1 scan

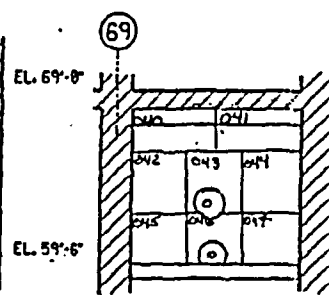
SURVEY PERFORMED PER AP 452 REV. 8

SIGNATURES	PRINT	SIGN	DATE
TECHNICIAN 1	J. CONLEY	<i>J. Conley</i>	8/26/2003
TECHNICIAN 2	J. FURBER	<i>J. Furber</i>	8/26/2003

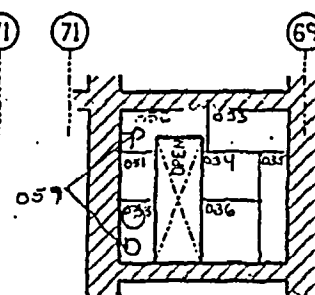
TROJAN FINAL SURVEY			
MAP NO.	51205701	REVISION NO.	00
PREPARED BY	R.C. RATHBON	REVISION DATE	05/22/03
CHECKED BY		DWG REFERENCE	C-913
AREA/COMPONENT	MSSS ELEVATION 59'-01"		



LOOKING EAST  
AT VIEW A-A



LOOKING EAST  
AT CONTAINMENT WALL



## FINAL SURVEY RESULTS SUMMARY

**Survey Unit ID Code:** S18069A  
**Survey Unit Name:** MSSS Cubicle A

**Classification:** Class 1  
**Size (m<sup>2</sup>):** 219

### Scan Measurement Data

**Measurement Type:** Surface Scanning Beta  
**Measurement Units:** dpm/100cm<sup>2</sup>  
**Minimum Value:** 529

**Scan Coverage (%):** 100  
**Investigation Level:** 21,000  
**Maximum Value:** 26,960

Location	Value	Location	Value	Location	Value
S18069A08000001	1,180	S18069A080000035	1,248	S18069A080000070	1,291
S18069A080000002	1,580	S18069A080000036	1,175	S18069A080000071	1,479
S18069A080000003	1,451	S18069A080000037	1,569	S18069A080000072	2,748
S18069A080000004	1,524	S18069A080000038	1,320	S18069A080000073	1,401
S18069A080000005	1,842	S18069A080000039	1,351	S18069A080000074	1,818
S18069A080000006	1,268	S18069A080000040	1,169	S18069A080000075	1,386
S18069A080000007	1,195	S18069A080000041	1,092	S18069A080000076	1,968
S18069A080000008	968	S18069A080000042	1,142	S18069A080000077	3,089
S18069A080000009	1,170	S18069A080000043	646	S18069A080000078	1,505
S18069A080000010	529	S18069A080000044	697	S18069A080000079	1,906
S18069A080000011	715	S18069A080000045	825	S18069A080000080	1,330
S18069A080000012	1,004	S18069A080000046	644	S18069A080000081	1,208
S18069A080000013	757	S18069A080000047	771	S18069A080000082	1,155
S18069A080000014	905	S18069A080000048	642	S18069A080000083	1,077
S18069A080000015	800	S18069A080000049	617	S18069A080000084	1,178
S18069A080000016	868	S18069A080000050	712	S18069A080000085	1,089
S18069A080000017	1,061	S18069A080000051	720	S18069A080000086	1,177
S18069A080000018	1,001	S18069A080000052	793	S18069A080000087	1,532
S18069A080000019	938	S18069A080000053	781	S18069A080000088	995
S18069A080000020	1,158	S18069A080000054	649	S18069A080000089	1,027
S18069A080000021	1,935	S18069A080000055	840	S18069A080000090	1,244
S18069A080000022	2,469	S18069A080000056	895	S18069A080000091	1,149
S18069A080000023	2,031	S18069A080000057	751	S18069A080000092	1,064
S18069A080000024	1,702	S18069A080000058	771	S18069A080000093	1,799
S18069A080000025	1,502	S18069A080000059	1,152	S18069A080000094	866
S18069A080000026	1,383	S18069A080000060	1,146	S18069A080000095	930
S18069A080000027	1,095	S18069A080000061	958	S18069A080000096	930
S18069A080000028	987	S18069A080000062	1,083	S18069A080000097	998
S18069A080000029	1,223	S18069A080000063	907	S18069A080000098	884
S18069A080000030	1,245	S18069A080000064	1,281	S18069A080000099	627
S18069A080000031	1,858	S18069A080000065	733	S18069A080000100	880
S18069A080000032	1,877	S18069A080000067	1,138	S18069A080000101	976
S18069A080000033	1,810	S18069A080000068	1,210	S18069A080000102	1,414
S18069A080000034	1,488	S18069A080000069	1,393	S18069A080000103	903

### FINAL SURVEY RESULTS SUMMARY

**Survey Unit ID Code:** S18069A  
**Survey Unit Name:** MSSS Cubicle A

**Classification:** Class 1  
**Size (m<sup>2</sup>):** 219

Location	Value	Location	Value	Location	Value
S18069A08000104	826	S18069A08000144	1,325	S18069A08000184	720
S18069A08000105	1,011	S18069A08000145	1,186	S18069A08000185	1,518
S18069A08000106	805	S18069A08000146	1,321	S18069A08000186	720
S18069A08000107	617	S18069A08000147	1,220	S18069A08000187	826
S18069A08000108	684	S18069A08000148	1,369	S18069A08000188	755
S18069A08000109	702	S18069A08000149	1,174	S18069A08000189	656
S18069A08000110	653	S18069A08000150	1,188	S18069A08000190	760
S18069A08000111	844	S18069A08000151	1,232	S18069A08000191	3,090
S18069A08000112	685	S18069A08000152	783	S18069A08000192	2,842
S18069A08000113	599	S18069A08000153	797	S18069A08000193	2,975
S18069A08000114	1,524	S18069A08000154	929	S18069A08000194	3,009
S18069A08000115	1,551	S18069A08000155	953	S18069A08000195	3,063
S18069A08000116	2,135	S18069A08000156	914	S18069A08000196	2,651
S18069A08000117	1,552	S18069A08000157	972	S18069A08000197	2,517
S18069A08000118	1,508	S18069A08000158	989	S18069A08000198	3,000
S18069A08000119	3,903	S18069A08000159	791	S18069A08000199	2,919
S18069A08000120	3,522	S18069A08000160	750	S18069A08000200	2,994
S18069A08000121	2,095	S18069A08000161	754	S18069A08000201	3,135
S18069A08000122	1,991	S18069A08000162	716	S18069A08000202	3,843
S18069A08000123	1,396	S18069A08000163	800	S18069A08000203	4,709
S18069A08000124	1,408	S18069A08000164	986	S18069A08000204	3,173
S18069A08000125	1,189	S18069A08000165	866	S18069A08000205	2,946
S18069A08000126	1,245	S18069A08000166	690	S18069A08000206	3,414
S18069A08000127	1,052	S18069A08000167	727	S18069A08000207	3,693
S18069A08000128	1,093	S18069A08000168	1,047	S18069A08000208	4,065
S18069A08000129	1,195	S18069A08000169	5,460	S18069A08000209	4,094
S18069A08000130	1,187	S18069A08000170	883	S18069A08000210	3,064
S18069A08000131	1,455	S18069A08000171	1,091	S18069A08000211	4,173
S18069A08000132	1,301	S18069A08000172	1,079	S18069A08000212	4,973
S18069A08000133	1,636	S18069A08000173	739	S18069A08000213	7,832
S18069A08000134	2,024	S18069A08000174	774	S18069A08000214	5,354
S18069A08000135	1,395	S18069A08000175	877	S18069A08000215	3,449
S18069A08000136	2,016	S18069A08000176	805	S18069A08000216	4,154
S18069A08000137	1,600	S18069A08000177	931	S18069A08000217	3,811
S18069A08000138	1,761	S18069A08000178	709	S18069A08000218	4,135
S18069A08000139	2,562	S18069A08000179	704	S18069A08000219	6,517
S18069A08000140	1,584	S18069A08000180	834	S18069A08000220	7,565
S18069A08000141	1,405	S18069A08000181	798	S18069A08000221	7,298
S18069A08000142	1,235	S18069A08000182	767	S18069A08000222	4,078
S18069A08000143	1,177	S18069A08000183	628	S18069A08000223	7,431

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18069A

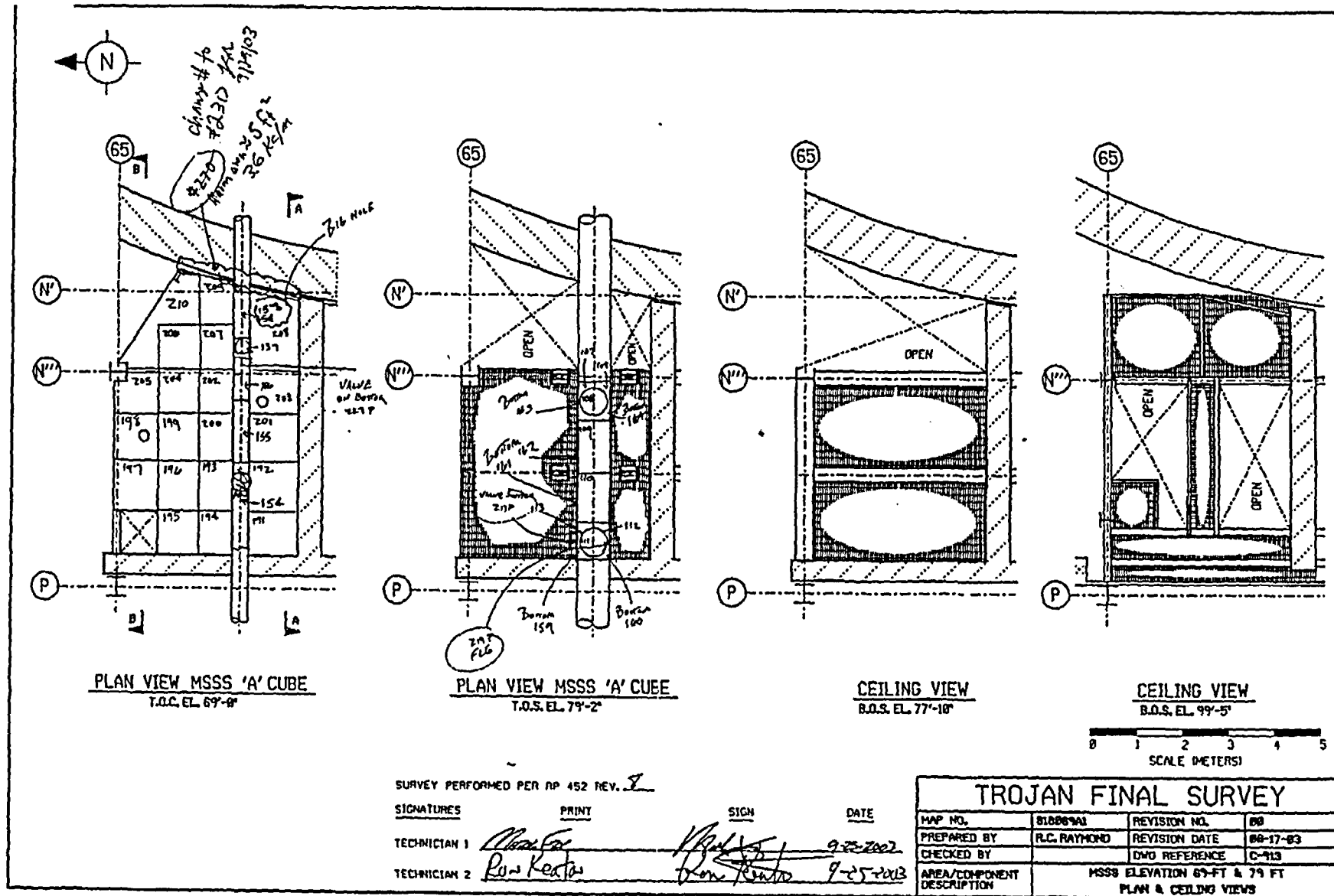
Classification: Class 1

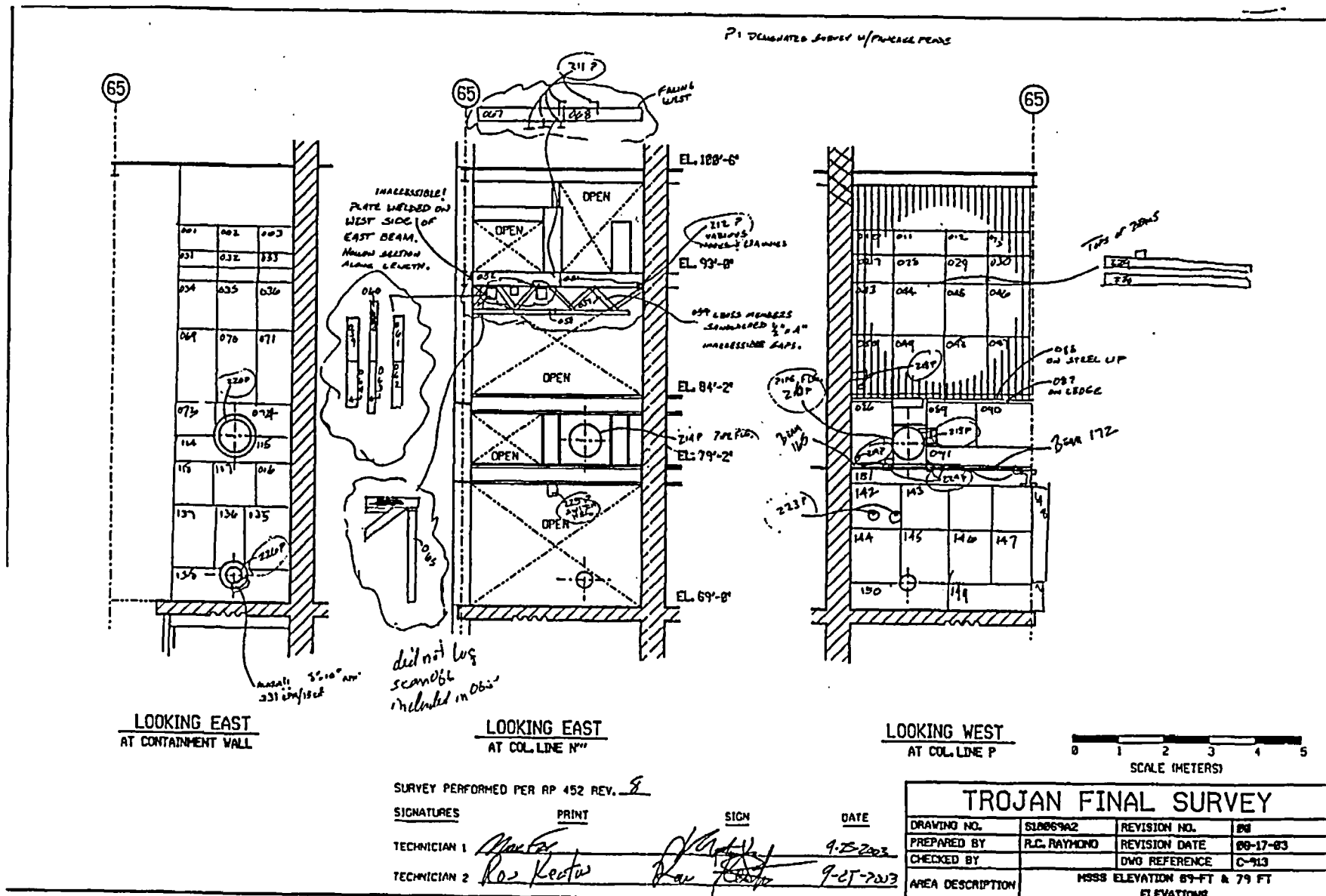
Survey Unit Name: MSSS Cubicle A

Size (m<sup>2</sup>): 219

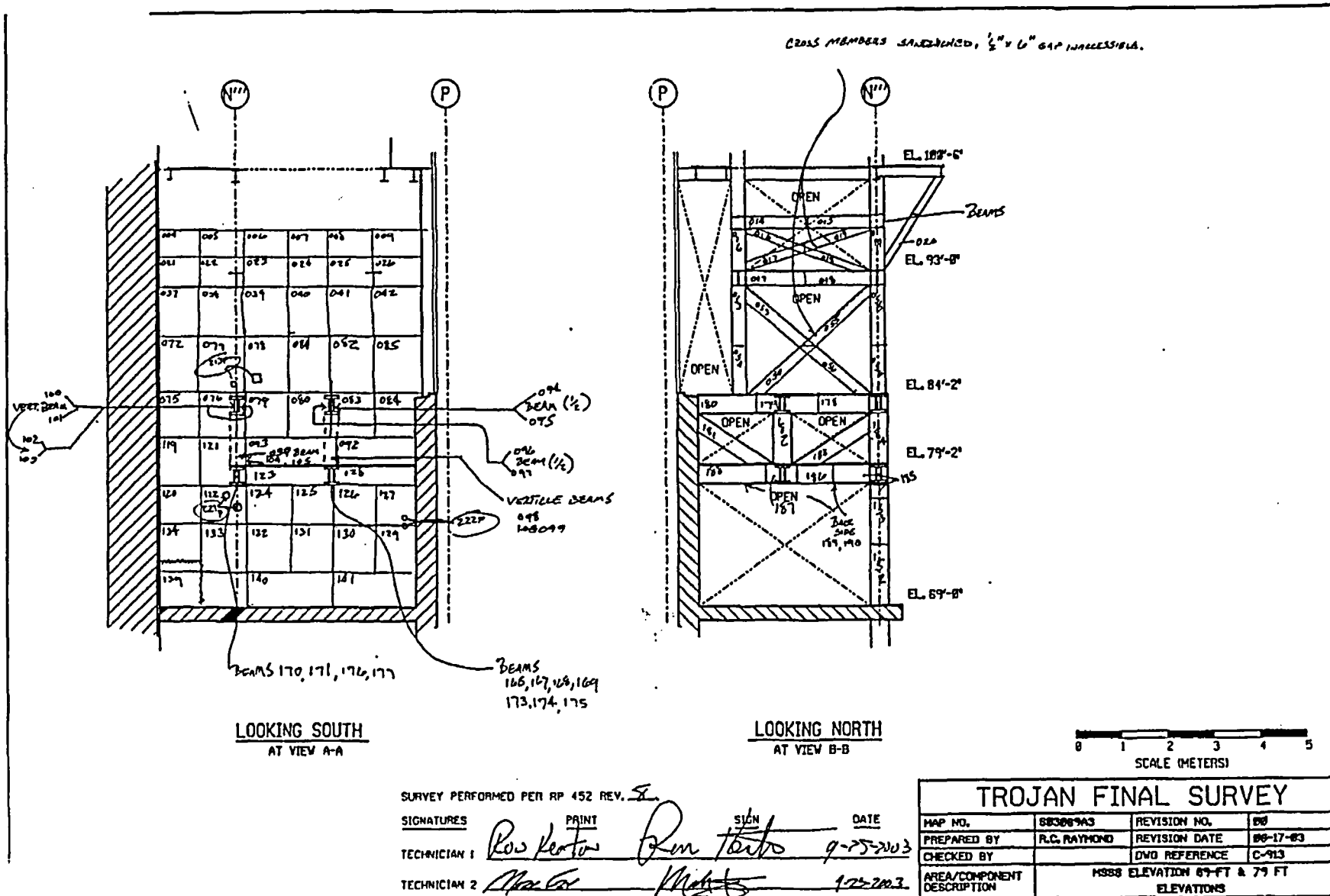
Location	Value	Location	Value	Location	Value
S18069A08000224	5,221				
S18069A08000225	4,726				
S18069A08000226	26,960				
S18069A08000227	2,515				
S18069A08000228	952				
S18069A08000229	1,035				
S18069A08000230	14,240				

Note that there is no scan location 066, as that area of beam was included with location 065.









## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18069B  
 Survey Unit Name: MSSS Cubicle B

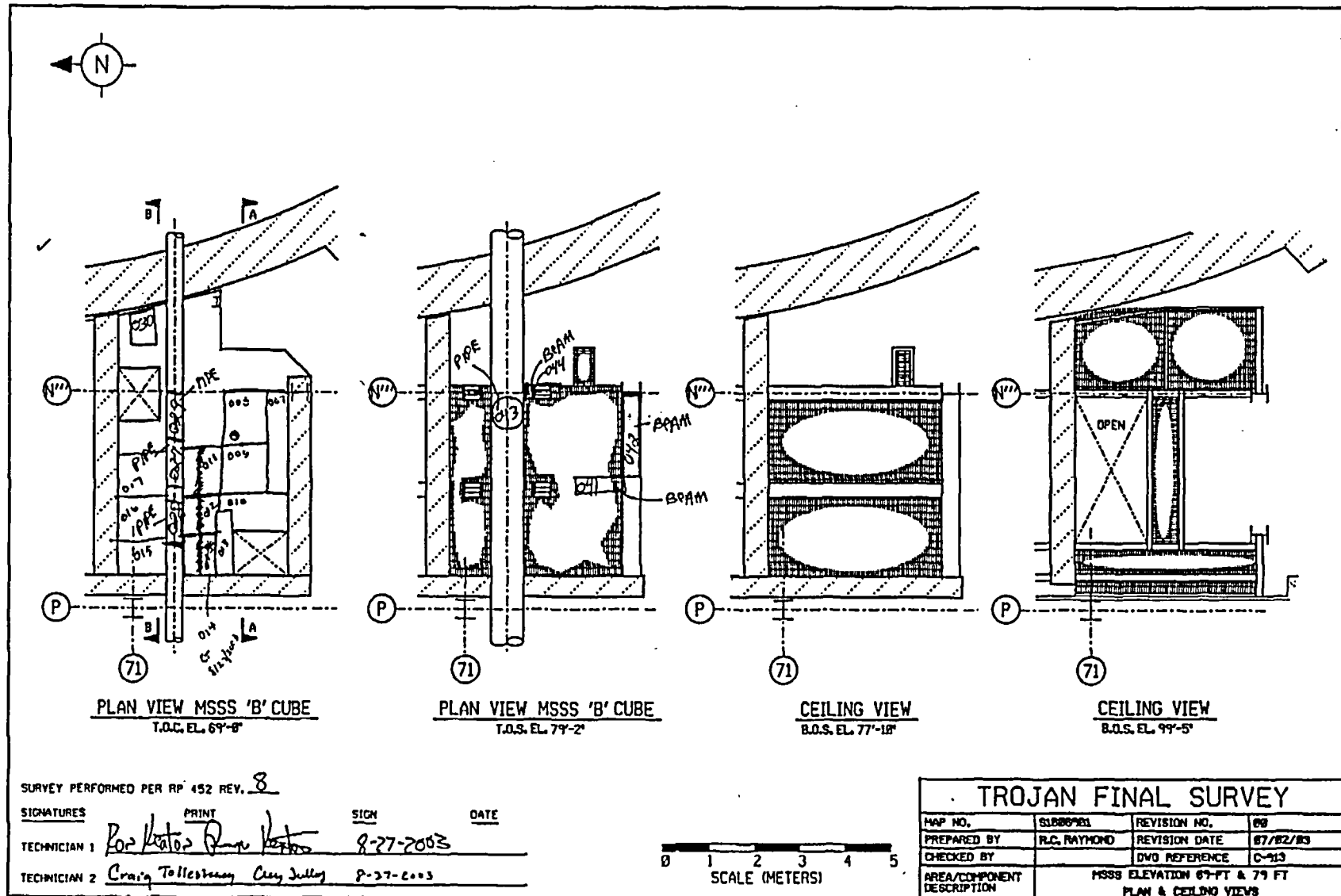
Classification: Class 2  
 Size (m<sup>2</sup>): 219

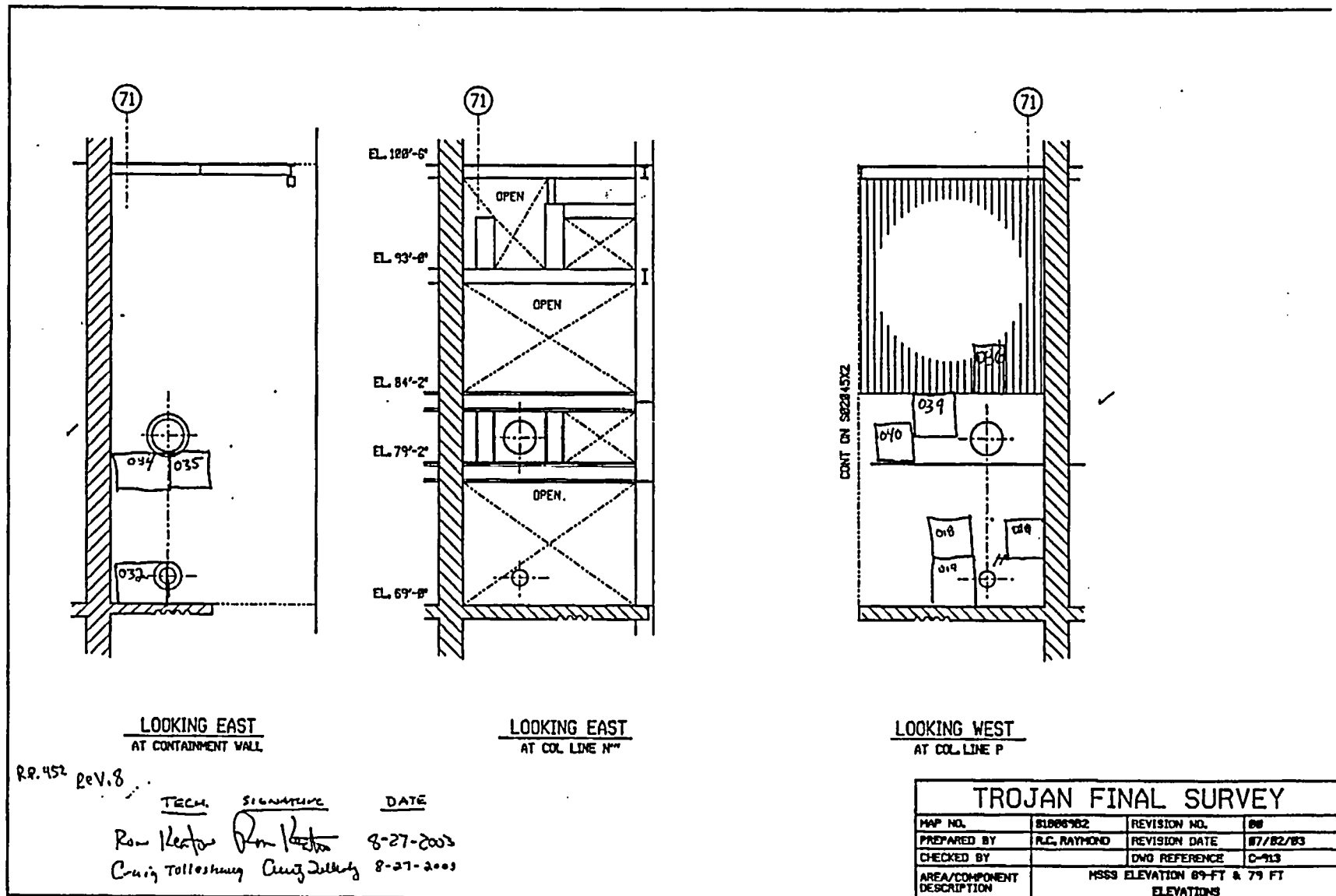
Scan Measurement Data

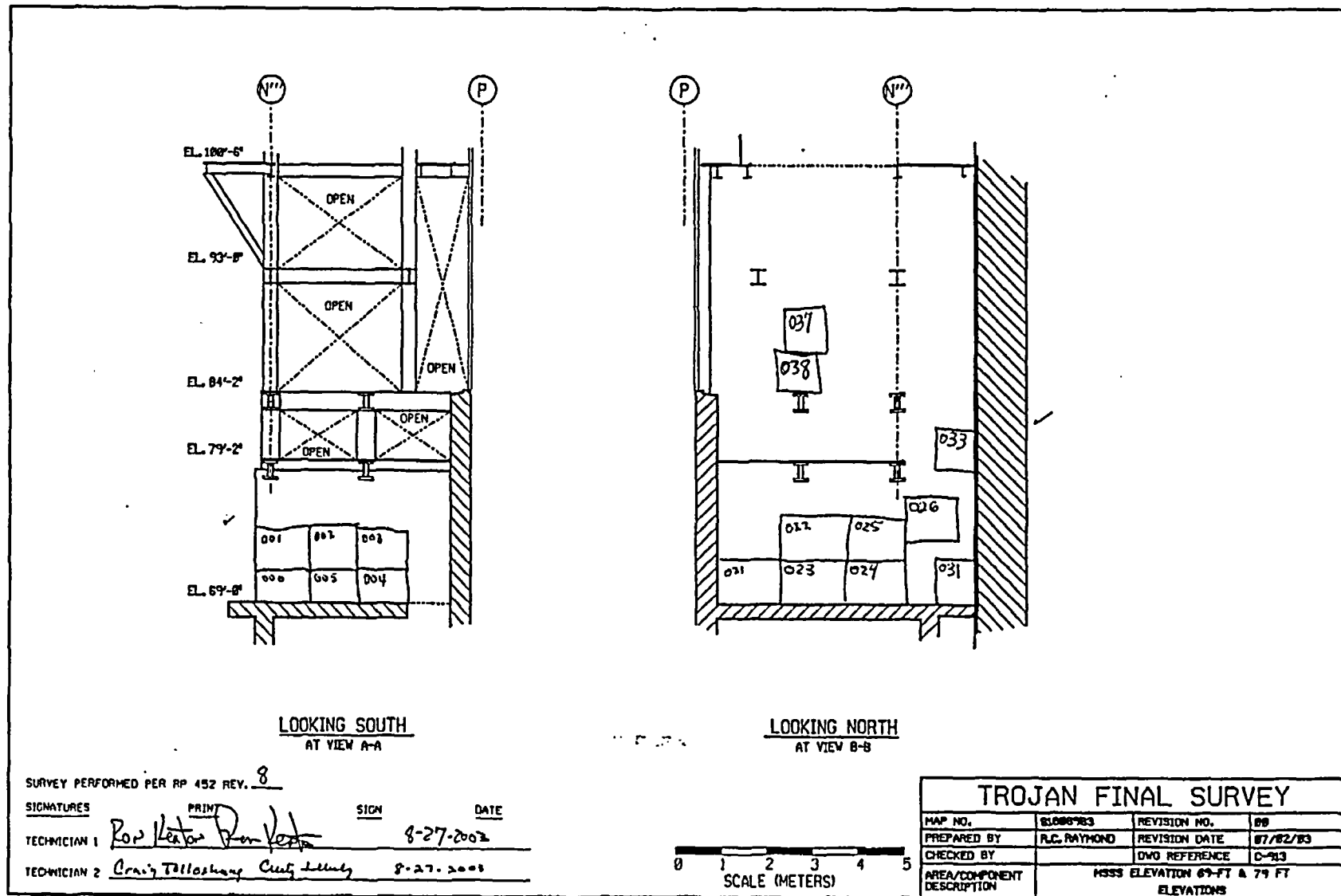
Measurement Type: Surface Scanning Beta  
 Measurement Units: dpm/100cm<sup>2</sup>  
 Minimum Value: 665

Scan Coverage (%): 20  
 Investigation Level: 21,000  
 Maximum Value: 3,980

Location	Value	Location	Value
S18069B08000001	1,212	S18069B08000035	1,239
S18069B08000002	1,410	S18069B08000036	765
S18069B08000003	1,265	S18069B08000037	1,443
S18069B08000004	1,312	S18069B08000038	1,377
S18069B08000005	1,464	S18069B08000039	1,242
S18069B08000006	1,257	S18069B08000040	1,413
S18069B08000007	1,354	S18069B08000041	991
S18069B08000008	1,254	S18069B08000042	712
S18069B08000009	1,428	S18069B08000043	997
S18069B08000010	1,349	S18069B08000044	936
S18069B08000011	1,308		
S18069B08000012	1,452		
S18069B08000013	1,488		
S18069B08000014	1,823		
S18069B08000015	3,980		
S18069B08000016	1,586		
S18069B08000017	1,334		
S18069B08000018	1,200		
S18069B08000019	1,354		
S18069B08000020	2,279		
S18069B08000021	1,563		
S18069B08000022	1,327		
S18069B08000023	1,442		
S18069B08000024	1,354		
S18069B08000025	1,269		
S18069B08000026	1,164		
S18069B08000027	665		
S18069B08000028	917		
S18069B08000029	876		
S18069B08000030	1,412		
S18069B08000031	1,370		
S18069B08000032	1,253		
S18069B08000033	1,215		
S18069B08000034	1,252		







## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18069C  
Survey Unit Name: MSSS Cubicle C

Classification: Class 1  
Size (m<sup>2</sup>): 67

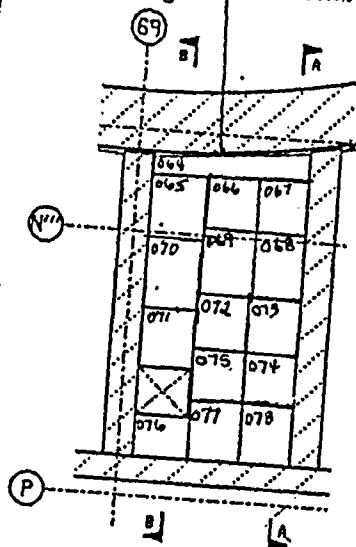
### Scan Measurement Data

Measurement Type: Surface Scanning Beta  
Measurement Units: dpm/100cm<sup>2</sup>  
Minimum Value: 1,293

Scan Coverage (%): 100  
Investigation Level: 21,000  
Maximum Value: 12,770

Location	Value	Location	Value	Location	Value
S18069C08000001	1,959	S18069C08000035	2,321	S18069C08000069	3,407
S18069C08000002	1,979	S18069C08000036	2,486	S18069C08000070	3,729
S18069C08000003	1,955	S18069C08000037	2,406	S18069C08000071	3,608
S18069C08000004	1,698	S18069C08000038	2,076	S18069C08000072	4,691
S18069C08000005	1,920	S18069C08000039	2,096	S18069C08000073	3,134
S18069C08000006	2,036	S18069C08000040	2,322	S18069C08000074	2,945
S18069C08000007	2,109	S18069C08000041	2,796	S18069C08000075	3,453
S18069C08000008	2,069	S18069C08000042	3,890	S18069C08000076	2,928
S18069C08000009	2,096	S18069C08000043	2,529	S18069C08000077	2,793
S18069C08000010	1,877	S18069C08000044	2,631	S18069C08000078	3,110
S18069C08000011	2,093	S18069C08000045	2,808	S18069C08000079	7,994
S18069C08000012	2,232	S18069C08000046	1,956	S18069C08000080	6,982
S18069C08000013	2,169	S18069C08000047	2,127	S18069C08000081	2,410
S18069C08000014	1,950	S18069C08000048	2,472	S18069C08000082	2,467
S18069C08000015	1,830	S18069C08000049	2,303	S18069C08000083	3,261
S18069C08000016	2,045	S18069C08000050	2,463	S18069C08000084	12,770
S18069C08000017	2,318	S18069C08000051	2,151	S18069C08000085	7,369
S18069C08000018	2,295	S18069C08000052	2,193	S18069C08000086	8,003
S18069C08000019	2,223	S18069C08000053	2,321		
S18069C08000020	2,094	S18069C08000054	2,351		
S18069C08000021	2,033	S18069C08000055	2,067		
S18069C08000022	1,895	S18069C08000056	1,662		
S18069C08000023	2,120	S18069C08000057	1,328		
S18069C08000024	2,240	S18069C08000058	1,319		
S18069C08000025	2,177	S18069C08000059	3,255		
S18069C08000026	2,061	S18069C08000060	3,635		
S18069C08000027	2,040	S18069C08000061	1,293		
S18069C08000028	2,007	S18069C08000062	2,225		
S18069C08000029	2,022	S18069C08000063	1,518		
S18069C08000030	2,187	S18069C08000064	2,285		
S18069C08000031	2,216	S18069C08000065	3,179		
S18069C08000032	2,102	S18069C08000066	3,671		
S18069C08000033	2,010	S18069C08000067	3,033		
S18069C08000034	1,568	S18069C08000068	2,633		

Scan # 083  
opening between floor and  
containment wall on EAST side,  
going North to South.

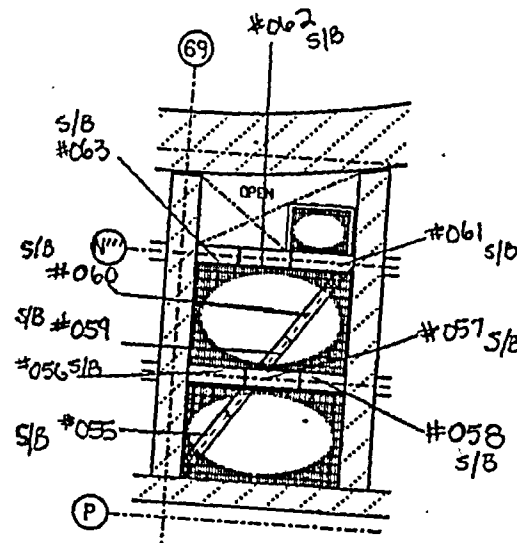


PLAN VIEW MSSS 'C' CUBE  
T.A.C. EL. 69'-0"

079 & 080  
Scan # 081 to 082  
opening between wall  
& containment wall.  
(from top of survey unit to  
bottom of survey unit, North  
and South.) halfway each.  
[see map #502069C3.]

Scan # 086  
Underneath the floor  
plates. (Penetrations  
inside a floor section  
covered by metal or  
steel plates.)

S/B = SIDES & BOTTOM  
ONLY.



CEILING VIEW  
B.O.S. EL. 77'-10"

SURVEY PERFORMED PER RP 452 REV. 8

SIGNATURES

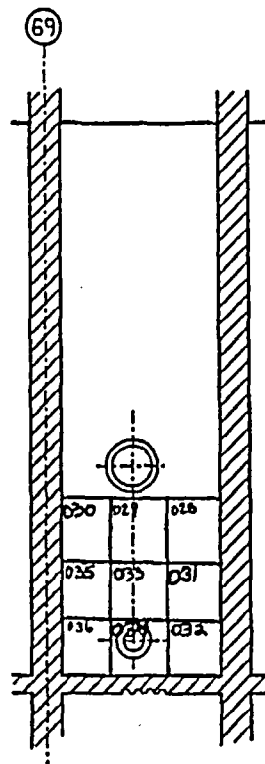
PRINT

SIGN

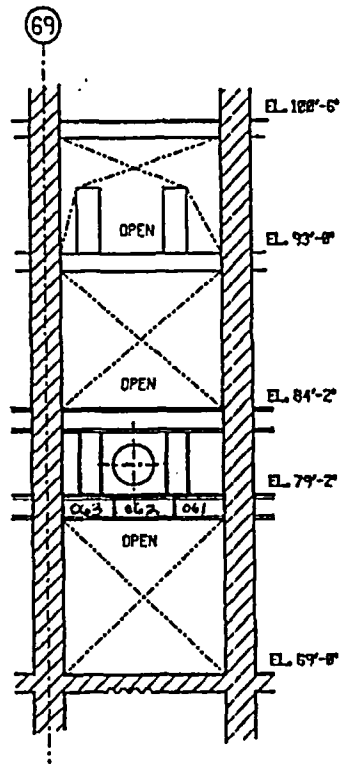
DATE

TECHNICIAN 1 Domilee R. SHAW / Domilee R. Shaw 9/23/2003  
TECHNICIAN 2 James Eastman / James Eastman 9/23/2003

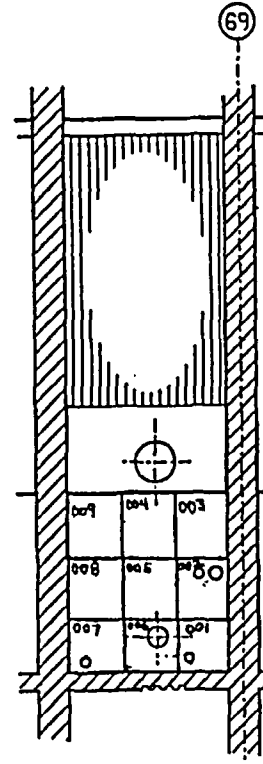
TROJAN FINAL SURVEY			
MAP NO.	SUBJECT	REVISION NO.	00
PREPARED BY	R C RAYMOND	REVISION DATE	09-17-03
CHECKED BY		DWG REFERENCE	C-203
AREA/COMPONENT DESCRIPTION		MSSS ELEVATION 69'-FT PLAN & CEILING VIEWS	



LOOKING EAST  
AT CONTAINMENT WALL



LOOKING EAST  
AT BAY LINE N



LOOKING WEST  
AT BAY TURBINE BLDG

Scan # 085  
penetrations on the  
wall. (EAST & WEST).

