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SAFETY REVIEW REPORT (SRR)

TITLE: FINAL RADIOLOGICAL SURVEY REPORT OF BUILDING 064 INTERIOR

- APPROVALS -

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**CONTENTS**

## FIGURES

## FIGURES

## TABLES

## ABSTRACT

A comprehensive radiological survey of Building 064 and its surrounding area at the SSFL was performed in 1988. In accordance with the recommendation made in that survey report, remedial efforts were undertaken to remove residual radioactively contaminated components from the Building 064 structure and grounds. After the decontamination efforts were completed, a comprehensive final survey of the building interior was performed to demonstrate regulatory compliance for release without radiological restrictions.

Results of surveys demonstrate that Building 064 meets the requirements of DOE, NRC, and State of California for releasing Building 064 for use without radiological controls.

## REFERENCES

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2. GEN-ZR-0005, Radiological Survey of the Source and Special Nuclear Material Storage Vault - Building T064, dated August 19, 1988, J. A. Chapman

3. SSWA-AN-0001, D&D Work Plan for Building 064, Environmental Restoration

4. ER-AN-0002, ETEC Environmental Restoration Program Management Plan, dated October 25, 1991

5. N001OP000033, Methods and Procedures for Radiological Monitoring

6. N001OP000028, Quality Control and General Operating Procedure for Gamma Spectroscopy Using Canberra Multichannel Analyzers

7. DOE Order 5400.5, Radiation Protection of the Public and the Environment, dated February 8, 1990

8. DECON-1, State of California Guidelines for Decontaminating Facilities and Equipment Prior to Release for Unrestricted Use, dated June 1977

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11. MIL-STD-414, Sampling Procedures and Tables for Inspection by Variables for Percent Defective, June 11, 1957

12. N704SRR990035, Radiological Assessment of the Building T064 Fenced-In Yard, January 12, 1994

13. N704SRR990031, Final Decontamination and Radiological Survey of the Building T064 Side Yard, Rev. A, September 10, 1993

14. SSWA-AR-0002, Building 064 D&D Operations Final Report

15. SSWA-SP-0001, Building 064 Interior Final Survey Procedure (completed "on-site work copy") dated February 25, 1993

## 1.0 INTRODUCTION

Decontamination and decommissioning (D&D) of a number of formerly used nuclear facilities and sites is underway at Rockwell International's Santa Susana Field Laboratory (SSFL). During D&D of these facilities, reasonable efforts are being made to eliminate or to reduce residual radioactive contamination to levels that are as low as reasonably achievable (ALARA). Upon completion of D&D, radiological surveys are performed under established protocols to determine that any remaining radioactivity does not exceed applicable regulatory limits. Findings from the surveys are also used to perform additional D&D or radiological investigations, as needed. The scope of the surveys includes both known and suspected areas of contamination in the Building 064 interior.

In accordance with a broad radiological survey plan for the SSFL (Ref. 1), a comprehensive radiological survey of Building 064 and its surrounding area was performed in 1988 (Ref. 2). Results of that survey showed that the soil of the Side Yard was radioactively contaminated (which was subsequently cleaned [Ref. 13]) and that some items within the building and the ventilation exhaust filter plenums were contaminated. This report presents the final status survey results following removal of the contaminated items and the filter plenums, and removal of the floor tiles.

This report is organized as follows: first, the summary of the results of the survey and the conclusions and recommendations; second, the background information concerning past radiological status, D&D efforts, and current radiological status; third, the survey results and the technical approach used in the data collection, analyses, and limit criteria; and fourth, the supporting documentation and calculations for historical records and report completeness.

## 2.0 SUMMARY AND CONCLUSIONS

Survey measurements were made for surface contamination (alpha and beta) on the interior walls, floors, and ceilings in Building 064, and for ambient gamma exposure rate at 1 meter above the interior floors. These measurements were tested statistically for compliance with acceptable contamination limits for enriched uranium, activation products, and mixed fission products, and for ambient exposure rate.

All tests for surface contamination showed that the facility is suitable for release without radiological restrictions. Interpretation of the gamma exposure rate measurements for the Building 064 interior is based on the average gamma exposure rate background value (15.76 $\mu$R/hr) for a building of similar construction (Building S445) that

has never been used for any radiological purposes. The probability distributions of the comparisons between these measurements shows no local contamination, except for two measurements that were affected by the near proximity of smoke alarm units containing approximately 80 μCi Am-241. The results indicate a natural/normal background distribution for the building, with an average value of 14.7 μR/hr. Therefore, the Building 064 interior average gamma exposure rate is consistent with the average gamma exposure rate for Building S445.

## 3.0 BACKGROUND

### 3.1 Location

Building 064 is located within Rockwell International's SSFL in the Simi Hills of southeastern Ventura County, California, adjacent to the Los Angeles County line and approximately 29 miles northwest of downtown Los Angeles, directly south of the City of Simi Valley. Location of the SSFL relative to Los Angeles and vicinities is shown in Figure 1. An enlarged map of neighboring SSFL communities is shown in Figure 2. Figure 3 is a plot plan of the western portion of SSFL known as Area IV, where Building 064 is located. Building 064 is located on government-optioned land, subject to the Health and Safety Clause of the operating contract with DOE, and is exempt from licensing.

### 3.2 Topography and Building Characteristics

Building T064 was designed and built as a special nuclear material and source radioactive material storage building. It was constructed in two phases. The first phase was constructed in 1958. This 2137 $ft^2$ portion, (room 110), is a reinforced concrete structure with 11-in thick walls on a concrete slab. The building eave height is 16 ft, and the structure is open bay except for a 12 ft x 13 ft material handling area in the southeast corner of the building. A fume hood was installed in this small southeast corner, (room 104).