SURVEY PERFORMED PER RP 452 REV. 8

SIGNATURES

PRINT

SIGN

DATE

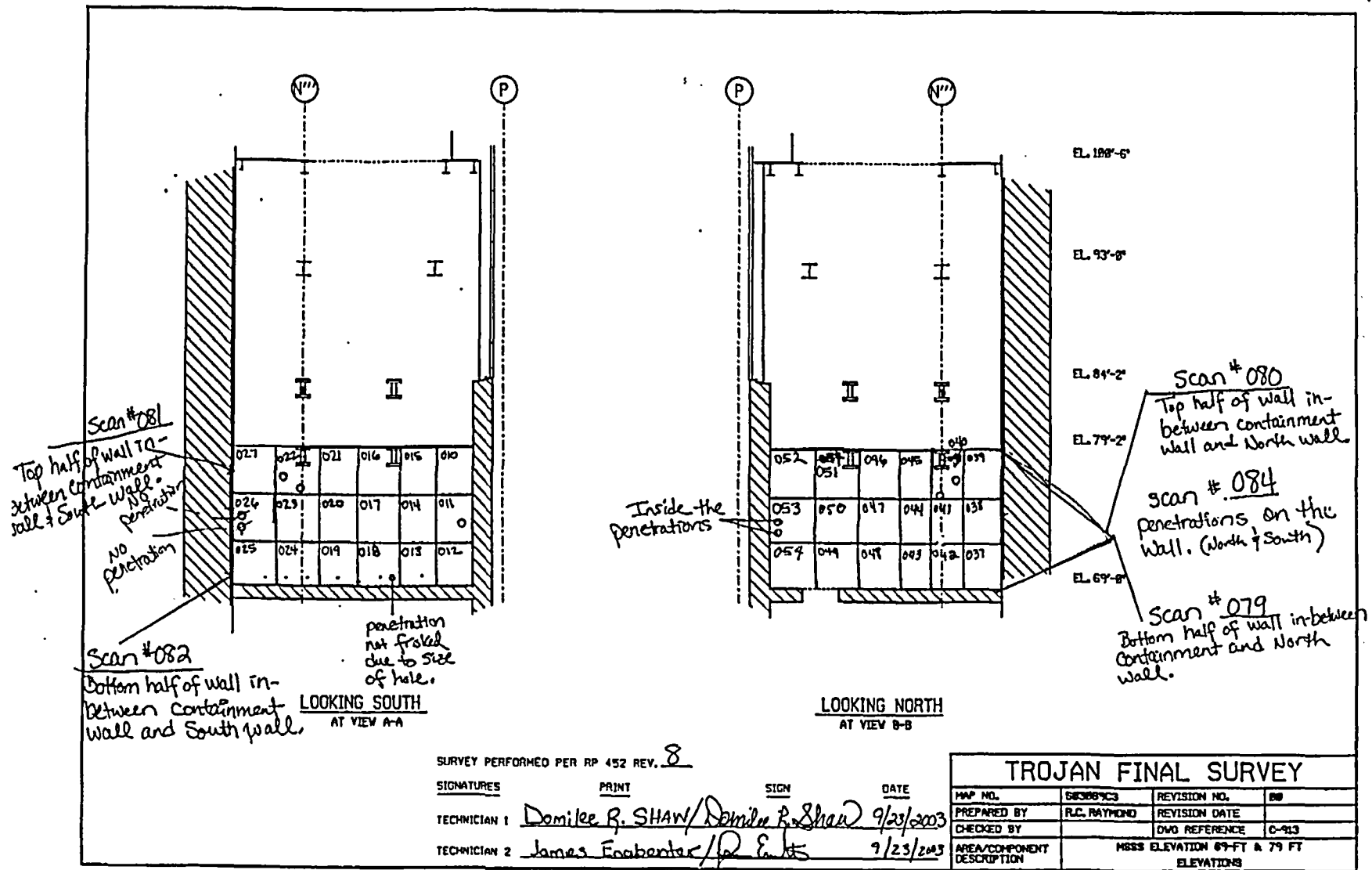
TECHNICIAN 1 Domike R. SHAW / Domike R. Shaw 9/23/2003

TECHNICIAN 2 James Forbester / J. Forbester 9/23/2003

# TROJAN FINAL SURVEY

MAP NO.	S10089C2	REVISION NO.	08
PREPARED BY	R.C. RAYMOND	REVISION DATE	09-17-03
CHECKED BY		DWG REFERENCE	C-913
AREA/COMPONENT DESCRIPTION	MSSS ELEVATION 69'-FT & 79' FT ELEVATIONS		





## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18069D  
 Survey Unit Name: MSSS Cubicle D

Classification: Class 1  
 Size (m<sup>2</sup>): 204

Scan Measurement Data

Measurement Type: Surface Scanning Beta

Scan Coverage (%): 100

Measurement Units: dpm/100cm<sup>2</sup>

Investigation Level: 21,000

Minimum Value: 1,218

Maximum Value: 11,590

Location	Value	Location	Value	Location	Value
S18069D08000001	2,192	S18069D080000035	1,716	S18069D080000069	6,759
S18069D080000002	2,385	S18069D080000036	1,422	S18069D080000070	3,473
S18069D080000003	2,385	S18069D080000037	1,891	S18069D080000071	8,352
S18069D080000004	7,894	S18069D080000038	2,046	S18069D080000072	2,381
S18069D080000005	3,181	S18069D080000039	2,851	S18069D080000073	1,687
S18069D080000006	2,409	S18069D080000040	3,278	S18069D080000074	2,242
S18069D080000007	2,501	S18069D080000041	2,900	S18069D080000075	2,939
S18069D080000008	1,959	S18069D080000042	8,255	S18069D080000076	2,345
S18069D080000009	3,101	S18069D080000043	3,913	S18069D080000077	2,224
S18069D080000010	3,264	S18069D080000044	3,086	S18069D080000078	2,088
S18069D080000011	2,692	S18069D080000045	2,829	S18069D080000079	2,524
S18069D080000012	2,371	S18069D080000046	2,782	S18069D080000080	2,745
S18069D080000013	2,024	S18069D080000047	2,510	S18069D080000081	2,256
S18069D080000014	2,138	S18069D080000048	2,576	S18069D080000082	2,957
S18069D080000015	1,957	S18069D080000049	2,660	S18069D080000083	3,012
S18069D080000016	2,077	S18069D080000050	2,681	S18069D080000084	3,620
S18069D080000017	2,088	S18069D080000051	3,777	S18069D080000085	3,111
S18069D080000018	1,596	S18069D080000052	3,515	S18069D080000086	4,893
S18069D080000019	1,341	S18069D080000053	7,999	S18069D080000087	3,750
S18069D080000020	1,521	S18069D080000054	2,701	S18069D080000088	3,331
S18069D080000021	1,426	S18069D080000055	2,599	S18069D080000089	3,090
S18069D080000022	1,496	S18069D080000056	2,712	S18069D080000090	3,731
S18069D080000023	1,376	S18069D080000057	2,220	S18069D080000091	3,831
S18069D080000024	2,229	S18069D080000058	1,693	S18069D080000092	3,433
S18069D080000025	2,218	S18069D080000059	1,735	S18069D080000093	6,870
S18069D080000026	2,542	S18069D080000060	1,669	S18069D080000094	4,363
S18069D080000027	3,197	S18069D080000061	1,594	S18069D080000095	4,608
S18069D080000028	2,584	S18069D080000062	1,433	S18069D080000096	3,647
S18069D080000029	2,731	S18069D080000063	1,499	S18069D080000097	3,756
S18069D080000030	2,193	S18069D080000064	2,029	S18069D080000098	3,100
S18069D080000031	2,259	S18069D080000065	3,173	S18069D080000099	2,574
S18069D080000032	1,361	S18069D080000066	2,709	S18069D08000100	2,371
S18069D080000033	1,535	S18069D080000067	5,932	S18069D08000101	2,360
S18069D080000034	1,460	S18069D080000068	7,794	S18069D08000102	2,318

### FINAL SURVEY RESULTS SUMMARY

**Survey Unit ID Code:** S18069D  
**Survey Unit Name:** MSSS Cubicle D

**Classification:** Class 1  
**Size (m<sup>2</sup>):** 204

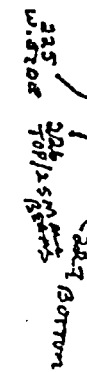
Location	Value	Location	Value	Location	Value
S18069D08000103	2,356	S18069D08000143	2,438	S18069D08000183	2,563
S18069D08000104	2,082	S18069D08000144	2,246	S18069D08000184	2,378
S18069D08000105	2,689	S18069D08000145	2,003	S18069D08000185	2,577
S18069D08000106	2,212	S18069D08000146	2,374	S18069D08000186	2,817
S18069D08000107	1,229	S18069D08000147	2,222	S18069D08000187	2,129
S18069D08000108	1,430	S18069D08000148	2,124	S18069D08000188	1,598
S18069D08000109	1,429	S18069D08000149	2,149	S18069D08000189	1,324
S18069D08000110	1,386	S18069D08000150	2,195	S18069D08000190	5,764
S18069D08000111	1,743	S18069D08000151	2,101	S18069D08000191	11,590
S18069D08000112	2,818	S18069D08000152	2,720	S18069D08000192	8,699
S18069D08000113	1,941	S18069D08000153	2,753	S18069D08000193	10,330
S18069D08000114	1,394	S18069D08000154	3,606	S18069D08000194	4,603
S18069D08000115	1,627	S18069D08000155	2,939	S18069D08000195	5,321
S18069D08000116	1,513	S18069D08000156	6,079	S18069D08000196	6,144
S18069D08000117	1,449	S18069D08000157	3,757	S18069D08000197	7,665
S18069D08000118	1,543	S18069D08000158	2,588	S18069D08000198	9,671
S18069D08000119	1,599	S18069D08000159	2,476	S18069D08000199	3,469
S18069D08000120	2,556	S18069D08000160	2,234	S18069D08000200	6,872
S18069D08000121	2,071	S18069D08000161	2,436	S18069D08000201	3,587
S18069D08000122	4,386	S18069D08000162	5,052	S18069D08000202	2,189
S18069D08000123	2,276	S18069D08000163	3,638	S18069D08000203	1,959
S18069D08000124	2,202	S18069D08000164	3,543	S18069D08000204	2,115
S18069D08000125	3,217	S18069D08000165	2,231	S18069D08000205	1,868
S18069D08000126	2,234	S18069D08000166	2,600	S18069D08000206	2,527
S18069D08000127	1,480	S18069D08000167	2,394	S18069D08000207	3,760
S18069D08000128	1,493	S18069D08000168	2,326	S18069D08000208	3,083
S18069D08000129	1,465	S18069D08000169	2,839	S18069D08000209	4,117
S18069D08000130	1,361	S18069D08000170	3,262	S18069D08000211	1,576
S18069D08000131	1,648	S18069D08000171	5,432	S18069D08000212	1,839
S18069D08000132	1,218	S18069D08000172	5,092	S18069D08000213	1,844
S18069D08000133	2,257	S18069D08000173	8,656	S18069D08000214	1,470
S18069D08000134	1,363	S18069D08000174	5,643	S18069D08000215	1,539
S18069D08000135	2,195	S18069D08000175	4,473	S18069D08000216	4,682
S18069D08000136	2,232	S18069D08000176	4,034	S18069D08000217	1,582
S18069D08000137	2,384	S18069D08000177	3,437	S18069D08000218	1,372
S18069D08000138	3,183	S18069D08000178	2,735	S18069D08000219	1,378
S18069D08000139	2,708	S18069D08000179	2,229	S18069D08000220	1,674
S18069D08000140	6,667	S18069D08000180	2,323	S18069D08000221	1,397
S18069D08000141	5,390	S18069D08000181	2,461	S18069D08000222	1,979
S18069D08000142	3,570	S18069D08000182	2,275	S18069D08000223	2,795

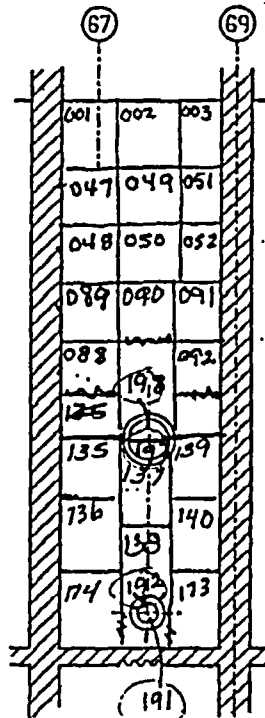
## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18069D  
Survey Unit Name: MSSS Cubicle D

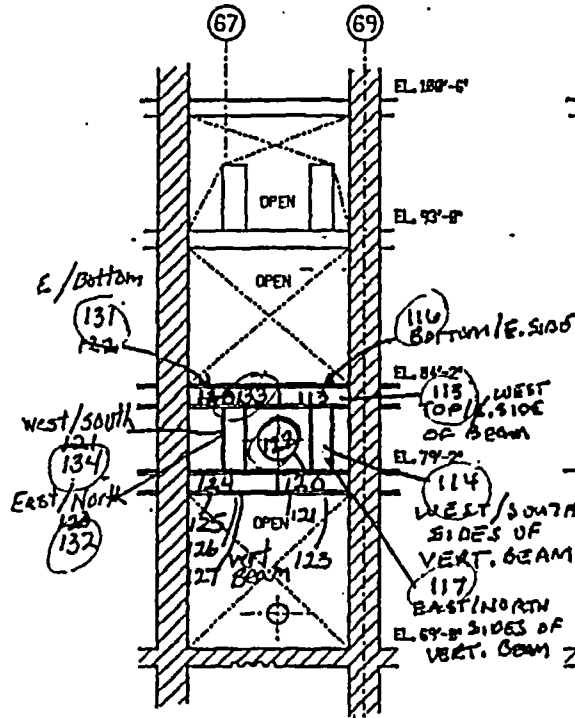
Classification: Class 1  
Size (m<sup>2</sup>): 204

Location	Value	Location	Value	Location	Value
S18069D08000224	2,231	S18069D08000235	4,506		
S18069D08000225	2,525	S18069D08000236	5,824		
S18069D08000226	3,007	S18069D08000237	4,265		
S18069D08000227	1,835	S18069D08000238	5,826		
S18069D08000228	4,012	S18069D08000239	5,202		
S18069D08000229	3,449	S18069D08000240	5,073		
S18069D08000230	4,022	S18069D08000241	2,975		
S18069D08000231	4,220	S18069D08000242	3,095		
S18069D08000232	4,792	S18069D08000243	3,329		
S18069D08000233	5,757	S18069D08000244	4,028		
S18069D08000234	6,013	S18069D08000245	3,905		