In 1963, the building was enlarged by adding a bay to the north (room 114) bringing the total square footage of the building to 4418 $ft^2$. This addition used 12-in concrete block construction with cores filled with concrete. Total square footage includes a small 150 $ft^2$ office (room 100) and a 50 $ft^2$ rest room (room 102), both located on the dock on the east side of the building. On the northwest corner is a small supply and storage room, about 50 $ft^2$, (room 116).

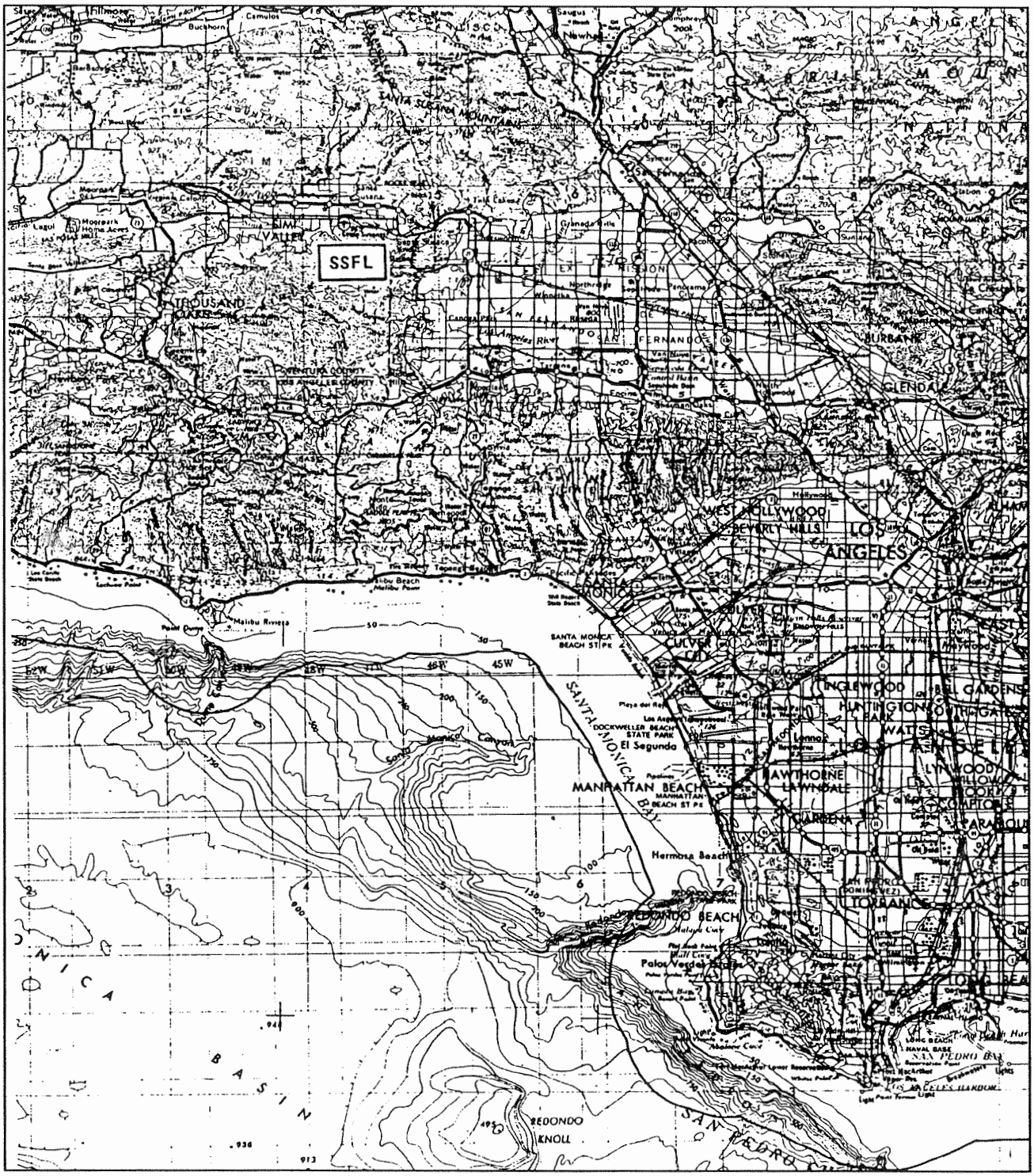



Figure 1. Location of SSFL in relation to Los Angeles and Vicinity


Figure 2. Map of Neighboring SSFL Communities

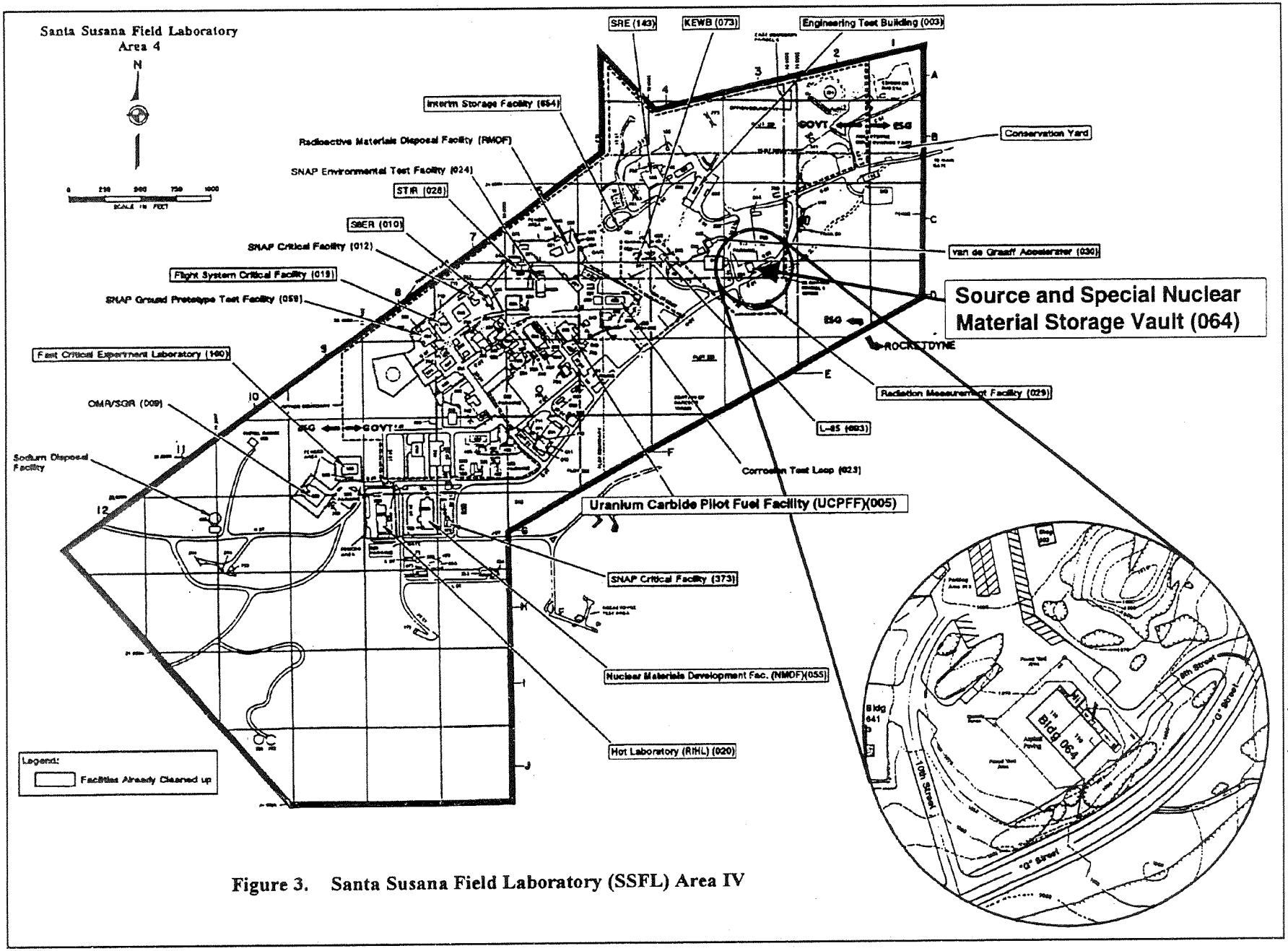



**Figure 3. Santa Susana Field Laboratory (SSFL) Area IV**

The concrete-slab floors were covered with 12-in square vinyl-asbestos tiles. The concrete-block walls are painted. In 1980, the entire facility was reroofed; interior wall surfaces were patched and painted; floor tile was removed and replaced; the rest room and office were restored; asphalt was patched; plumbing was repaired; heating and ventilation was repaired; and a window air-conditioner was installed in the office. Ten-ft-long fluorescent lights were suspended from the 16-ft high ceiling. Storage racks were constructed to accommodate fuel. Room 114 is accessible from the east through a 20 ft x 15 ft electrically driven rollup door and a conventional hinged door. Room 110 is accessible from the east through a heavy secured door. These two rooms are extremely secure. Ramps leading to each room allow easy transport of materials via forklift.