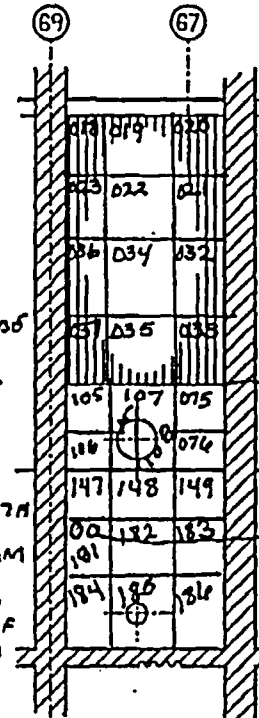




LOOKING EAST  
AT CONTAINMENT WALL



LOOKING EAST  
AT COL. LINE N



LOOKING WEST  
AT COL. LINE P

SURVEY PERFORMED PER RP 452 REV. 8

SIGNATURES

PRINT

SIGN

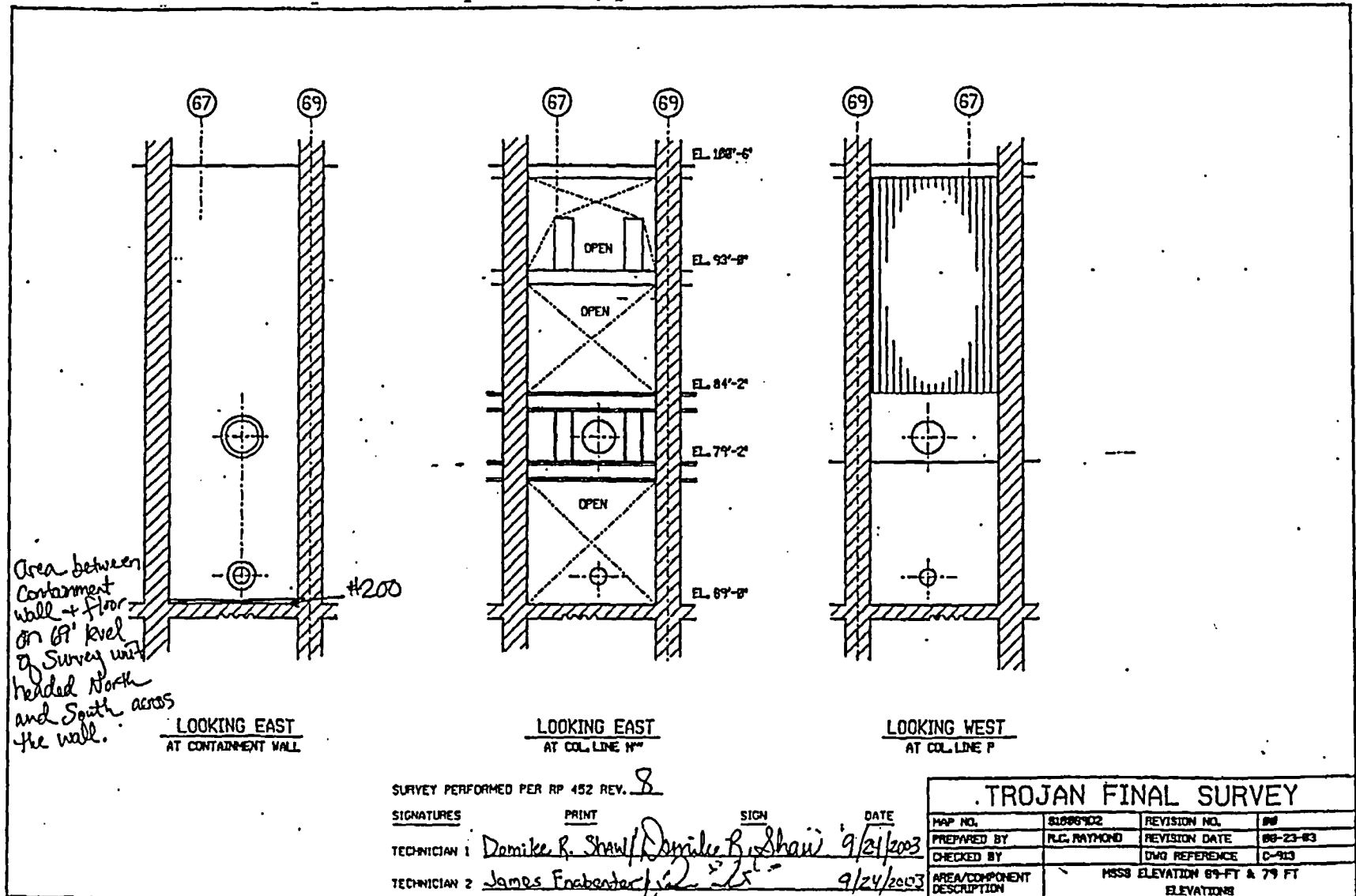
DATE

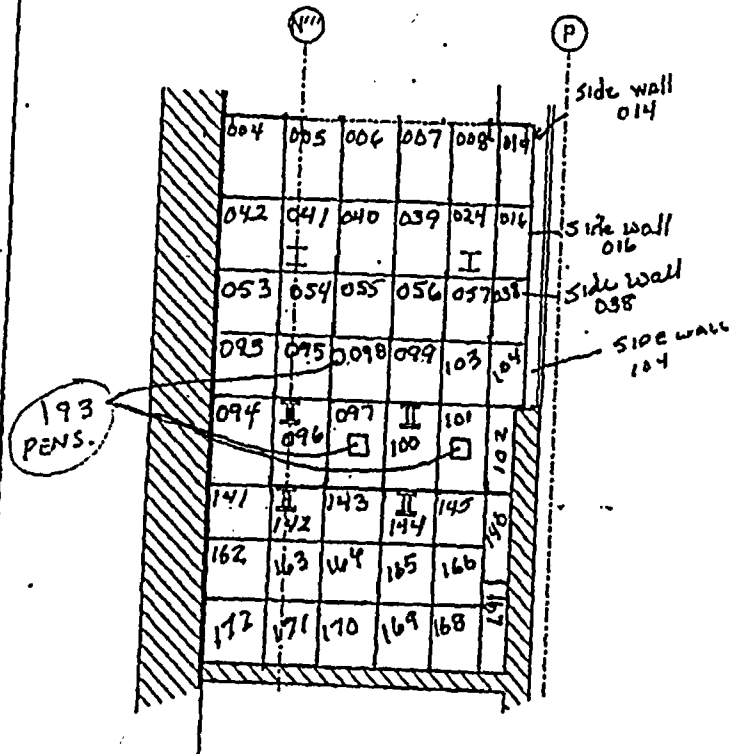
TECHNICIAN 1 Craig Tolleshaug Craig Tolleshaug 9/26/2005

TECHNICIAN 2 LORI LIBAL LORI LIBAL 9-26-2005

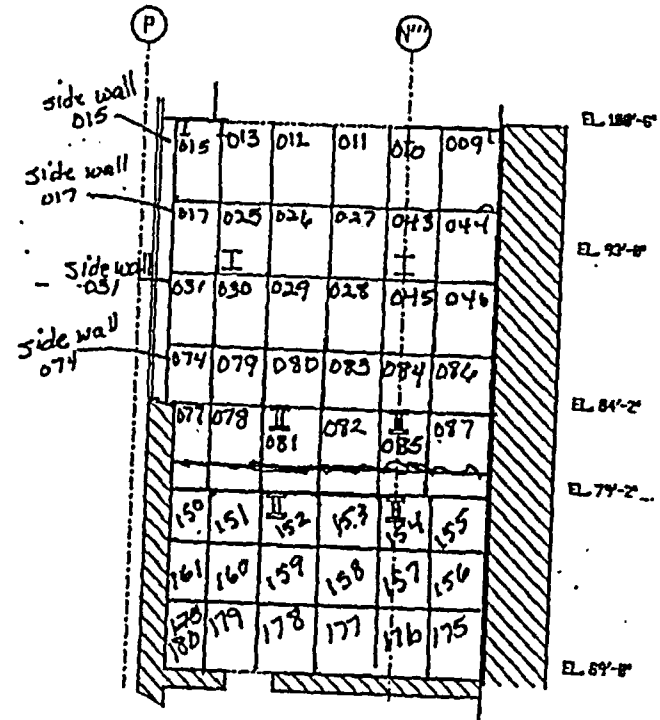
# TROJAN FINAL SURVEY

MAP NO.	S1006702	REVISION NO.	00
PREPARED BY	R.C. RAYMOND	REVISION DATE	08-23-03
CHECKED BY		DWG REFERENCE	C-93
AREA/COMPONENT DESCRIPTION	MSSS ELEVATION 69-FT & 79-FT ELEVATIONS		





LOOKING SOUTH  
AT VIEW A-A



LOOKING NORTH  
AT VIEW B-B

SURVEY PERFORMED PER RP 452 REV. 8

SIGNATURES

PRINT

SIGN

DATE

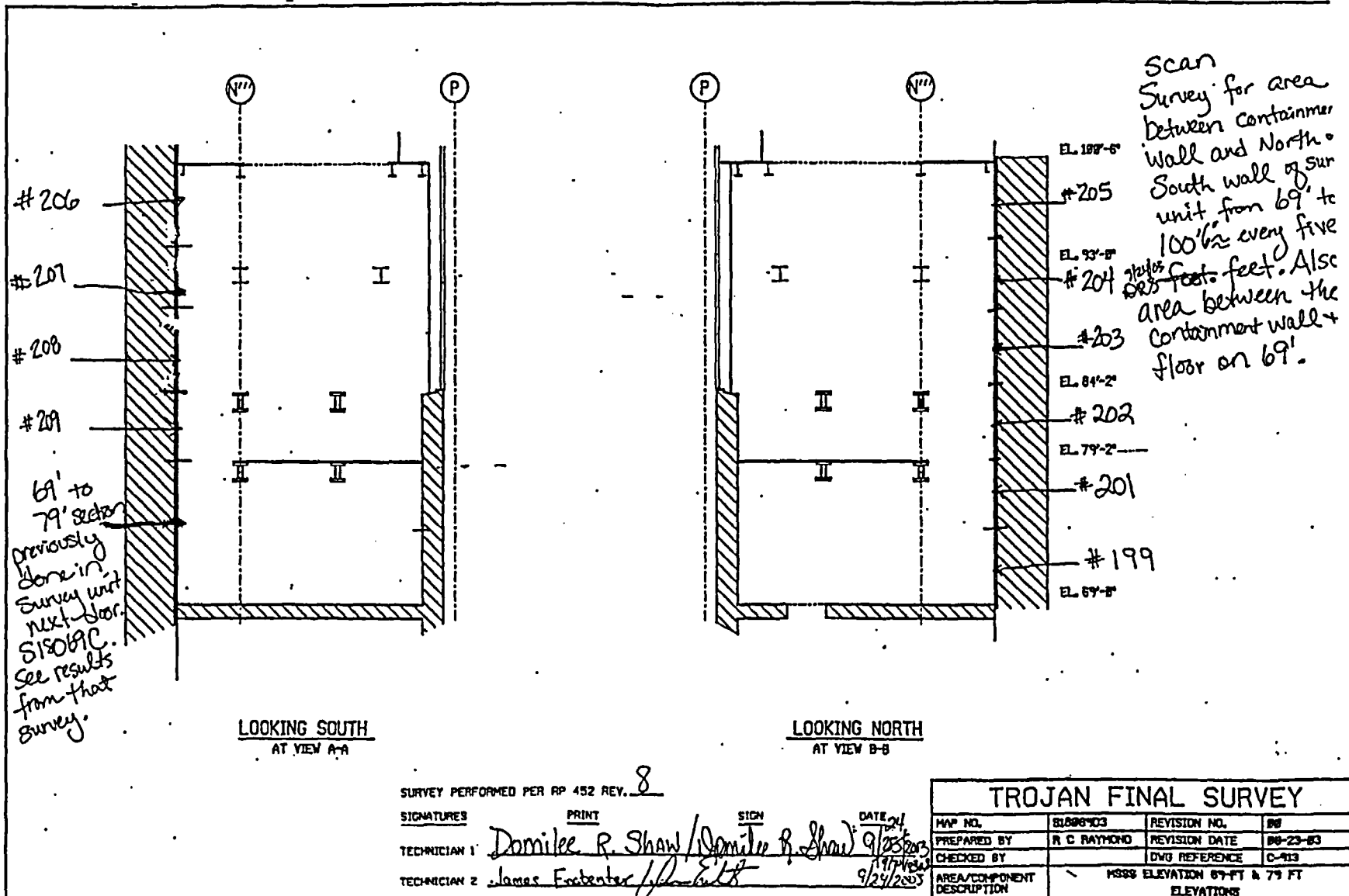
TECHNICIAN 1 Craig Tolleshaup Chris Sully 9/26/2003

TECHNICIAN 2 Lois Libal Chris Libal 9/26/2003

### TROJAN FINAL SURVEY

MAP NO.	81000000	REVISION NO.	88
PREPARED BY	R C RAYMOND	REVISION DATE	88-23-83
CHECKED BY		DWG REFERENCE	C-703
AREA/COMPONENT DESCRIPTION	MSSS ELEVATION 69 FT & 79 FT ELEVATIONS		





## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18079A  
Survey Unit Name: MSSS Cubicle C

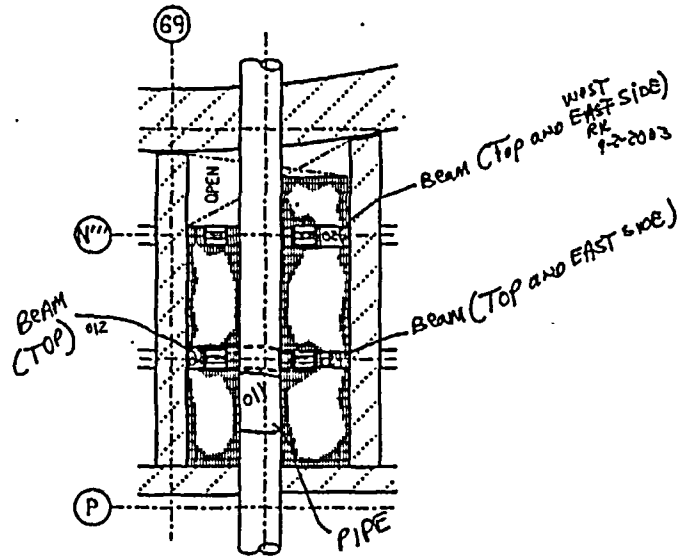
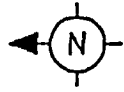
Classification: Class 2  
Size (m<sup>2</sup>): 123

Scan Measurement Data

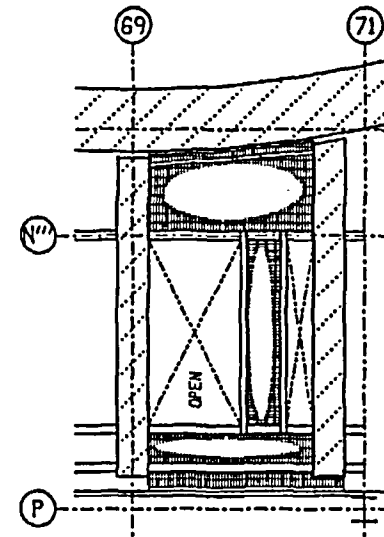
Measurement Type: Surface Scanning Beta  
Measurement Units: dpm/100cm<sup>2</sup>  
Minimum Value: 643

Scan Coverage (%): 20  
Investigation Level: 21,000  
Maximum Value: 1,426

Location	Value
S18079A08000001	1,243
S18079A08000002	1,334
S18079A08000003	1,232
S18079A08000004	1,353
S18079A08000005	748
S18079A08000006	643
S18079A08000007	1,233
S18079A08000008	1,381
S18079A08000009	1,422
S18079A08000010	1,420
S18079A08000011	791
S18079A08000012	1,117
S18079A08000013	1,196
S18079A08000014	1,312
S18079A08000015	1,177
S18079A08000016	1,377
S18079A08000017	1,373
S18079A08000018	1,375
S18079A08000019	1,426
S18079A08000020	1,220
S18079A08000021	858
S18079A08000022	1,258
S18079A08000023	1,290
S18079A08000024	1,164
S18079A08000025	1,133



PLAN VIEW MSSS 'C' CUBE  
T.O.S. EL. 79'-2"



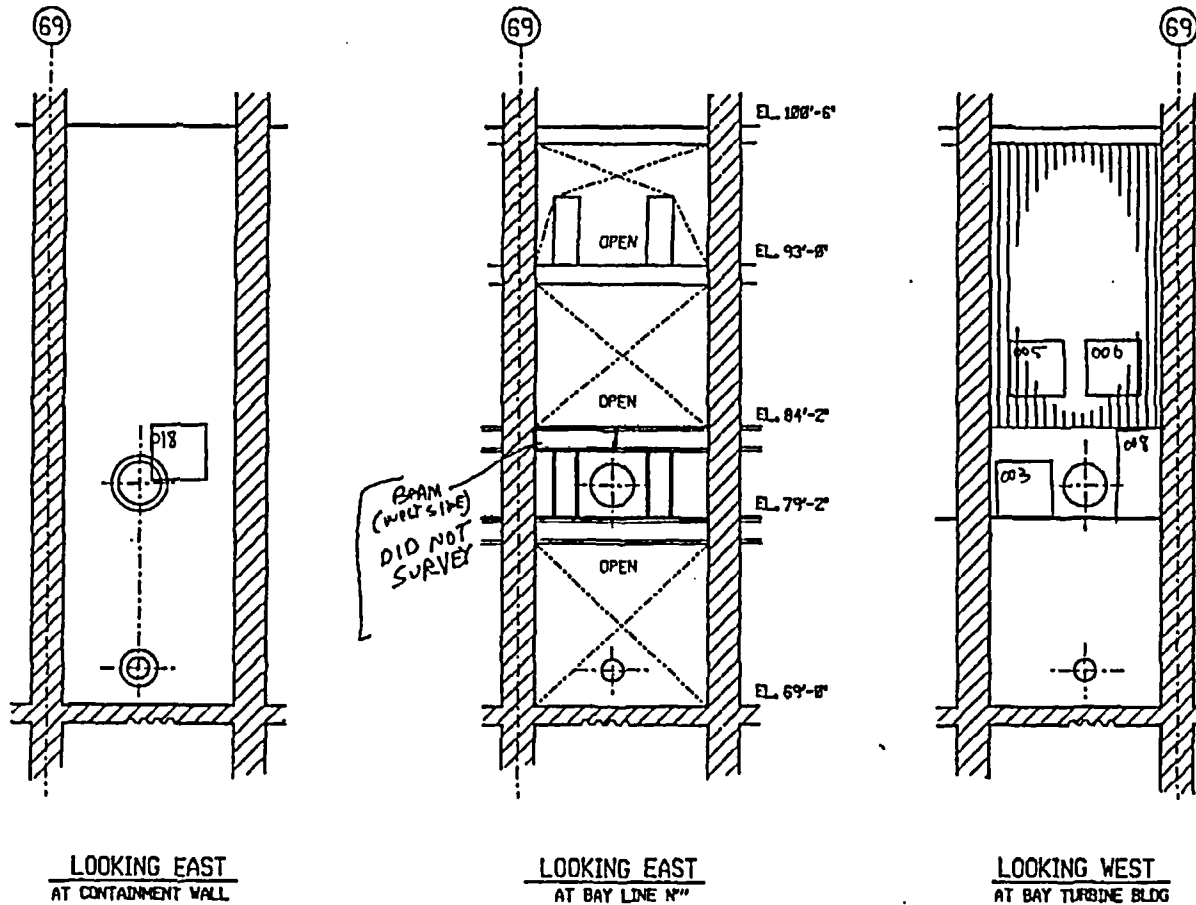
CEILING VIEW  
B.O.S. EL. 99'-5"

SURVEY PERFORMED PER RP 452 REV. 8

SIGNATURES	PRINT	SIGN	DATE
TECHNICIAN 1	Domilee R. SHAW	Domilee R. Shaw	9/2/2003
TECHNICIAN 2	Row Keaton	Row Keaton	9-2-2003



TROJAN FINAL SURVEY			
MAP NO.	SLB97941	REVISION NO.	08
PREPARED BY		REVISION DATE	87/82/83
CHECKED BY		DWG REFERENCE	C-913
AREA/COMPONENT DESCRIPTION	MSSS ELEVATION 69-FT & 79 FT PLAN & CEILING VIEWS		



SURVEY PERFORMED PER RP 452 REV. 8

SIGNATURES

PRINT

SIGN

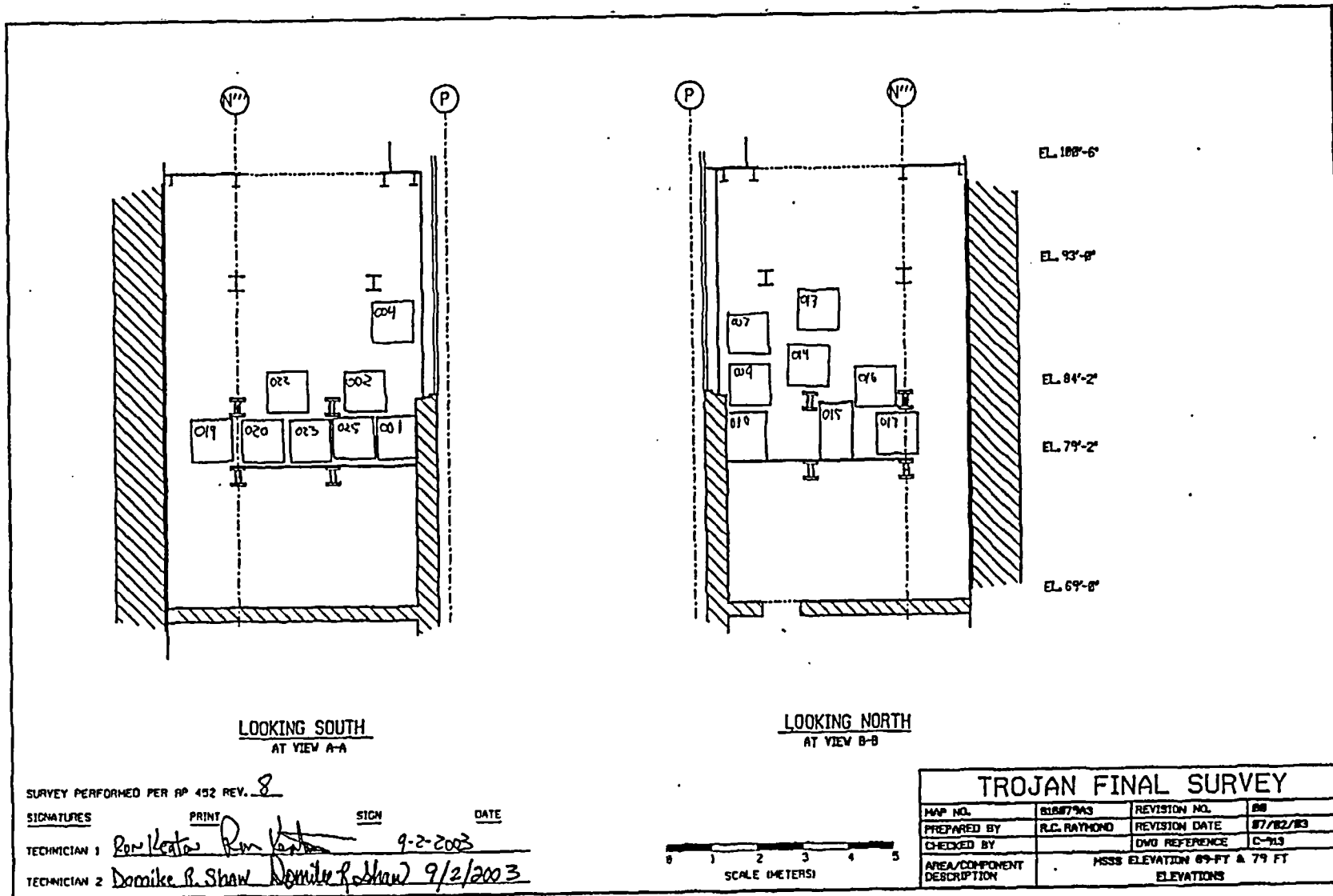
DATE

TECHNICIAN 1 Ron Keaton Ron Keaton 9-2-2003

TECHNICIAN 2 Domilee R. Shaw Domilee R. Shaw 9/2/2003



TROJAN FINAL SURVEY			
MAP NO.	SLB879A2	REVISION NO.	00
PREPARED BY	R.C. RAYMOND	REVISION DATE	07/02/03
CHECKED BY		DWG REFERENCE	C-913
AREA/COMPONENT DESCRIPTION	MSSS ELEVATION 69-FT & 79 FT ELEVATIONS		



## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18100A  
 Survey Unit Name: MSSS Safety Relief Valve Area

Classification: Class 2  
 Size (m<sup>2</sup>): 311

Scan Measurement Data

Measurement Type: Surface Scanning Beta

Scan Coverage (%): 20

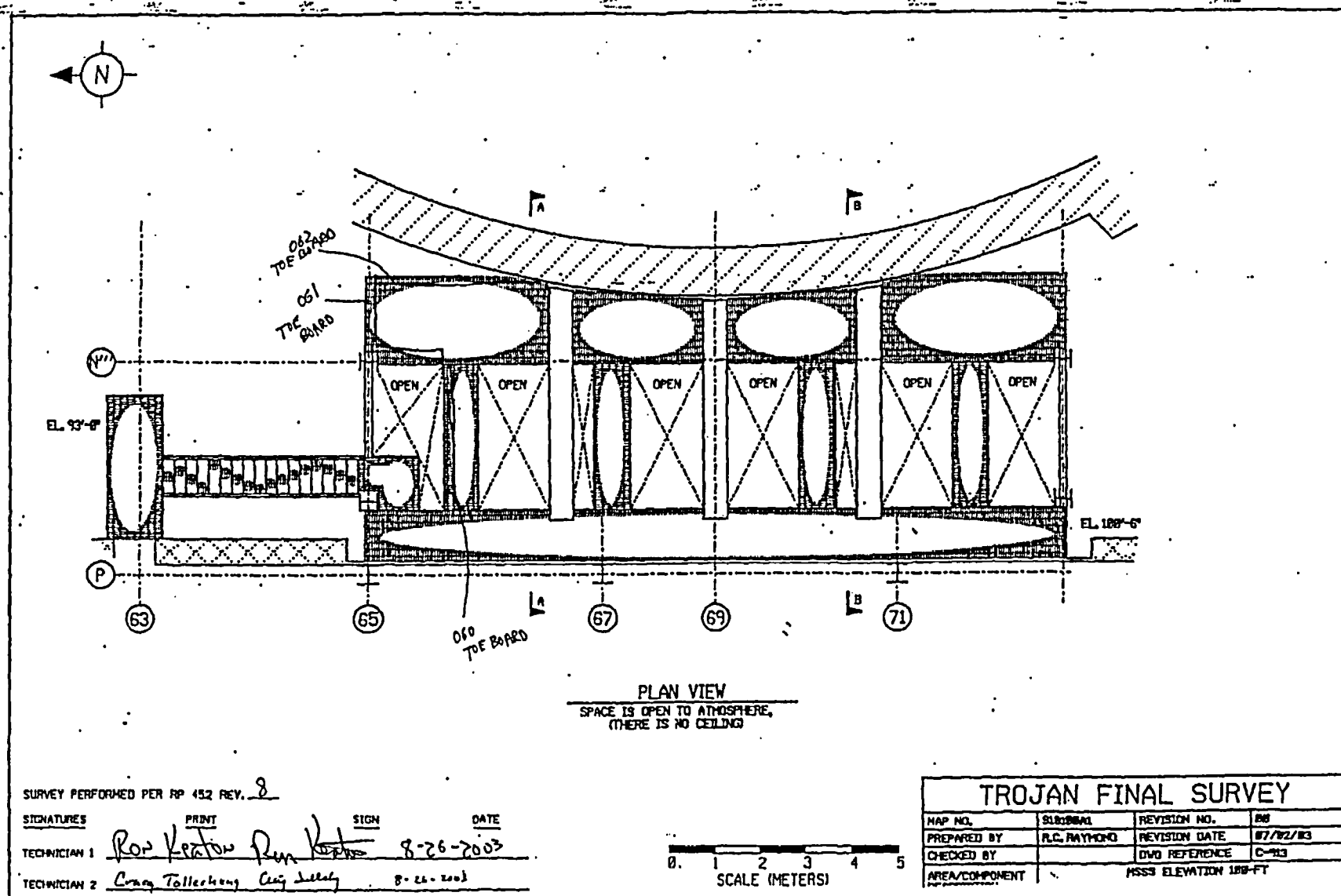
Measurement Units: dpm/100cm<sup>2</sup>

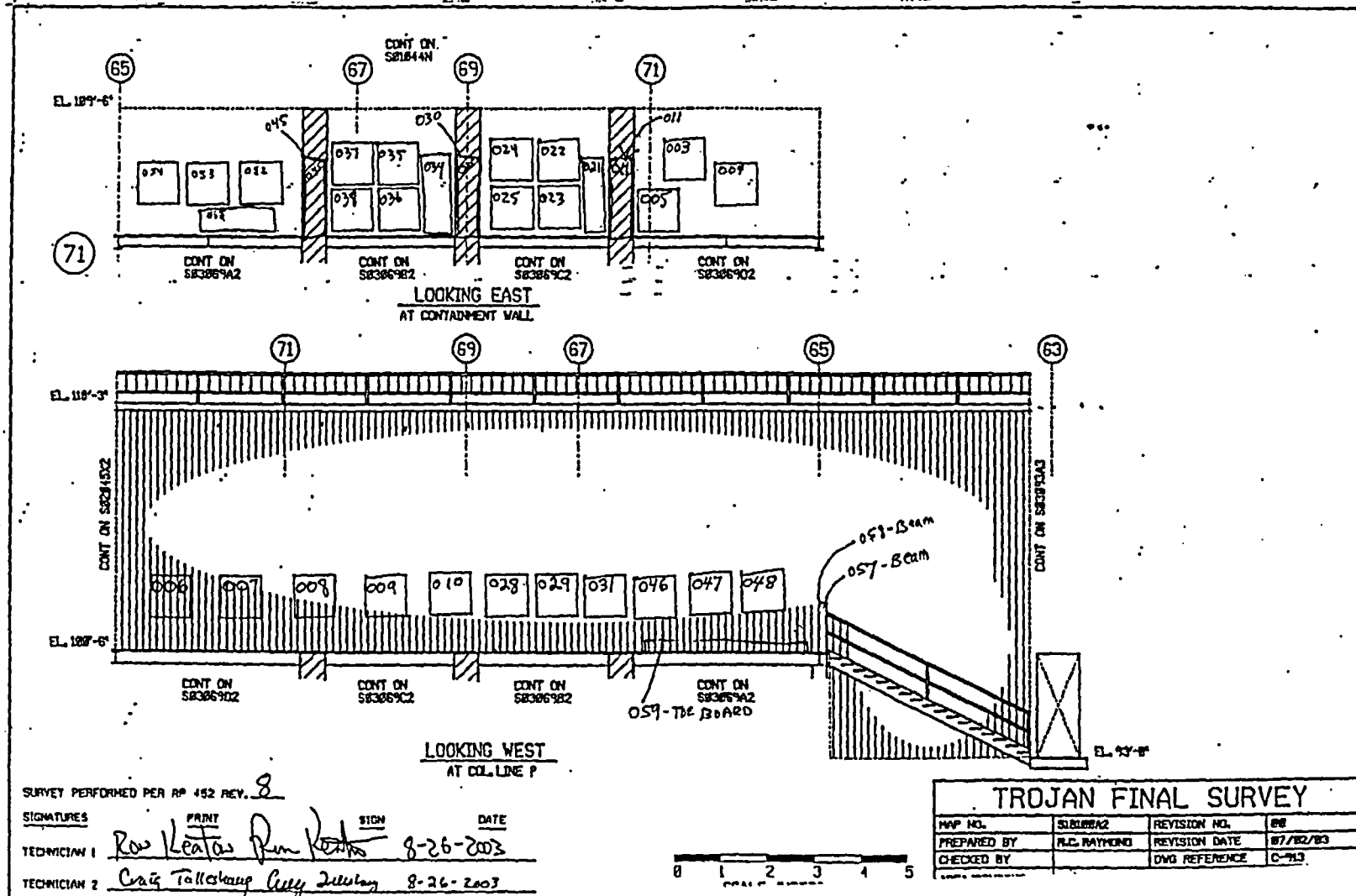
Investigation Level: 21,000

Minimum Value: 641

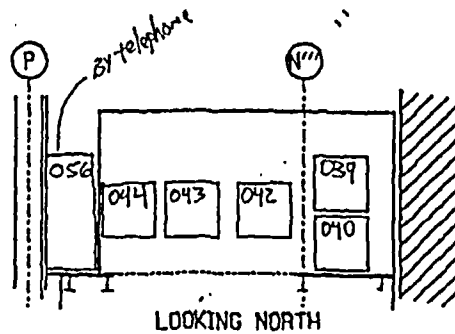
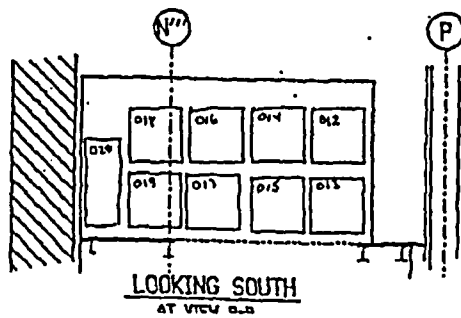
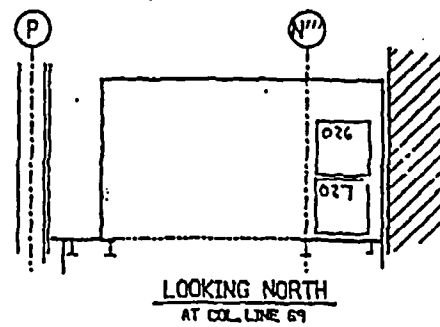
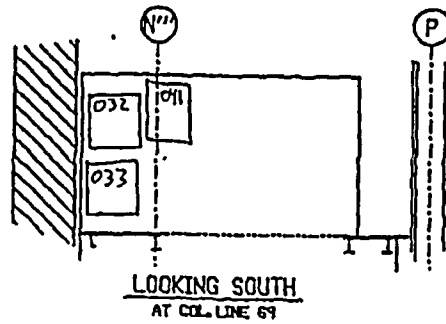
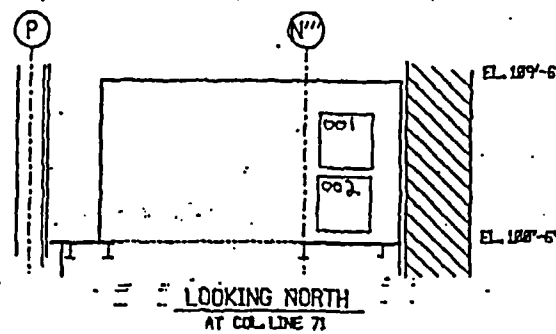
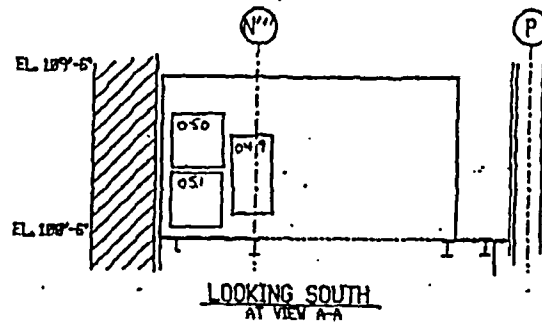
Maximum Value: 3,160

Location	Value	Location	Value
S18100A08000001	1,661	S18100A080000035	2,333
S18100A08000002	1,449	S18100A080000036	3,160
S18100A08000003	1,852	S18100A080000037	2,385
S18100A08000004	1,413	S18100A080000038	2,404
S18100A08000005	1,300	S18100A080000039	2,192
S18100A08000006	722	S18100A080000040	1,810
S18100A08000007	766	S18100A080000041	1,810
S18100A08000008	788	S18100A080000042	1,878
S18100A08000009	778	S18100A080000043	1,723
S18100A08000010	828	S18100A080000044	1,426
S18100A08000011	1,280	S18100A080000045	1,216
S18100A08000012	1,382	S18100A080000046	779
S18100A08000013	1,321	S18100A080000047	720
S18100A08000014	1,410	S18100A080000048	731
S18100A08000015	1,455	S18100A080000049	1,461
S18100A08000016	1,372	S18100A080000050	1,349
S18100A08000017	1,316	S18100A080000051	1,610
S18100A08000018	1,555	S18100A080000052	1,303
S18100A08000019	1,399	S18100A080000053	1,327
S18100A08000020	1,382	S18100A080000054	1,876
S18100A08000021	1,522	S18100A080000055	1,557
S18100A08000022	1,417	S18100A080000056	641
S18100A08000023	1,317	S18100A080000057	839
S18100A08000024	1,440	S18100A080000058	844
S18100A08000025	1,370	S18100A080000059	774
S18100A08000026	1,488	S18100A080000060	954
S18100A08000027	1,488	S18100A080000061	986
S18100A08000028	888	S18100A080000062	862
S18100A08000029	874		
S18100A08000030	1,488		
S18100A08000031	914		
S18100A08000032	1,899		
S18100A08000033	2,728		
S18100A08000034	1,708		









SURVEY PERFORMED PER RP 452 REV. 2

TECHNICIAN 1 *Paul Weston* SIGN *Paul Weston* DATE *8-28-03*

TECHNICIAN 2 *Craig Tallesbury* SIGN *Craig Tallesbury* DATE *8-28-03*

0 1 2 3 4 5  
SCALE (METERS)

TROJAN FINAL SURVEY			
MAP NO.	SUBBAS	REVISION NO.	08
PREPARED BY	R.C. RAYMOND	REVISION DATE	87/82/83
CHECKED BY		DWG. REFERENCE	

**SUPPLEMENT TO APPENDIX D**

**SURVEY UNIT SUMMARY REPORTS – EPA**

<b><u>Survey Unit ID Code</u></b>	<b><u>Page(s)</u></b>
S18045A .....	D-2 through D-6
S18045B.....	D-7 and D-8
S18045F.....	D-9 and D-10
S18045G .....	D-11 and D-12
S18093A .....	D-13 through D-16

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18045A  
 Survey Unit Name: EPA, Major Portion

Classification: Class 2  
 Size (m<sup>2</sup>): 836

Scan Measurement Data

Measurement Type: Surface Scanning Beta  
 Measurement Units: dpm/100cm<sup>2</sup>  
 Minimum Value: 705

Scan Coverage (%): 20  
 Investigation Level: 21,000  
 Maximum Value: 9,488

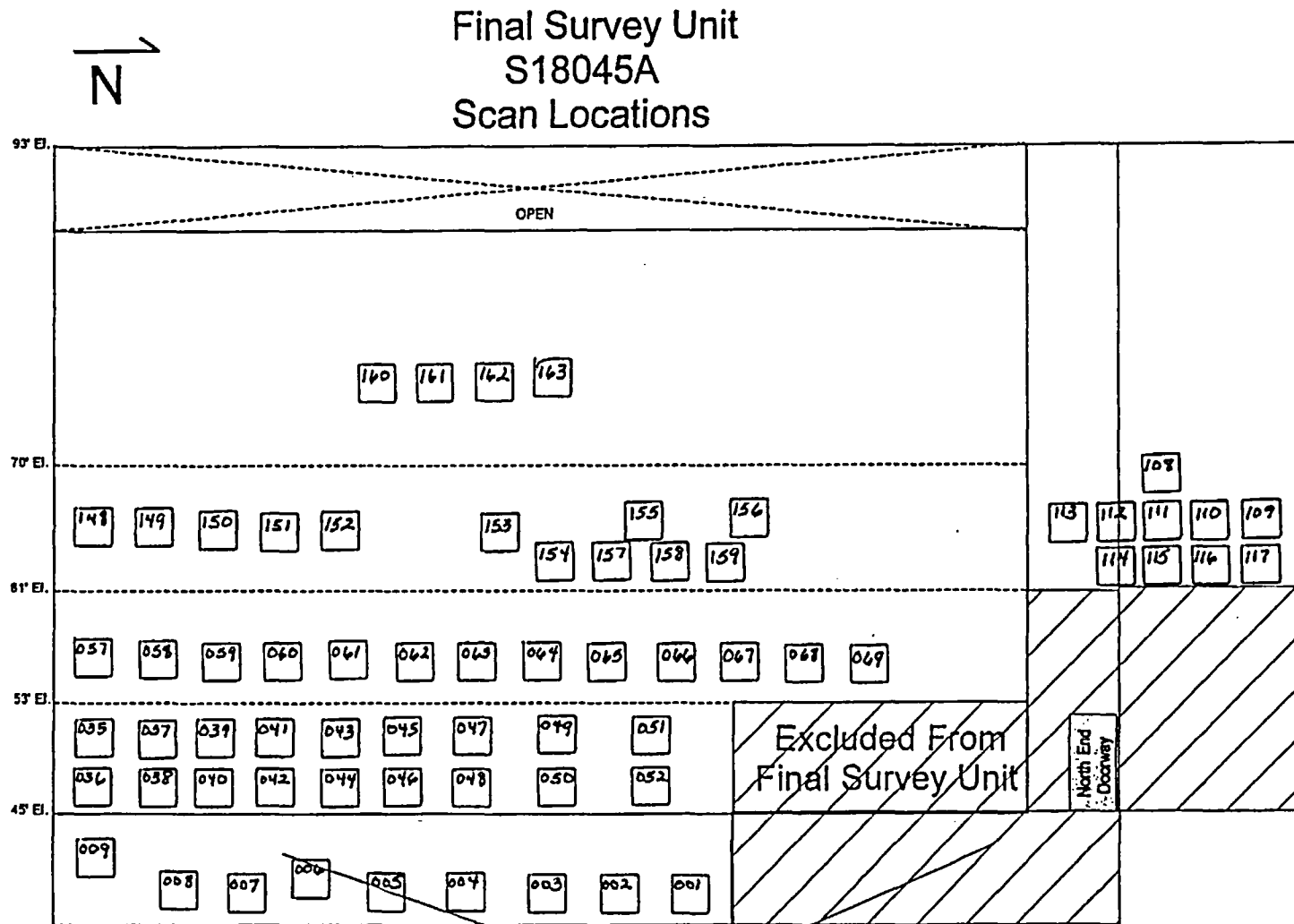
Location	Value	Location	Value	Location	Value
S18045A08000001	1,981	S18045A08000035	1,500	S18045A08000069	1,626
S18045A08000002	1,809	S18045A08000036	1,444	S18045A08000070	1,276
S18045A08000003	1,499	S18045A08000037	1,609	S18045A08000071	1,379
S18045A08000004	1,506	S18045A08000038	1,531	S18045A08000072	1,321
S18045A08000005	1,843	S18045A08000039	1,475	S18045A08000073	1,249
S18045A08000006	1,728	S18045A08000040	1,437	S18045A08000074	1,229
S18045A08000007	1,691	S18045A08000041	1,338	S18045A08000075	1,358
S18045A08000008	1,594	S18045A08000042	1,543	S18045A08000076	1,158
S18045A08000009	1,502	S18045A08000043	1,511	S18045A08000077	1,167
S18045A08000010	1,441	S18045A08000044	1,865	S18045A08000078	1,323
S18045A08000011	1,523	S18045A08000045	1,508	S18045A08000079	1,391
S18045A08000012	1,353	S18045A08000046	1,599	S18045A08000080	1,260
S18045A08000013	1,489	S18045A08000047	1,441	S18045A08000081	1,235
S18045A08000014	1,467	S18045A08000048	1,535	S18045A08000082	1,284
S18045A08000015	1,414	S18045A08000049	1,516	S18045A08000083	1,356
S18045A08000016	1,358	S18045A08000050	1,504	S18045A08000084	1,312
S18045A08000017	1,443	S18045A08000051	1,546	S18045A08000085	1,041
S18045A08000018	1,479	S18045A08000052	1,491	S18045A08000086	1,179
S18045A08000019	1,581	S18045A08000053	1,413	S18045A08000087	1,224
S18045A08000020	1,581	S18045A08000054	1,430	S18045A08000088	1,181
S18045A08000021	1,497	S18045A08000055	1,421	S18045A08000089	1,289
S18045A08000022	1,619	S18045A08000056	1,529	S18045A08000090	1,158
S18045A08000023	1,516	S18045A08000057	1,400	S18045A08000091	1,330
S18045A08000024	2,156	S18045A08000058	1,486	S18045A08000092	974
S18045A08000025	1,873	S18045A08000059	1,575	S18045A08000093	1,139
S18045A08000026	1,492	S18045A08000060	1,357	S18045A08000094	1,105
S18045A08000027	1,762	S18045A08000061	1,395	S18045A08000095	1,062
S18045A08000028	1,611	S18045A08000062	1,372	S18045A08000096	1,178
S18045A08000029	1,492	S18045A08000063	1,372	S18045A08000097	1,097
S18045A08000030	1,493	S18045A08000064	1,523	S18045A08000098	1,164
S18045A08000031	1,985	S18045A08000065	1,473	S18045A08000099	1,128
S18045A08000032	1,390	S18045A08000066	1,422	S18045A08000100	1,097
S18045A08000033	1,565	S18045A08000067	1,394	S18045A08000101	1,331
S18045A08000034	1,513	S18045A08000068	1,409	S18045A08000102	1,760
S18045A08000103	7,418	S18045A08000142	1,511		