Since nuclear material was only stored here, there was no processing equipment within the building. No sinks were installed in the storage areas. The only water supply was to the rest room (room 102); this water was released to the sewer. The facility is not air conditioned. Each vault was ventilated by dedicated blowers through a plenum containing pre-filters and HEPA filters. Room 104 had a fume hood which exhausted through the south filter plenum.

Figure 4 is a plot plan of the building and immediate surrounding yard area. The facility sits atop a plateau about 25 ft above "G" Street and slightly above the 513 parking lot. Rock outcroppings exist upslope to the north-northeast and downslope in every other direction. Water runoff is primarily due east at the southern end of the facility. A sanitary leach field existed several years ago just north of the access road to "G" Street on the southeast section of the property. The building is surrounded by a chain link fence which is located from 20 to 30 ft from the exterior walls of the building. The area it encloses, including the building, is about 11,000 $ft^2$.

There are three points of access to the site location of Building T064. One access is directly from the north through the 513 parking area which is on the east side of 10th Street. A second point of access is directly off 10th Street at the NW corner of the facility, and the third is a short paved roadway connecting the SE corner of the facility with "G" Street to the east. There are two gates for accessing the fenced-in storage yard. One from the northeast corner, off of the 513 parking lot. The other from the southeast corner, off of "G" Street. Figure 5 is an aerial photo of Building T064 as viewed from the east side of the facility including the dock, office, crane, and main entrance.