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18045A  
 Survey Unit Name: EPA, Major Portion

Classification: Class 2  
 Size (m<sup>2</sup>): 836

Location	Value	Location	Value	Location	Value
S18045A08000104	9,488	S18045A08000143	1,413		
S18045A08000105	1,186	S18045A08000144	1,464		
S18045A08000106	1,402	S18045A08000145	1,373		
S18045A08000107	1,158	S18045A08000146	1,461		
S18045A08000108	2,299	S18045A08000147	1,287		
S18045A08000109	1,770	S18045A08000148	1,512		
S18045A08000110	1,688	S18045A08000149	1,419		
S18045A08000111	1,535	S18045A08000150	1,313		
S18045A08000112	1,643	S18045A08000151	1,220		
S18045A08000113	1,499	S18045A08000152	1,194		
S18045A08000114	1,459	S18045A08000153	1,209		
S18045A08000115	2,692	S18045A08000154	1,278		
S18045A08000116	1,854	S18045A08000155	1,306		
S18045A08000117	1,945	S18045A08000156	1,442		
S18045A08000118	1,532	S18045A08000157	952		
S18045A08000119	1,478	S18045A08000158	1,007		
S18045A08000120	1,421	S18045A08000159	962		
S18045A08000121	1,312	S18045A08000160	1,004		
S18045A08000122	1,246	S18045A08000161	974		
S18045A08000123	1,426	S18045A08000162	818		
S18045A08000124	1,198	S18045A08000163	940		
S18045A08000125	1,379	S18045A08000164	863		
S18045A08000126	1,159	S18045A08000165	989		
S18045A08000127	1,232	S18045A08000166	941		
S18045A08000128	1,230	S18045A08000167	863		
S18045A08000129	1,222	S18045A08000168	811		
S18045A08000130	1,275	S18045A08000169	918		
S18045A08000131	1,456	S18045A08000170	839		
S18045A08000132	1,218	S18045A08000171	705		
S18045A08000133	1,195	S18045A08000172	707		
S18045A08000134	1,165				
S18045A08000135	1,156				
S18045A08000136	1,191				
S18045A08000137	1,327				
S18045A08000138	1,281				
S18045A08000139	1,321				
S18045A08000140	1,278				
S18045A08000141	1,467				

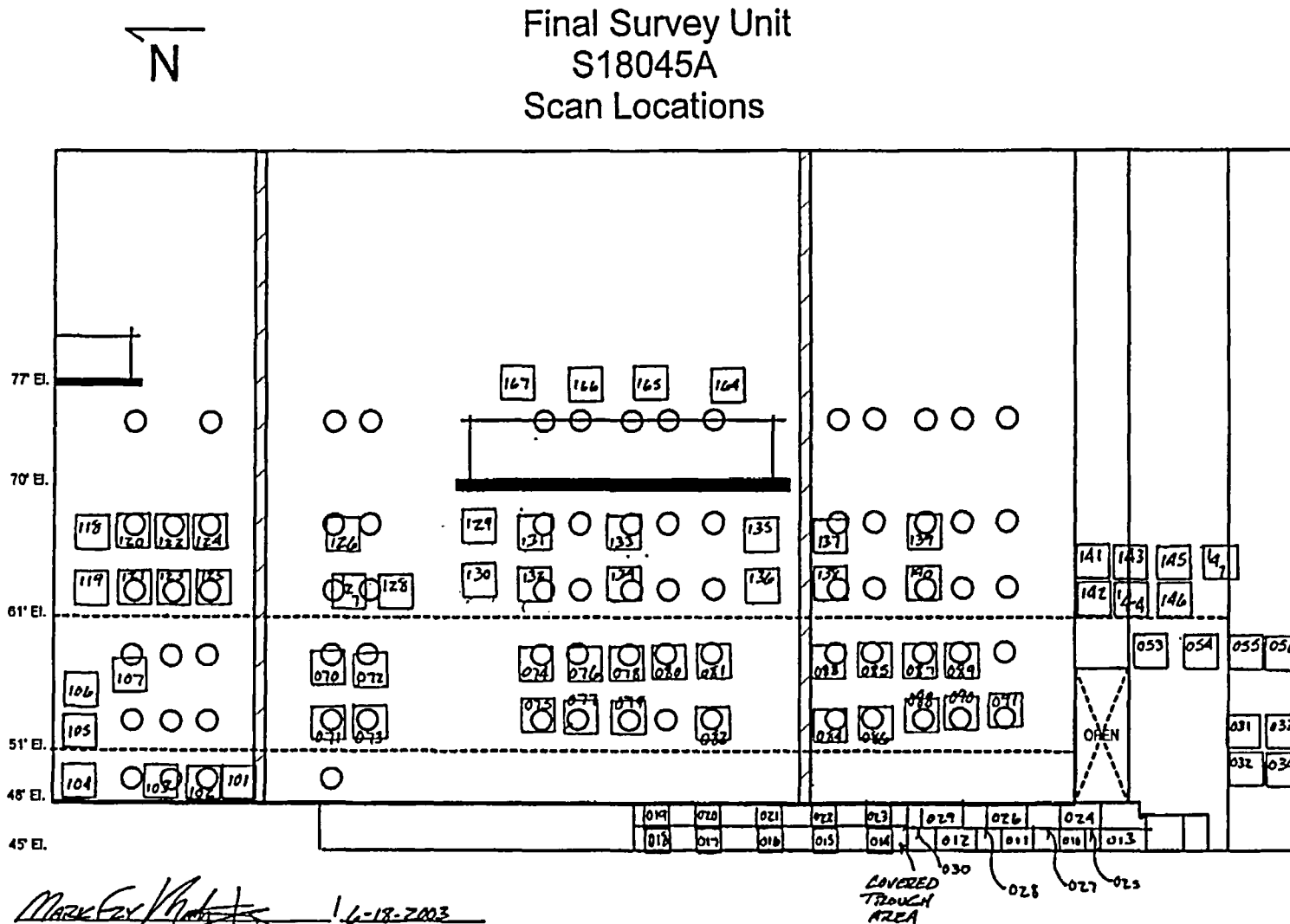


Loxi Libal / Loxi Libal 16-18-2003  
Survey Technician Date

Mark Far / Mark Far 16-18-2003  
Survey Technician Date

Data collection performed IAW  
RP 452 Rev. 8

EPAOSScn.cad



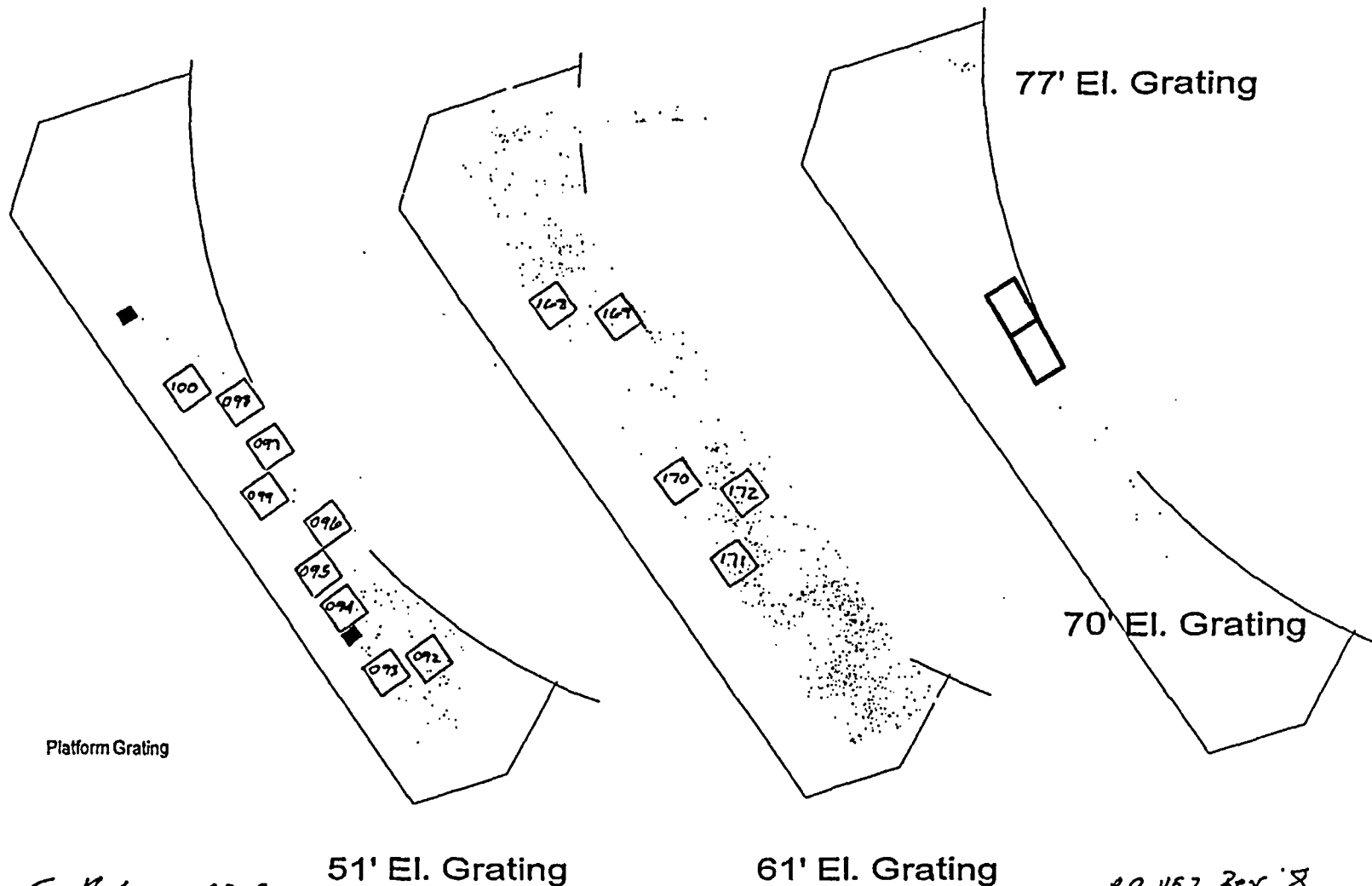
*Mark E. [Signature]*  
Survey Technician  
1.6.18.2003  
Date

*Lori Libal / Lori Libal*  
Survey Technician  
1.6.18.2003  
Date

Data collection performed IAW  
RP 452 Rev. 8

EPAISscn.cad

# Final Survey Unit S18045A



Mark Far Mark 6-18-2003

Loi Libal Loi Libal 6-18-2003

Supplement to Appendix D

D-6

RP 452 Rev '8

EPAGrat.cad

## FINAL SURVEY RESULTS SUMMARY

**Survey Unit ID Code:** S18045B  
**Survey Unit Name:** EPA, Minor Portion

**Classification:** Class 1  
**Size (m<sup>2</sup>):** 74

### Scan Measurement Data

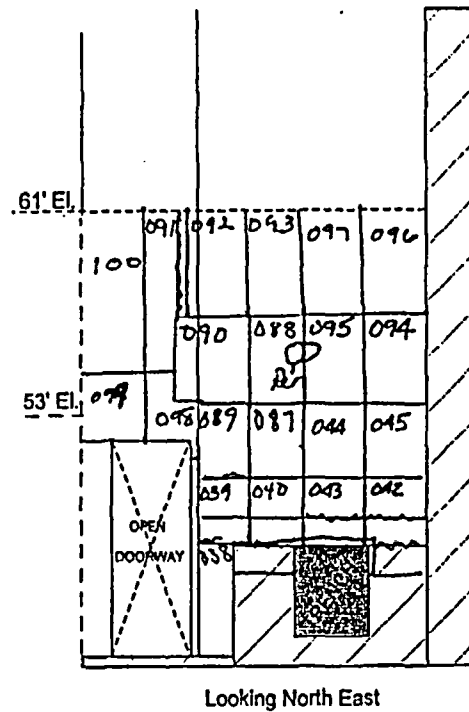
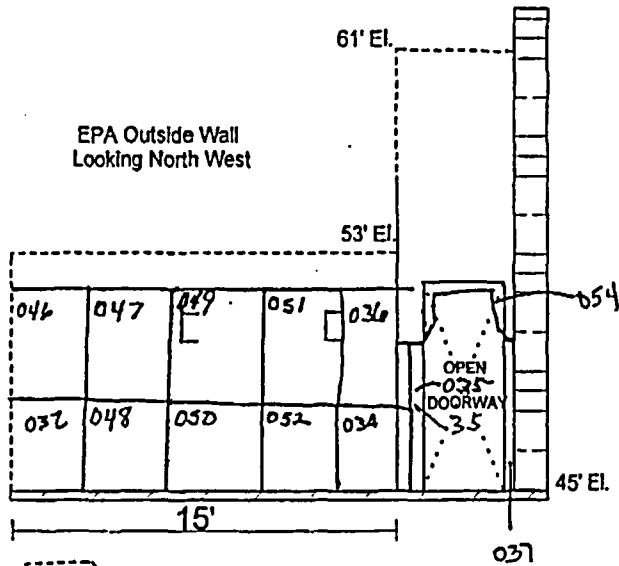
**Measurement Type:** Surface Scanning Beta  
**Measurement Units:** dpm/100cm<sup>2</sup>  
**Minimum Value:** 1,945

**Scan Coverage (%):** 100  
**Investigation Level:** 22,000  
**Maximum Value:** 9,836

Location	Value	Location	Value	Location	Value
S18045B08000001	8,393	S18045B08000035	6,991	S18045B08000069	2,718
S18045B08000002	7,432	S18045B08000036	8,213	S18045B08000070	2,701
S18045B08000003	7,752	S18045B08000037	7,192	S18045B08000071	2,557
S18045B08000004	7,151	S18045B08000038	6,711	S18045B08000072	2,609
S18045B08000005	6,030	S18045B08000039	6,430	S18045B08000073	2,500
S18045B08000006	7,372	S18045B08000040	6,450	S18045B08000074	2,606
S18045B08000007	6,751	S18045B08000041	8,674	S18045B08000075	2,822
S18045B08000008	6,611	S18045B08000042	2,544	S18045B08000076	2,560
S18045B08000009	7,232	S18045B08000043	2,379	S18045B08000077	2,418
S18045B08000010	6,871	S18045B08000044	2,562	S18045B08000078	2,415
S18045B08000011	7,151	S18045B08000045	2,352	S18045B08000079	2,430
S18045B08000012	7,412	S18045B08000046	2,165	S18045B08000080	2,411
S18045B08000013	7,432	S18045B08000047	2,570	S18045B08000081	2,549
S18045B08000014	7,292	S18045B08000048	2,316	S18045B08000082	2,310
S18045B08000015	7,853	S18045B08000049	2,570	S18045B08000083	2,311
S18045B08000016	8,033	S18045B08000050	2,445	S18045B08000084	2,619
S18045B08000017	8,233	S18045B08000051	2,507	S18045B08000085	2,458
S18045B08000018	7,472	S18045B08000052	2,411	S18045B08000086	3,077
S18045B08000019	8,454	S18045B08000053	2,532	S18045B08000087	6,110
S18045B08000020	7,252	S18045B08000054	2,609	S18045B08000088	7,833
S18045B08000021	7,993	S18045B08000055	2,890	S18045B08000089	6,170
S18045B08000022	6,831	S18045B08000056	2,141	S18045B08000090	8,033
S18045B08000023	8,954	S18045B08000057	2,658	S18045B08000091	7,352
S18045B08000024	9,135	S18045B08000058	2,260	S18045B08000092	6,911
S18045B08000025	7,572	S18045B08000059	2,395	S18045B08000093	6,891
S18045B08000026	6,891	S18045B08000060	2,263	S18045B08000094	1,945
S18045B08000027	7,412	S18045B08000061	2,310	S18045B08000095	2,575
S18045B08000028	8,874	S18045B08000062	2,203	S18045B08000096	2,172
S18045B08000029	9,836	S18045B08000063	2,417	S18045B08000097	2,292
S18045B08000030	7,732	S18045B08000064	2,404	S18045B08000098	2,863
S18045B08000031	7,692	S18045B08000065	2,759	S18045B08000099	2,122
S18045B08000032	7,953	S18045B08000066	2,783	S18045B08000100	2,387
S18045B08000033	7,432	S18045B08000067	2,237		
S18045B08000034	7,312	S18045B08000068	2,724		