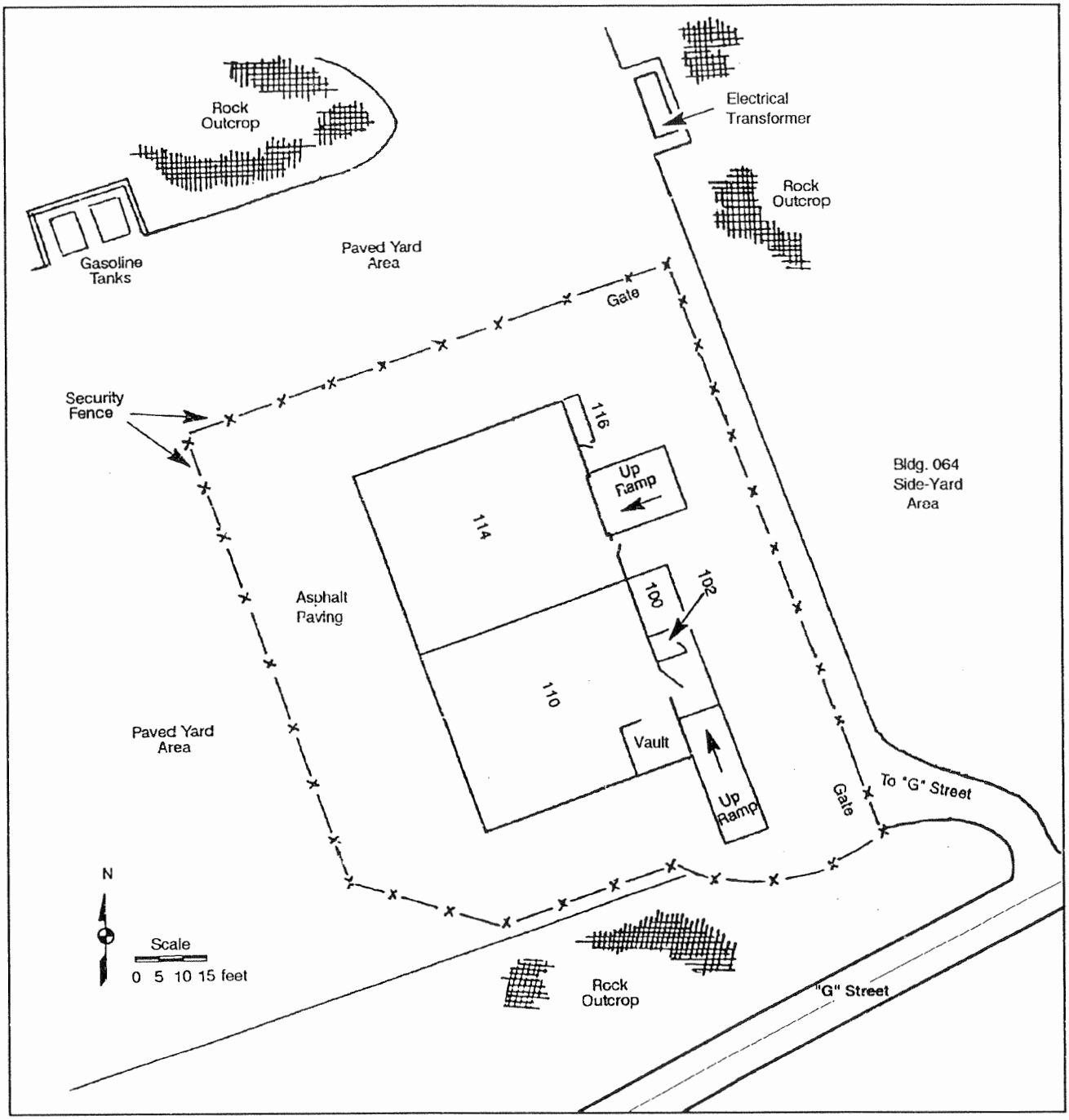



Figure 4. Building 064 Plan View

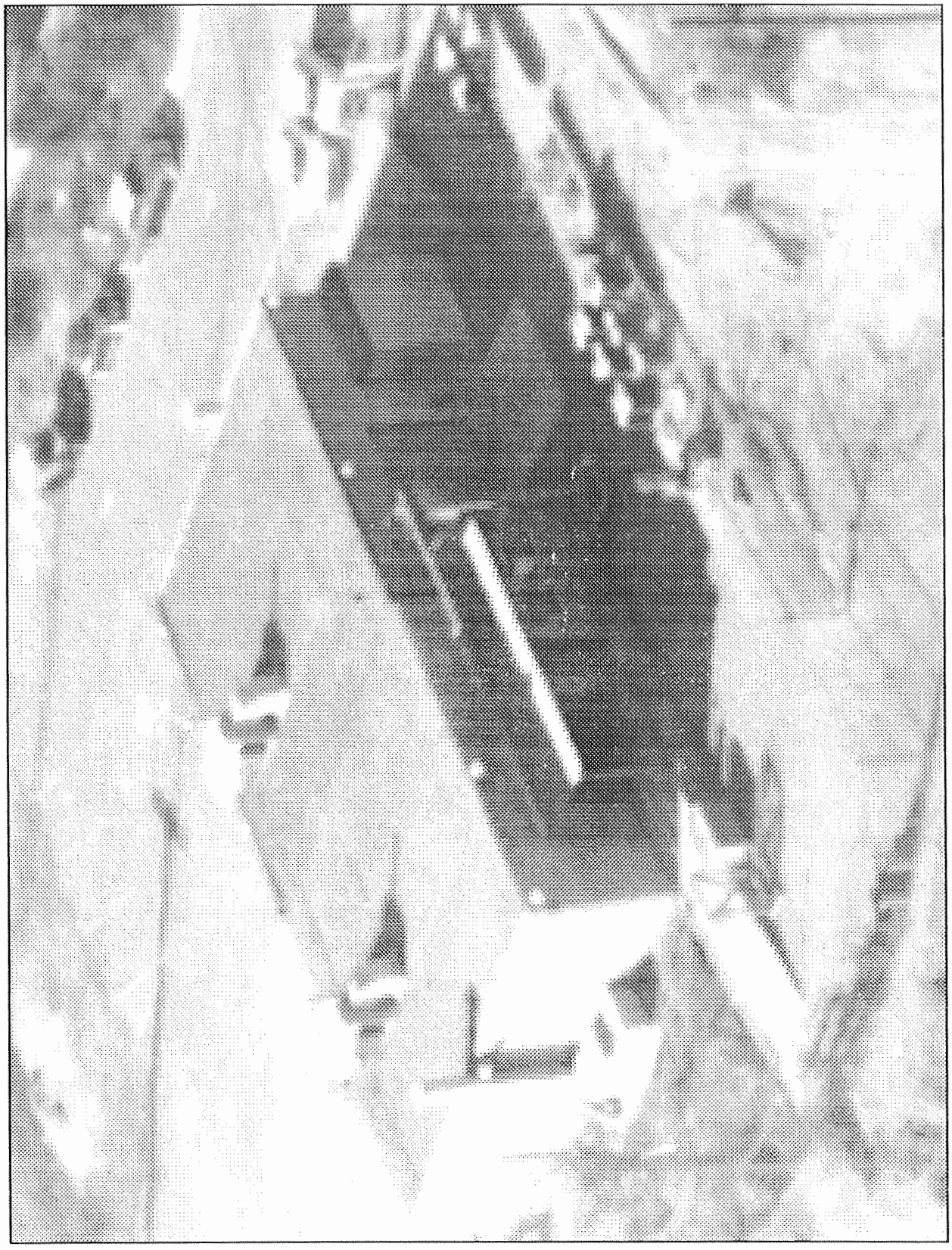


**Figure 5:** Aerial Photograph of Building 064, Viewing Eastside

## 3.3 Operating History

This building was used primarily for storage of packaged items of source material (normal uranium, depleted uranium, thorium) and special nuclear material (enriched uranium, plutonium, U-233) of various forms and configurations. Originally both the north (room 114) and the south (room 110) vaults contained steel racks for storing material. The south side was primarily used for storage of highly enriched uranium and plutonium bearing items; the north side was primarily used for source material and low enriched uranium storage.

Enriched uranium powders and source material powder packages were split into smaller units or combined into larger units in a glove box located in the small work area alcove (room 104) in the southeast corner of room 110. The glove box has since been removed from the building. Plutonium was handled only in packaged form; never in a loose form. No plutonium repackaging was done other than transferring sealed packages between containers. Transfers of solid metallic forms of material generally were handled in the glove box; however, on occasion, larger pieces were transferred and repackaged within the vault area. During shutdown and termination of the SNAP program, excess Zr-U (enriched U) alloy product line material was sectioned into lengths suitable for packaging for shipment in DOE (AEC) containers. This was done near the edge of the south side alcove in the vault. The floor was covered with plastic sheets before the Zr-U was sectioned using a common hack saw.

During the early 1960's, a changed storage configuration was required. The metal racks from the south half of room 110 was removed in order to store material in "birdcages" and drums. This storage included large quantities of special nuclear material recoverable scrap.

During this time, recoverable scrap space was at a premium. As a result, the entire yard area in front of the building (East), the side (North) and the back (West) was filled with 55 gallon drums of low enriched recoverable scrap. This material was shipped to various recovery sites in the mid-to late 1960's and early 1970's.

No plutonium or U-233 packages were ever opened in either vault. Any residual radioactive contamination is enriched uranium, normal uranium, depleted uranium, or thorium and generally could be expected to have come from "dust" from handling bare metallic pieces.

During the mid 1970's to early 1980's, most of the major DOE nuclear development and reactor contracts had ended.

No special nuclear material powders were handled or repackaged after 1980. Most of the material had been sent to other DOE sites for recovery and use. A new roof was installed on the facility in 1980 to correct leaks. Shortly afterward, the walls were repainted and other repairs were made. The racks from the north vault were removed and the area converted to storage of non-nuclear DOE components.

No reports of contamination incidents occurring within the building were recorded in the overall incident file.

## 3.4 Decommissioning and Demolition Efforts

To release the facility for use without radiological restrictions, all contaminated equipment and fixtures had to be removed in preparation for the final radiological survey. In addition, all hazardous materials and wastes in the facility had to be properly disposed. Where practical and cost effective, equipment was decontaminated and either disposed as non-RA waste or surplused. Some equipment required disassembly in order to remove hazardous materials such as oils, grease, and lead. Most of the items, however, could not be readily decontaminated and some equipment had areas that could not be surveyed with the confidence level necessary for release without radiological restrictions. Analysis of the floor tiles indicated that the tiles and mastic glue throughout the facility contained asbestos and would require removal and disposal.

The decommissioning work performed in room 114 consisted of the removal of miscellaneous packaged components and approximately 195 cubic yards of previously packaged containerized soil temporarily stored there. All of the items stored in room 114 were brought to the facility for storage after work with nuclear materials had ceased at B/064 and had been properly packaged to prevent release of contamination. During the removal of the equipment and boxes of soil, frequent area contamination surveys were performed by Radiation Protection and Health Physics Services (RP&HPS) representatives to assure that container integrity and contamination control were maintained. All contaminated equipment, components, and soil that had been stored in room 114 were transported to the RMDF for temporary storage awaiting eventual disposal at an approved DOE burial site.

Most of the items in room 110 had been used for operations at B/064 and were contaminated to varying degrees. When practical, size reduction and packaging were performed in the facility. However, some of the equipment required more aggressive techniques for size reduction and contamination control. These items included: a fume hood that had been

used to package enriched uranium powders and source materials, two large balances, and several steel shipping drum inserts. All of these items were transferred to the RMDF for size reduction and packaging for disposal. The fluorescent light fixtures in this room were found to be contaminated and were taken down, disassembled, and the PCB containing ballasts were removed. The fixtures (less ballasts and bulbs) were packaged and disposed of as radioactive waste. The ballasts were surveyed and found to be radiologically clean and were disposed of as hazardous PCB waste. The fluorescent bulbs were decontaminated and disposed of as conventional waste. The storage racks contained fixed RA contamination and were disassembled, size reduced, and packaged, and transferred to the RMDF for eventual shipment to an approved disposal facility.