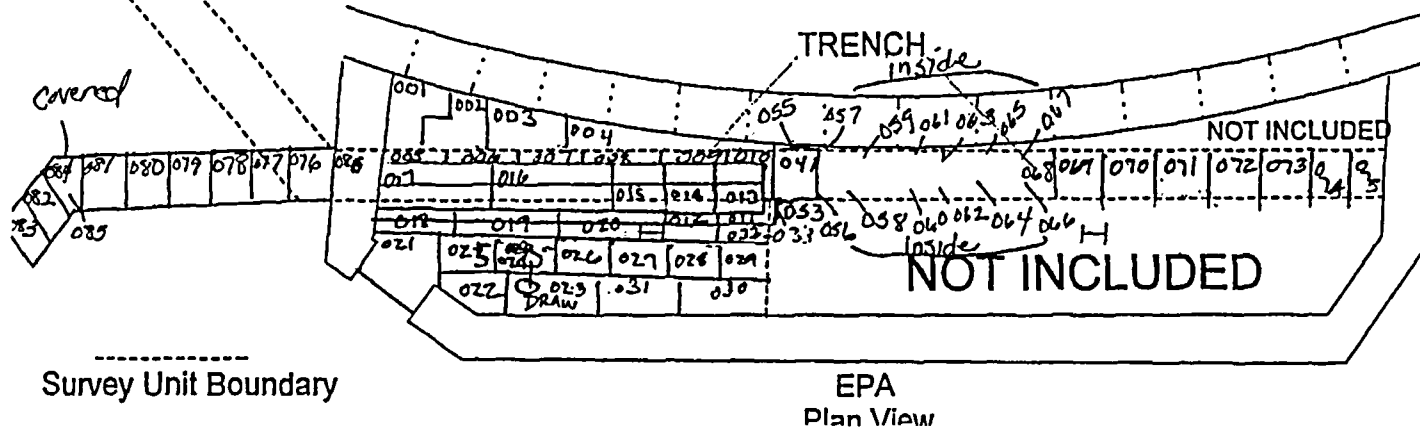
FINAL SURVEY UNIT  
S18045B  
SCAN LOCATIONS



Data collection performed IAW  
RP 452 Rev. 8

Lori Lubatkin 7-15-2003  
Survey Technician Date

Mark For 7-15-2002  
Survey Technician Date



045Bscn.CAD

### FINAL SURVEY RESULTS SUMMARY

**Survey Unit ID Code:** S18045F

**Classification:** Class 3

**Survey Unit Name:** MSSS/EPA Areas Between  
Containment & Auxiliary Buildings

**Size (m<sup>2</sup>):** 688

#### Scan Measurement Data

**Measurement Type:** Surface Scanning Beta

**Scan Coverage (%):** 5

**Measurement Units:** dpm/100cm<sup>2</sup>

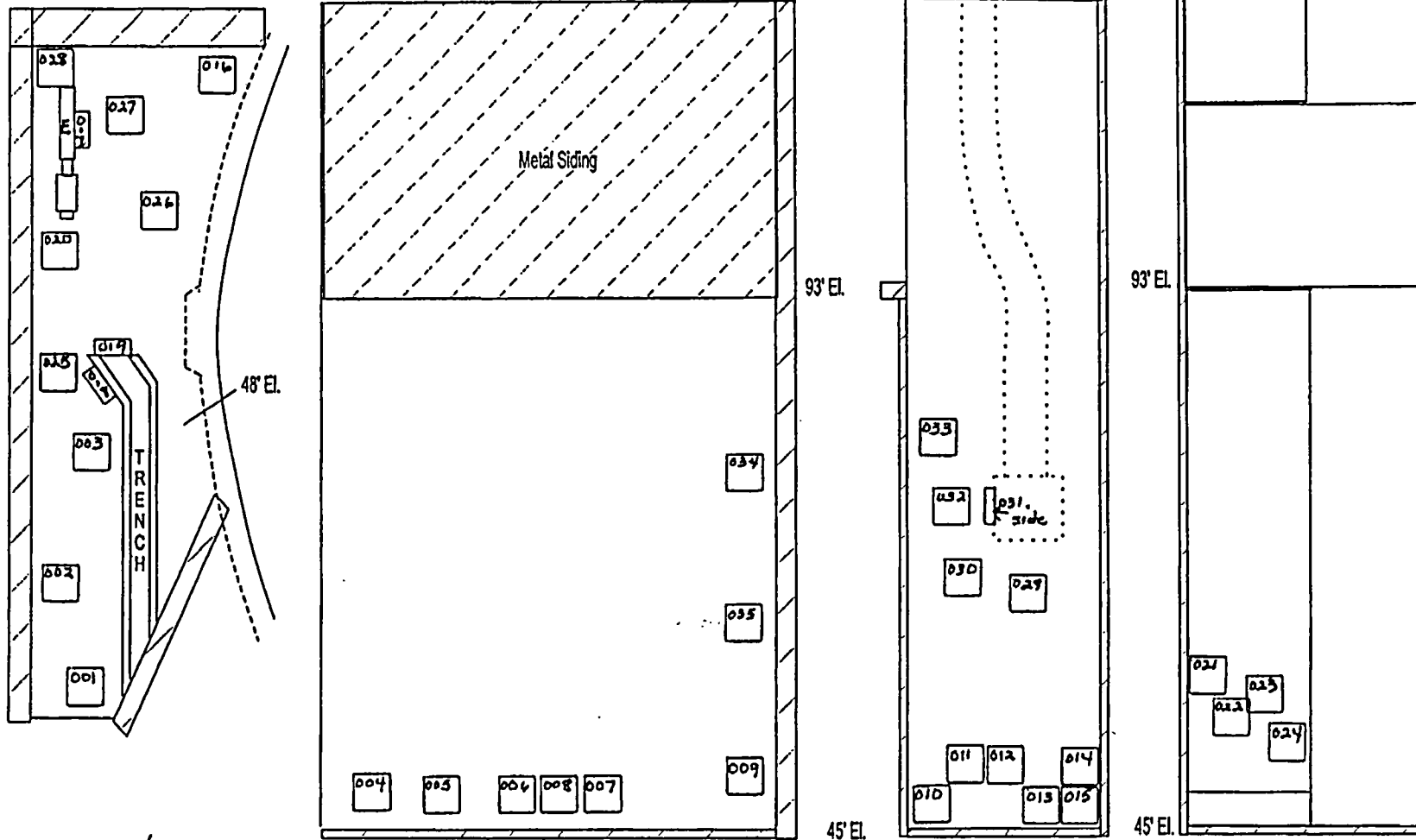
**Investigation Level:** 21,000

**Minimum Value:** 774

**Maximum Value:** 1,890

Location	Value	Location	Value
S18045F08000001	1,745	S18045F08000026	1,550
S18045F08000002	1,664	S18045F08000027	1,478
S18045F08000003	1,848	S18045F08000028	1,405
S18045F08000004	1,404	S18045F08000029	1,407
S18045F08000005	1,383	S18045F08000030	1,519
S18045F08000006	1,433	S18045F08000031	936
S18045F08000007	1,407	S18045F08000032	1,378
S18045F08000008	1,412	S18045F08000033	1,525
S18045F08000009	1,456	S18045F08000034	1,468
S18045F08000010	1,392	S18045F08000035	1,563
S18045F08000011	1,356		
S18045F08000012	1,364		
S18045F08000013	1,394		
S18045F08000014	1,400		
S18045F08000015	1,395		
S18045F08000016	1,652		
S18045F08000017	774		
S18045F08000018	1,618		
S18045F08000019	1,424		
S18045F08000020	1,511		
S18045F08000021	1,487		
S18045F08000022	1,375		
S18045F08000023	1,389		
S18045F08000024	1,420		
S18045F08000025	1,890		

FINAL SURVEY UNIT  
S18045F  
SCAN LOCATIONS



Loei Libal/Loei Libal 7-1-2003 Looking North  
Survey Technician Date

Marka Marka 7-1-2003  
Survey Technician Date

Data collection performed IAW  
RP 452 Rev. 8

045Fscn.cad

### FINAL SURVEY RESULTS SUMMARY

**Survey Unit ID Code:** S18045G  
**Survey Unit Name:** Areas Between EPA,  
 Control & Turbine Buildings

**Classification:** Class 3  
**Size (m<sup>2</sup>):** 970

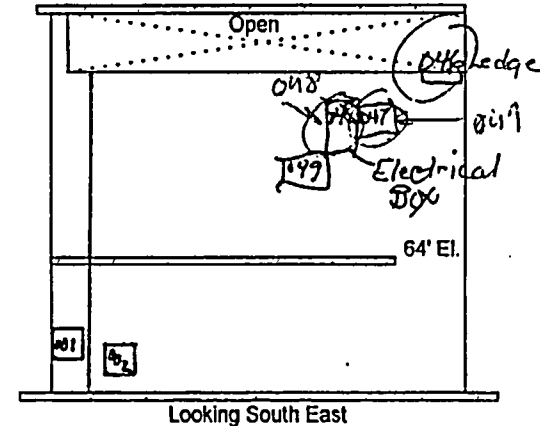
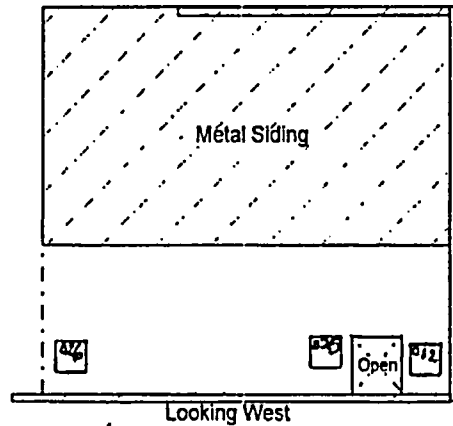
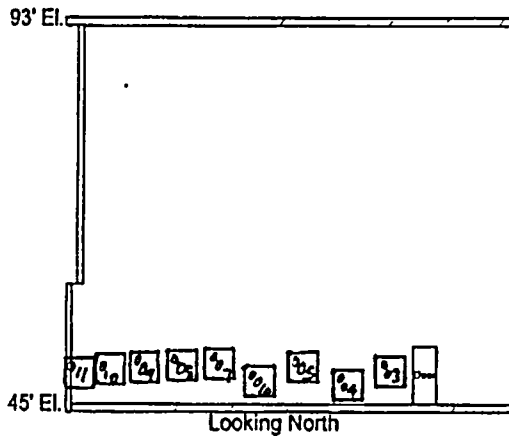
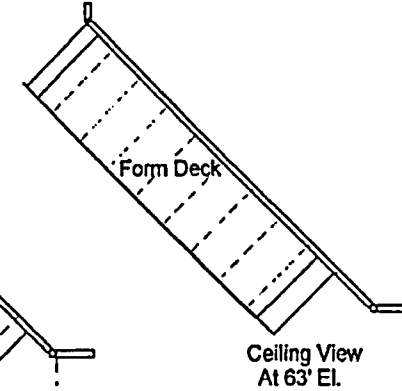
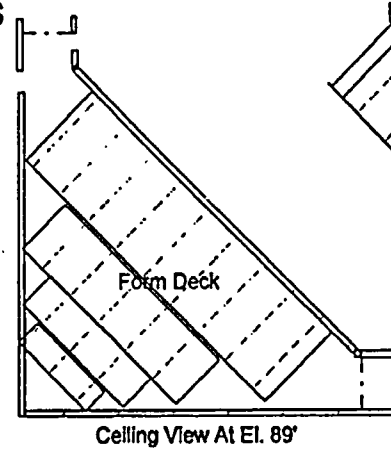
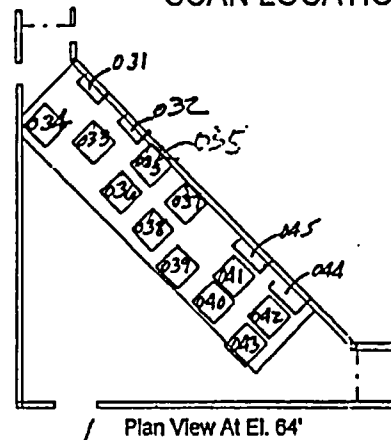
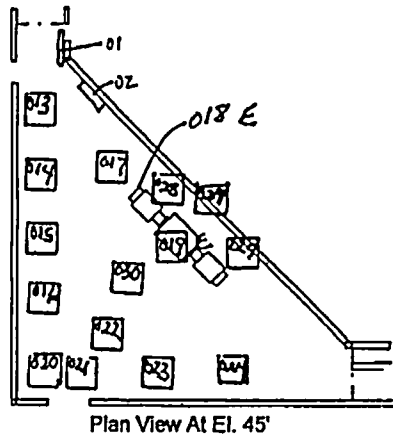
#### Scan Measurement Data

**Measurement Type:** Surface Scanning Beta  
**Measurement Units:** dpm/100cm<sup>2</sup>  
**Minimum Value:** 704

**Scan Coverage (%):** 5  
**Investigation Level:** 21,000  
**Maximum Value:** 2,164

Location	Value	Location	Value
S18045G08000001	1,169	S18045G08000026	1,349
S18045G08000002	1,825	S18045G08000027	1,315
S18045G08000003	1,446	S18045G08000028	1,693
S18045G08000004	1,375	S18045G08000029	2,164
S18045G08000005	1,343	S18045G08000030	1,507
S18045G08000006	1,308	S18045G08000031	1,641
S18045G08000007	1,389	S18045G08000032	1,381
S18045G08000008	1,352	S18045G08000033	1,478
S18045G08000009	1,444	S18045G08000034	1,337
S18045G08000010	1,260	S18045G08000035	1,367
S18045G08000011	1,214	S18045G08000036	1,311
S18045G08000012	1,118	S18045G08000037	1,319
S18045G08000013	1,160	S18045G08000038	1,376
S18045G08000014	1,426	S18045G08000039	1,443
S18045G08000015	1,359	S18045G08000040	1,373
S18045G08000016	1,372	S18045G08000041	1,312
S18045G08000017	1,596	S18045G08000042	1,269
S18045G08000018	704	S18045G08000043	1,430
S18045G08000019	724	S18045G08000044	1,360
S18045G08000020	1,563	S18045G08000045	1,427
S18045G08000021	1,382	S18045G08000046	1,550
S18045G08000022	1,380	S18045G08000047	1,150
S18045G08000023	1,185	S18045G08000048	786
S18045G08000024	999	S18045G08000049	1,321
S18045G08000025	860		

FINAL SURVEY UNIT  
S18045G  
SCAN LOCATIONS



Data collection performed  
IAW RP 452 Rev. 8

*Lois Libal* / *Lois Libal* 7-15-2003  
Survey Technician Date  
*Mark For* / *Mark For* 7-5-2003  
Survey Technician Date