To maintain contamination control during the size reduction of the HEPA filter plenums, size reduction was done at the RMDF. The plenums were detached from the buildings and blowers as intact units and transported to the RMDF. Because of the large size of the exhaust plenums, this effort required the fabrication of custom boxes to assure contamination control during transport. Inlet and outlet openings were sealed, the units were disconnected from the building, placed in the boxes and transferred to the RMDF. The plenums were cut into manageable pieces using a plasma torch and packaged for disposal as radioactive waste.

Because the facility had been used for storage for a number of years, special attention was given to identifying hazardous or potentially hazardous materials requiring disposition. Two scales were found to contain oil and one also contained lead. A four-ounce quantity of oil from one of the scales was determined to contain radioactive contamination and was effectively treated during the Molten Salt Oxidation (MSO) Bench Scale Unit tests being performed at the RMDF. The other oil and the lead were certified as "Containing No DOE-Added Radioactivity," in accordance with ER-SP-0001 and were disposed of in accordance with the Rocketdyne Environmental Control Manual. The ballasts removed from the light fixtures in room 110 were hermetically sealed units and after a thorough radiological survey were also certified as "Containing No DOE-Added Radioactivity" and were disposed of in accordance with the Rocketdyne Environmental Control Manual.

Because the tiles throughout the facility had been determined to contain asbestos and were in a deteriorated state their removal was required. A sampling plan was developed and implemented in accordance with ER-SP-0001. Randomly selected tiles were removed and the tiles and subfloor were surveyed for total contamination. The results of this survey sampling concluded that the tiles

and subfloor had no detectable activity (NDA) above background; therefore, all tiles were certified as "Containing No DOE-Added Radioactivity." An asbestos abatement contractor was employed to remove a total of 4,352 $ft^2$ of tile. The tile and abatement-related ACM wastes have been packaged and placed in an approved hazardous waste container and will be disposed at an approved disposal facility. Copies of certifications were forwarded to the DOE.

## 4.0 SURVEY RESULTS

### 4.1 Overview

Upon D&D of radioactive constituents, releasing a facility or area for unrestricted use requires a formal radiation survey to demonstrate that the applicable regulatory limits for such a release are met. The survey is performed under an established plan, and a statistical interpretation of the resulting data is made to determine if the regulatory release criteria have been met. This document provides information that demonstrates that Building 064 meets DOE, NRC, and State of California criteria for release of the facility for unrestricted use.

### 4.2 Scope of the Survey

For the final radiological survey of Building 064, the interior rooms and office were separated into sample lots. These sample lots are graphically shown in Figure 6. Sample lots were treated separately for the purposes of statistical data analyses. Distinguishable properties for selecting the sample lots were areas or rooms which contained contaminated components that were recently decontaminated. The chosen sample lots or areas are shown in Table 1 with the corresponding type of survey performed. (The Fenced-In Yard has been surveyed and reported [Ref. 12]. The Side Yard, to the east, has also been surveyed and reported [Ref. 13]).

Table 1. Sample Lots Surveyed

| Sample Lot No. | Room or Area | Type of Survey Performed[1,3] | | | | |
|---|---|---|---|---|---|---|
| | | Total | | Removable | | Ambient Gamma[2] |
| | | Alpha | Beta | Alpha | Beta | |
| 1 | Rooms 110 & 104 | x | x | x | x | x |
| 2 | Room 114 | x | x | x | x | x |
| 3 | Rooms 116, 120, & rest rooms | x | x | x | x | x |

(1) The type of survey performed for each sample lot was dependent on the type of surface being measured (e.g., concrete floor, walls, asphalt, gravel roof, tile floors, etc.)

(2) Ambient gamma readings are performed only on the horizontal walking surfaces at 1 meter.

(3) 20% of all structural surfaces were surveyed in each sample lot for total alpha, total beta, removable alpha, and removable beta.

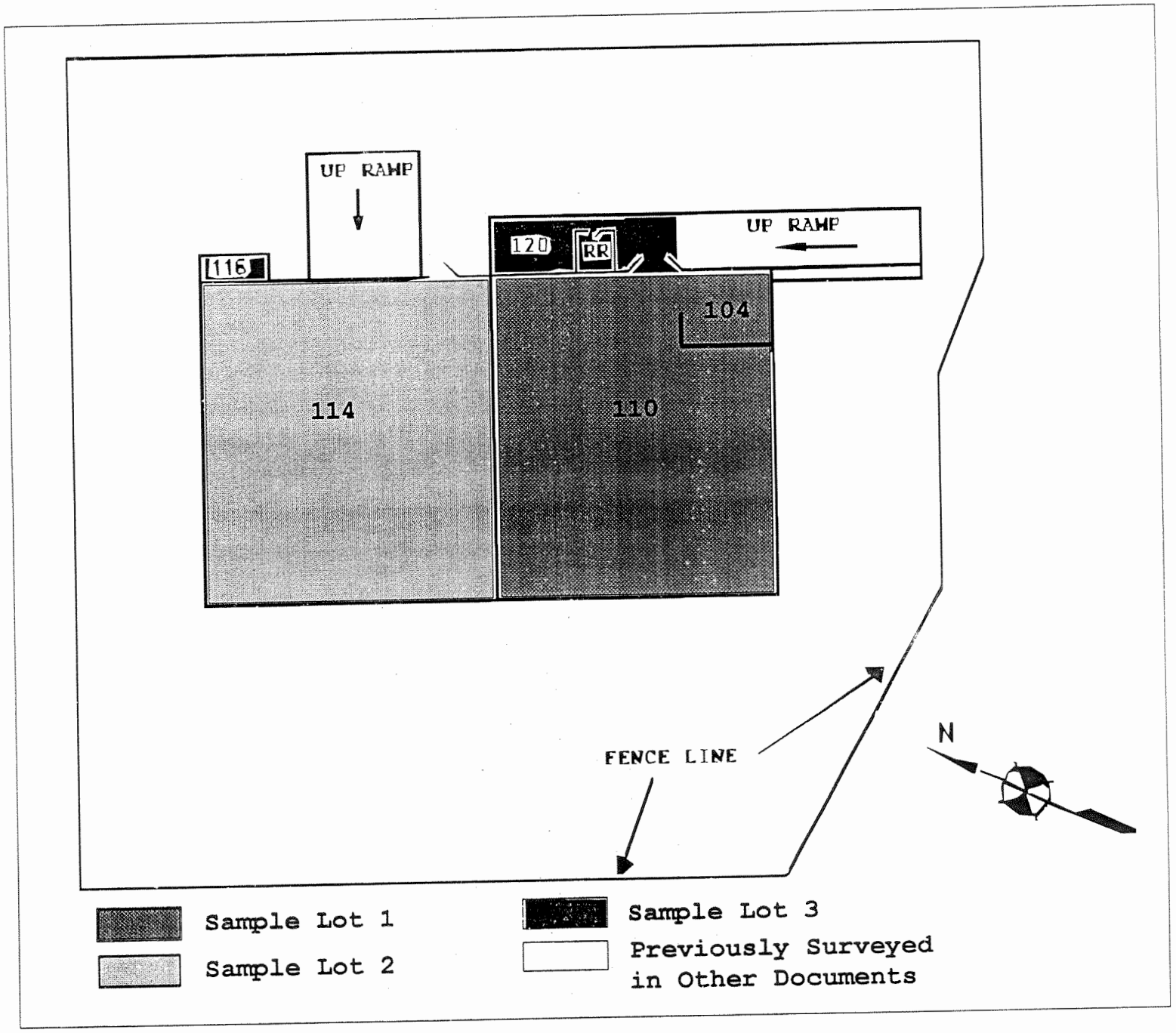



Figure 6: Building 064 Interior Sample Lot Identification

## 4.3 Survey Methods

The survey methods used for Building 064 interior are described in detail in Ref. 15. Maps, diagrams, and raw data for the final survey are also found in Ref. 15. Described below is a summary of those methods.

1. Sampling Method

The method and type of survey measurements depended on the type of surfaces involved. For each sample lot, a 3-meter by 3-meter grid was superimposed on the floors, walls, ceilings, or ground of the entire sample lot area. A 100% direct frisk of each 3-m by 3-m grid was then performed using a G-M pancake probe. A 1-meter by 1-meter area was then selected from each 3-m by 3-m area based on previous D&D knowledge, randomly, or indications of elevated readings from the 100% direct frisk.

Each selected 1-m by 1-m grid location was then surveyed for contamination based on the type of surface involved. This method satisfies the State of California guidelines in DECON-1 (Ref. 8) for a minimum of 10% of an area shall be surveyed, and is shown graphically in Figure 7. Walls, floors, and ceilings were surveyed for total alpha and beta activity, removable alpha and beta activity and maximum alpha and beta activity, if a "hot spot" was detected when the total alpha and beta measurements were made. Additionally, the floors were surveyed for ambient gamma exposure rate in $\mu$R/hr at 1 meter above the floor. Twenty percent of all structural surfaces (pipes, conduit, light fixtures, etc.) were surveyed for total and removable alpha and beta activity. Concrete slabs and pads were surveyed in the same manner as the interior floors. (Asphalt paving around the building was surveyed in another project and was reported in Ref. 12).

2. Instrument Calibrations and Checks

Measurements of the total and maximum alpha surface activities were made with alpha scintillation detectors, sensitive only to alpha particles with energies exceeding about 1.5 MeV. The detectors were calibrated with a Th-230 alpha source standard, traceable to NIST. A 5-min integrated count time was used.

Measurements of the total and maximum beta surface activities were made with a thin-window pancake Geiger-Mueller tube. The detectors were calibrated with a Tc-99 beta source standard, traceable to NIST. A 5-min integrated count time was used.