045Gscn.cad

## FINAL SURVEY RESULTS SUMMARY

**Survey Unit ID Code:** S18093A

**Classification:** Class 3

**Survey Unit Name:** MSSS/EPA

**Size (m<sup>2</sup>):** 463

Containment Purge Supply Fan Area

### Scan Measurement Data

**Measurement Type:** Surface Scanning Beta

**Scan Coverage (%):** 5

**Measurement Units:** dpm/100cm<sup>2</sup>

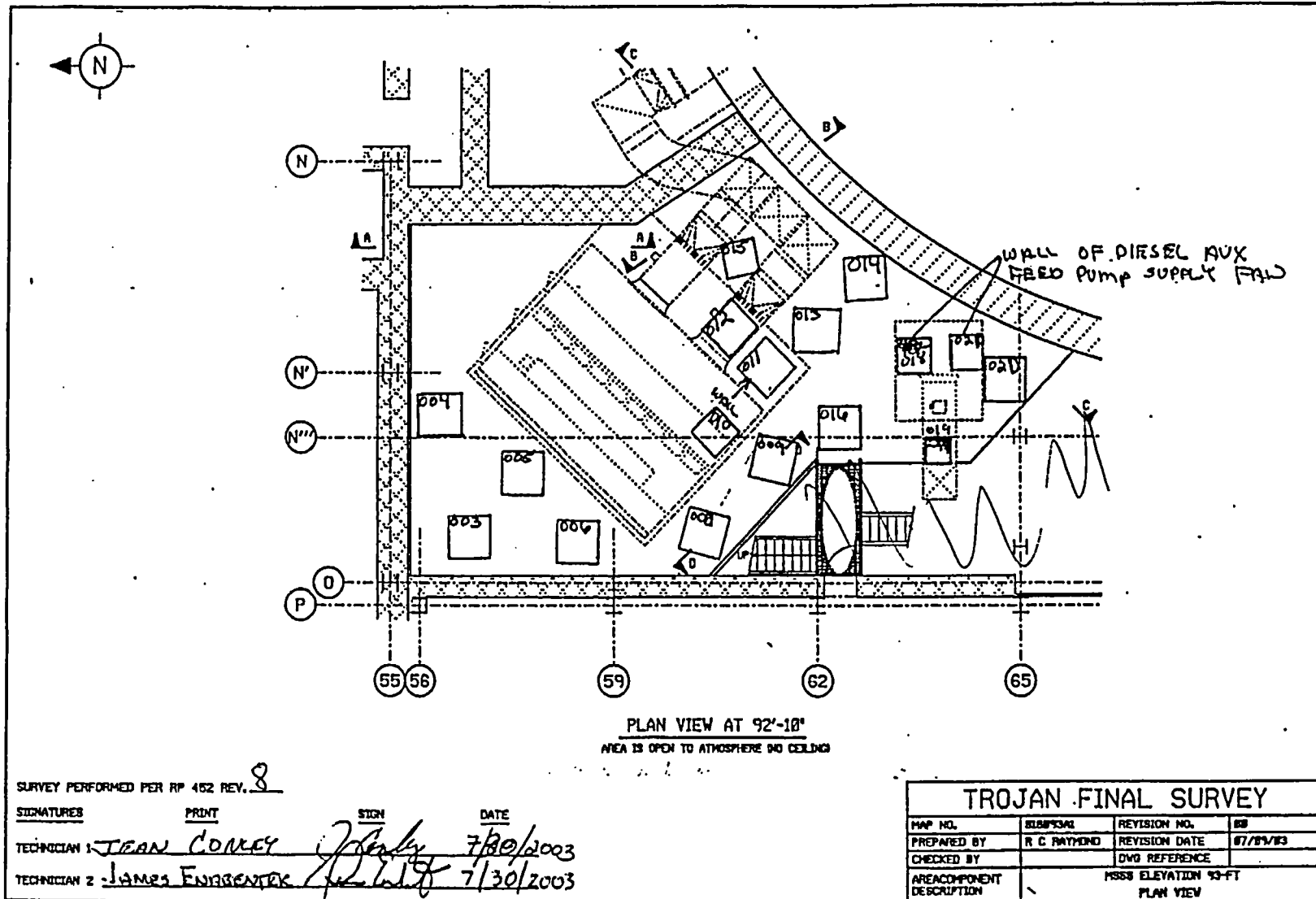
**Investigation Level:** 21,000

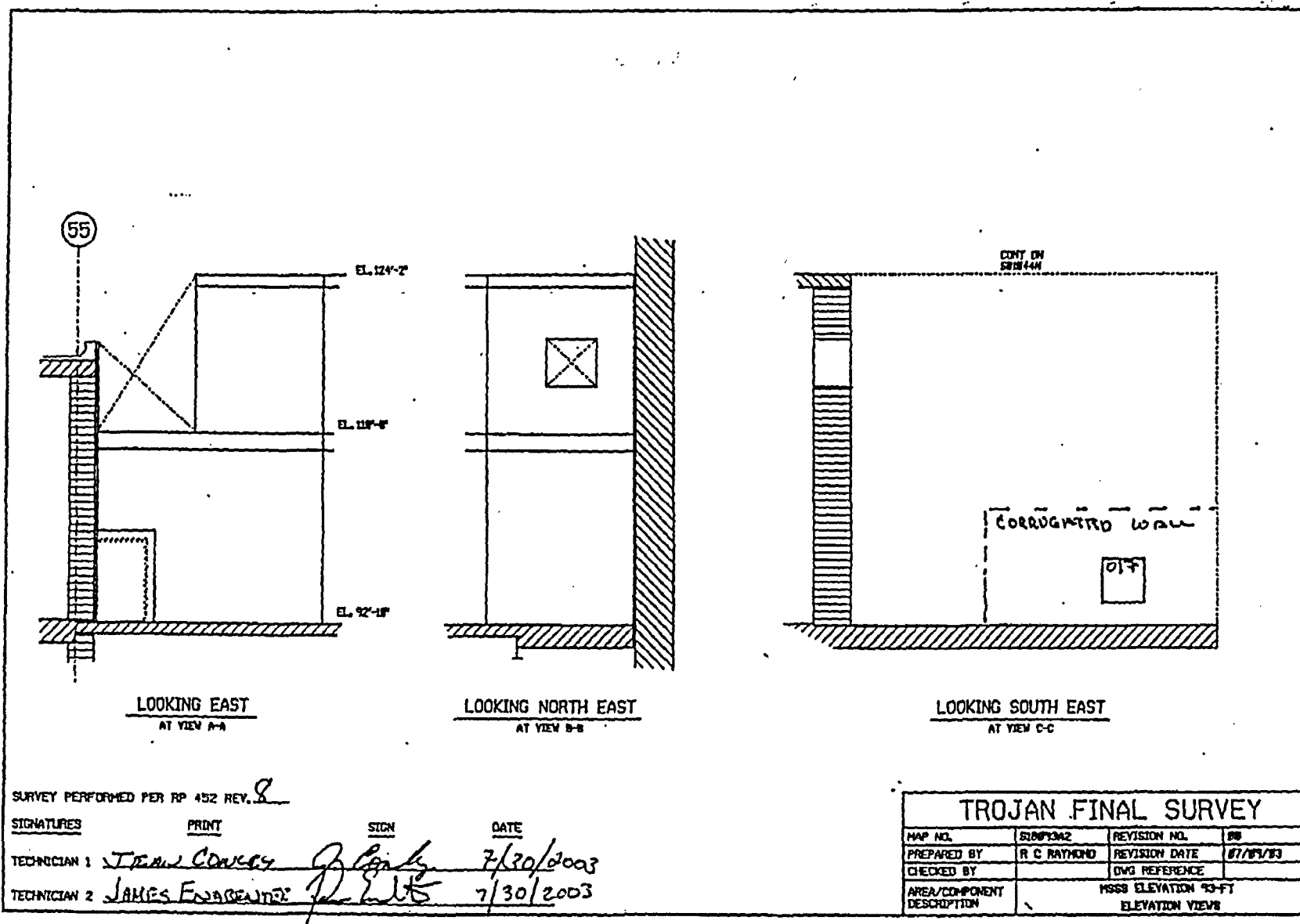
**Minimum Value:** 752

**Maximum Value:** 1,623

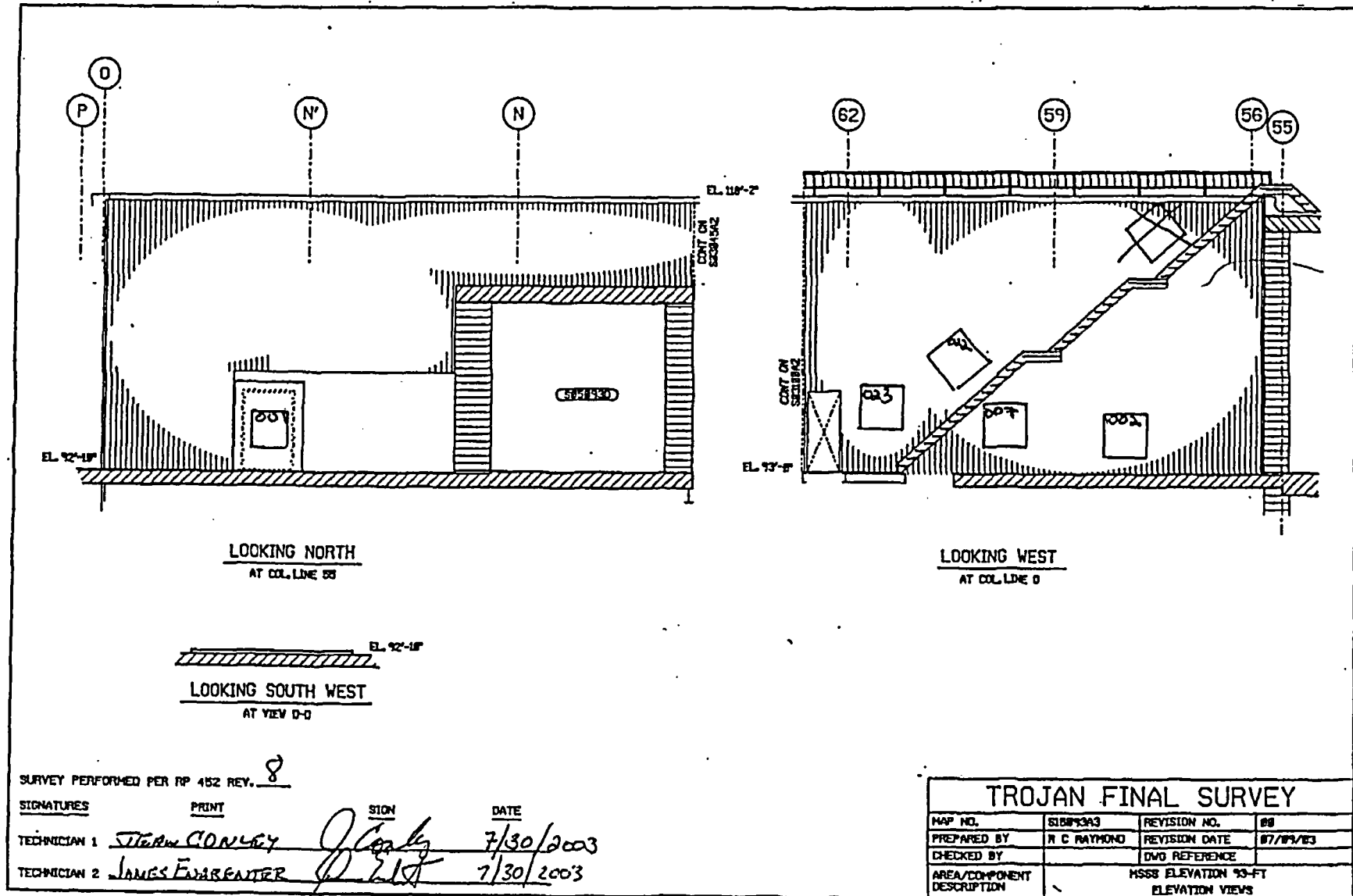
Location	Value
S18093A08000001	1,073
S18093A08000002	826
S18093A08000003	1,493
S18093A08000004	1,442
S18093A08000005	1,232
S18093A08000006	1,397
S18093A08000007	797
S18093A08000008	1,410
S18093A08000009	1,347
S18093A08000010	752
S18093A08000011	756
S18093A08000012	870
S18093A08000013	1,605
S18093A08000014	1,461
S18093A08000015	1,527
S18093A08000016	1,623
S18093A08000017	828
S18093A08000018	893
S18093A08000019	1,420
S18093A08000020	1,475
S18093A08000021	779
S18093A08000022	802
S18093A08000023	819

Scan maps









**SUPPLEMENT TO APPENDIX E**

**SURVEY UNIT SUMMARY REPORTS – SGBB**

**Survey Unit ID Code**

**Page(s)**

S18045C..... E-2 and E-3  
S18045D ..... E-4 through E-6

**FINAL SURVEY RESULTS SUMMARY**

**Survey Unit ID Code:** S18045C  
**Survey Unit Name:** SGBB Interior

**Classification:** Class 2  
**Size (m<sup>2</sup>):** 134

**Scan Measurement Data**

**Measurement Type:** Surface Scanning Beta  
**Measurement Units:** dpm/100cm<sup>2</sup>  
**Minimum Value:** 1,043

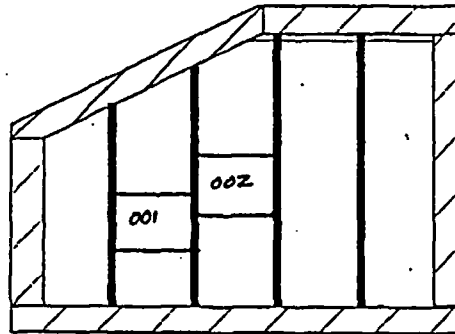
**Scan Coverage (%):** 20  
**Investigation Level:** 21,000  
**Maximum Value:** 1,818

Location	Value
S18045C08000001	1,043
S18045C08000002	1,114
S18045C08000003	1,327
S18045C08000004	1,234
S18045C08000005	1,271
S18045C08000006	1,287
S18045C08000007	1,159
S18045C08000008	1,439
S18045C08000009	1,470
S18045C08000010	1,380
S18045C08000011	1,350
S18045C08000012	1,391
S18045C08000013	1,349
S18045C08000014	1,270
S18045C08000015	1,498
S18045C08000016	1,444
S18045C08000017	1,379
S18045C08000018	1,324
S18045C08000019	1,202
S18045C08000020	1,138
S18045C08000021	1,355
S18045C08000022	1,322
S18045C08000023	1,387
S18045C08000024	1,316
S18045C08000025	1,611
S18045C08000026	1,378
S18045C08000027	1,722
S18045C08000028	1,818

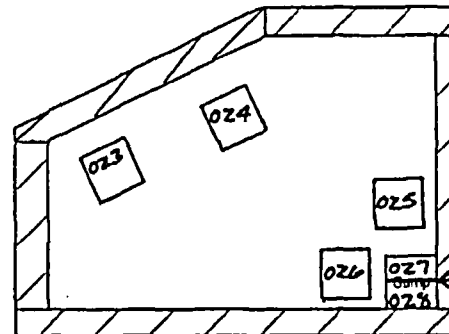
# FINAL SURVEY UNIT S18045C Scan Locations

Data collection performed  
IAW RP 452, Rev. 8

N



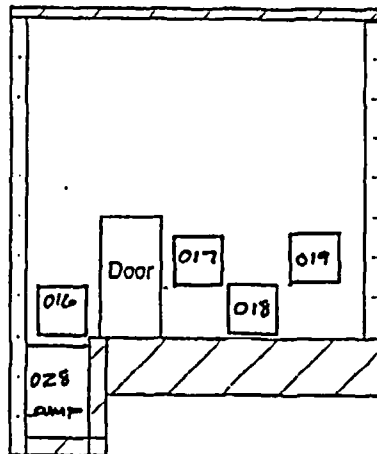
CEILING VIEW



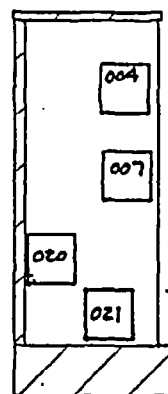
PLAN VIEW

*Mark For...* 1-5-2003  
Survey Technician Date

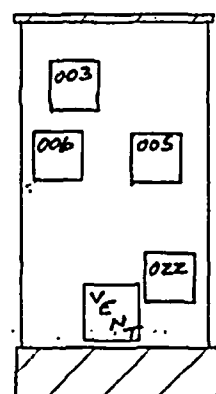
*Loe...* 1-5-2003  
Survey Technician Date



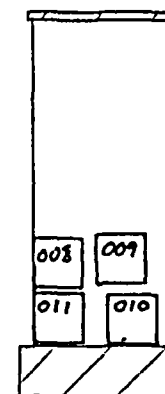
LOOKING WEST



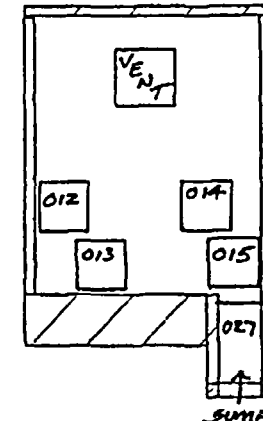
LOOKING NORTH



LOOKING NORTH EAST



LOOKING EAST



LOOKING SOUTH

045Cscn.cad

## FINAL SURVEY RESULTS SUMMARY

Survey Unit ID Code: S18045D  
Survey Unit Name: SGBB Exterior

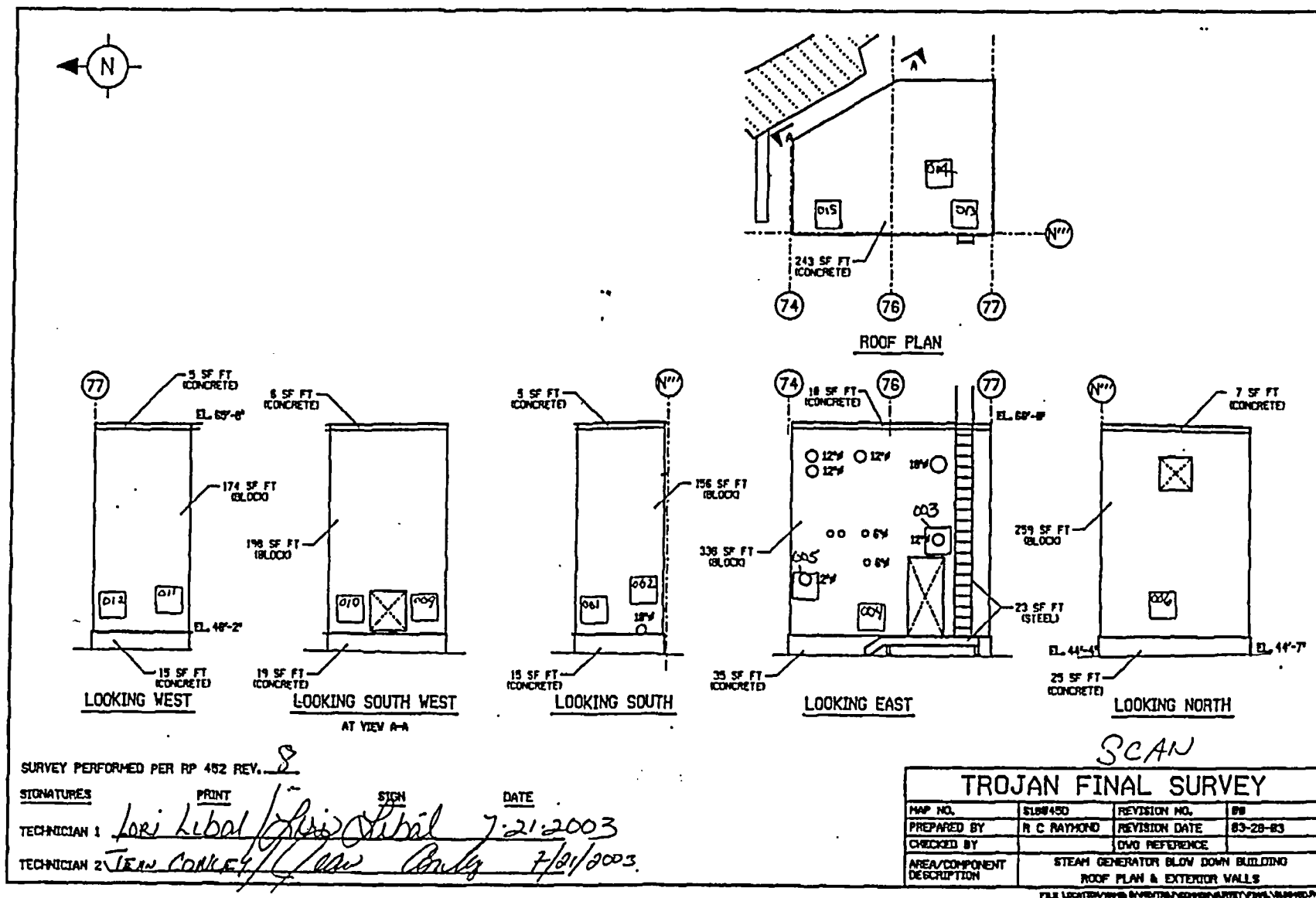
Classification: Class 3  
Size (m<sup>2</sup>): 151

### Scan Measurement Data

Measurement Type: Surface Scanning Beta  
Measurement Units: dpm/100cm<sup>2</sup>  
Minimum Value: 1,302

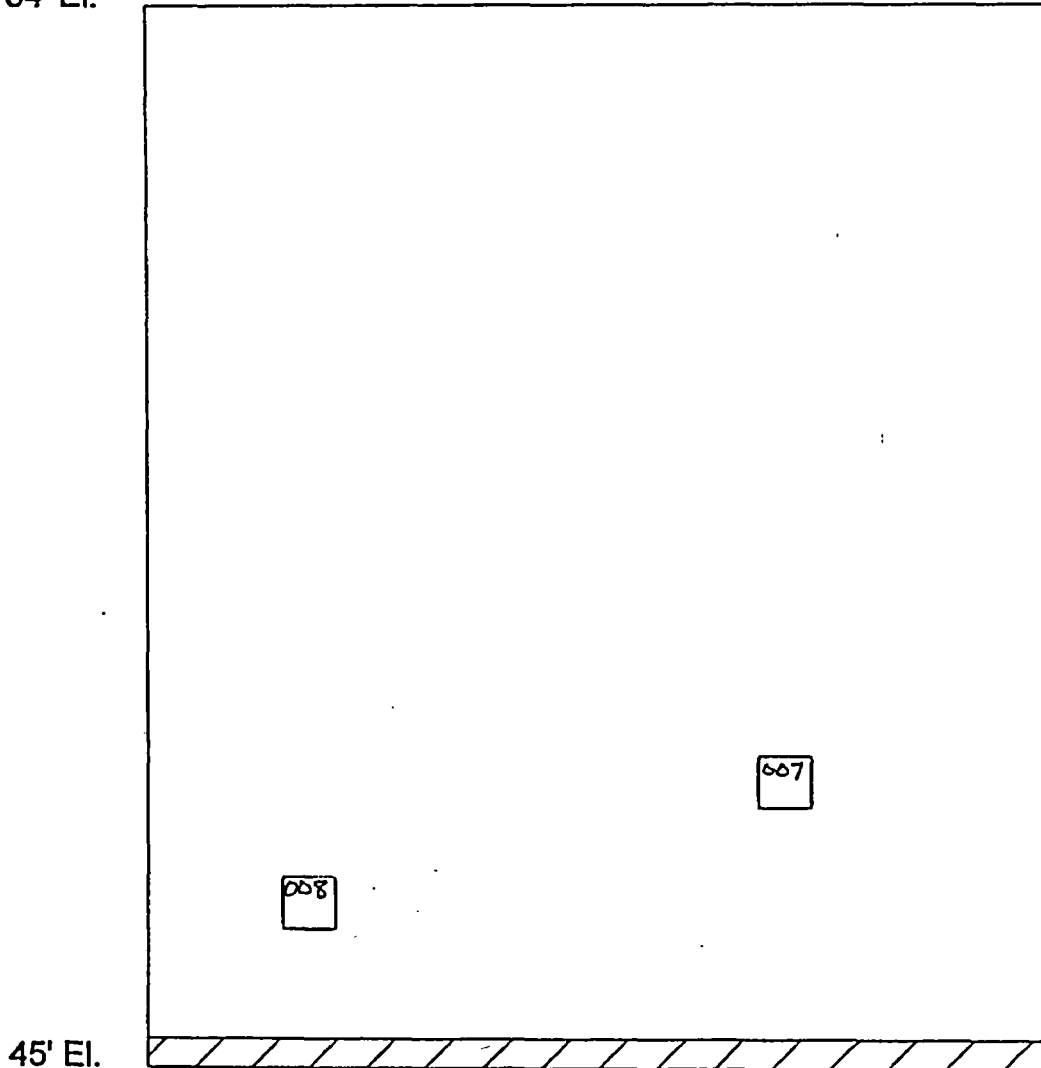
Scan Coverage (%): 10  
Investigation Level: 21,000  
Maximum Value: 1,672

Location	Value
S18045D08000001	1,367
S18045D08000002	1,369
S18045D08000003	1,459
S18045D08000004	1,462
S18045D08000005	1,352
S18045D08000006	1,672
S18045D08000007	1,653
S18045D08000008	1,507
S18045D08000009	1,489
S18045D08000010	1,365
S18045D08000011	1,343
S18045D08000012	1,302
S18045D08000013	1,327
S18045D08000014	1,473
S18045D08000015	1,553



Exterior South End Wall  
Of MSSS Access  
(7 m<sup>2</sup>)

54' El.



45' El.

Scan

Looking North

Lori Libal/Lori Libal 7/21/2003  
Survey Technician Date

JEAN CONLEY 7/01/2003  
Survey Technician Date

S18045D2