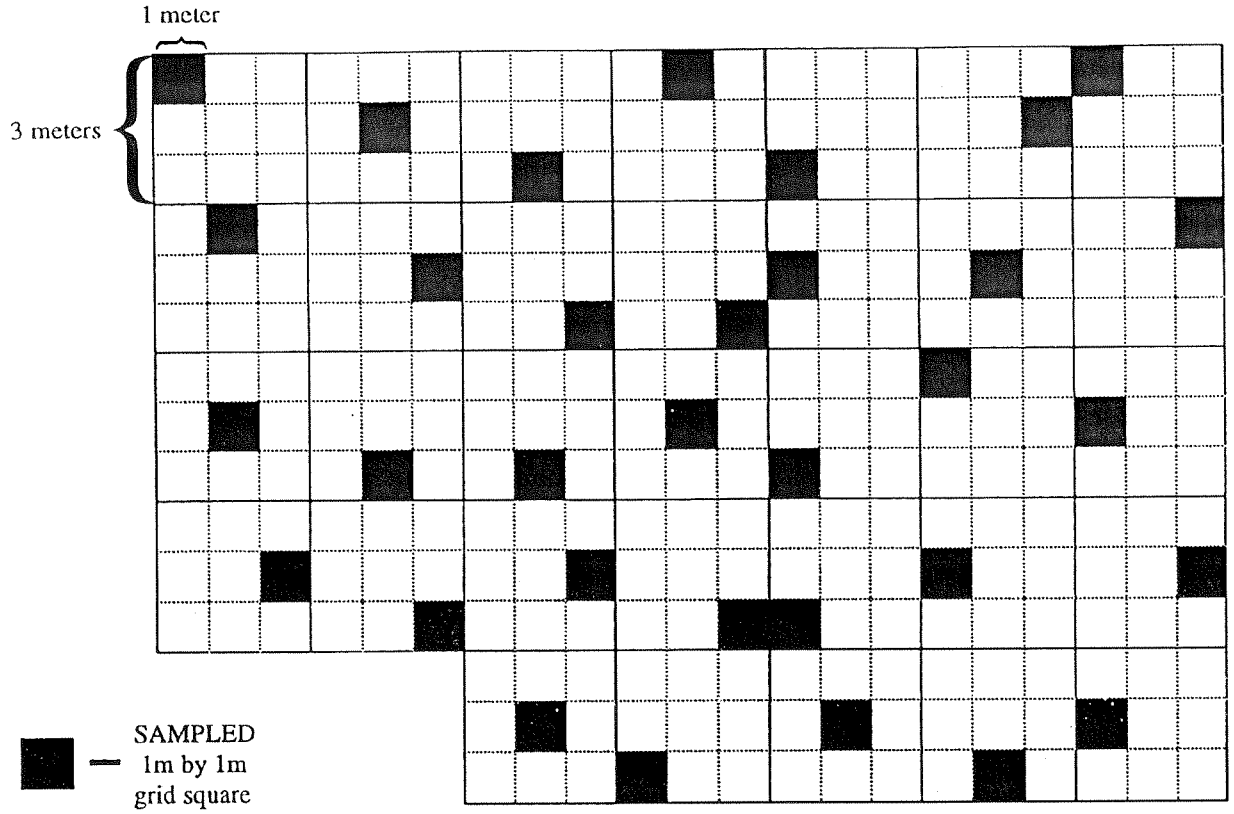



**Figure 7:** Typical Room or Area 3-Meter by 3-Meter Grid Markings

Measurements of removable surface activity (alpha and beta) were made by wiping approximately 100 $cm^2$ of surface area using standard smear disks. The activity on the disks were measured using a low-background gas-flow proportional counter. The counters were calibrated using Th-230 and Tc-99 standard sources, traceable to NIST. A 1-min integrated count time was used.

The ambient exposure rates at 1 m from surfaces were measured using a 1-in. NaI scintillation detector. These instruments were calibrated against a Reuter-Stokes high-pressure ionization chamber with natural background, and daily checks were made using a Ra-226 source, traceable to NIST, placed 1-m from the detector. A 1-min integrated count time was used.

All portable survey instruments were serviced and calibrated with NIST traceable standards on a quarterly basis. In addition, daily (when used) checks and calibrations were performed on all instrumentation to determine acceptable performance and establish a background value for the instrument on that day. Reference 5 provides further methods and procedures for environmental surveys.

Soil analyses were performed using a high purity Ge detector gamma-spectroscopy system calibrated with a NIST traceable standard. Reference 6 contains additional information concerning the entire method by which soil analyses are validated.

## 4.4 Technical Approach

1. Criteria and Their Implementation

Acceptable contamination limits and gamma exposure rates for releasing a facility for unrestricted use are prescribed in DOE guidelines (Ref. 7). The lowest (most conservative) limits were chosen from these guidelines and incorporated into the final survey criteria for Building 064. Two distinguishable criteria were chosen from the guidelines.

a) The surface contamination limits for alpha and beta were excerpted from DOE Order 5400.5 (Ref. 7 and State of California guidelines (Ref. 8);

b) The ambient gamma exposure rate limits at 1 m were excerpted from NRC Dismantling Order for the L-85 reactor decommissioning (Ref. 9) for conservatism and consistency with past decommissioning efforts. Although DOE Order 5400.5 (Ref. 7) recommends a value of 20 μR/hr above background, the value of 5 μR/hr from the NRC Dismantling Order (Ref. 9) was used for consistency, conservatism, and in keeping with ALARA principles.

Determination of an appropriate value for gamma exposure rate background has been a continuing problem, due to the variability of natural radiation on the site and differences between indoors and out. Reference values that have been used are 8.10 μR/hr inside a steel-walled and -roofed building with plasterboard office walls, and from 14.0 to 16.6 μR/hr in outside areas. This building does not correspond to either case, being an empty concrete structure.

To resolve this difficulty, a building with similar construction was sought for the purpose of determining a comparable radiation background. Building S445, near the entrance to SSFL and never used for nuclear or radioactive materials, was selected. This building was a concrete slab floor, cast-in-place concrete walls up to about 3 ft above grade with concrete blocks above, and a poured concrete roof. The ambient gamma exposure rate was measured, in the same manner as for a final survey, at 40 locations within Building 445, on an evenly spaced 1-m grid. A cumulative probability plot of these measurements is shown in Figure 8. This shows that the majority of values, with the exception of one anomalously low measurement, fit a Gaussian distribution very well. (The low value was measured adjacent to the steel double doors of the building, one open, the other closed.) The average of these values is 15.76 μR/hr, and the acceptance limit for gamma exposure rate in buildings of this sort is 20.76 μR/hr.

Table 2 provides a summary of the contamination limit criteria. Table 3 demonstrates that the detection limits (SSAs) for the instruments and method are well below the established limit criteria (from regulatory requirements) shown in Table 2.

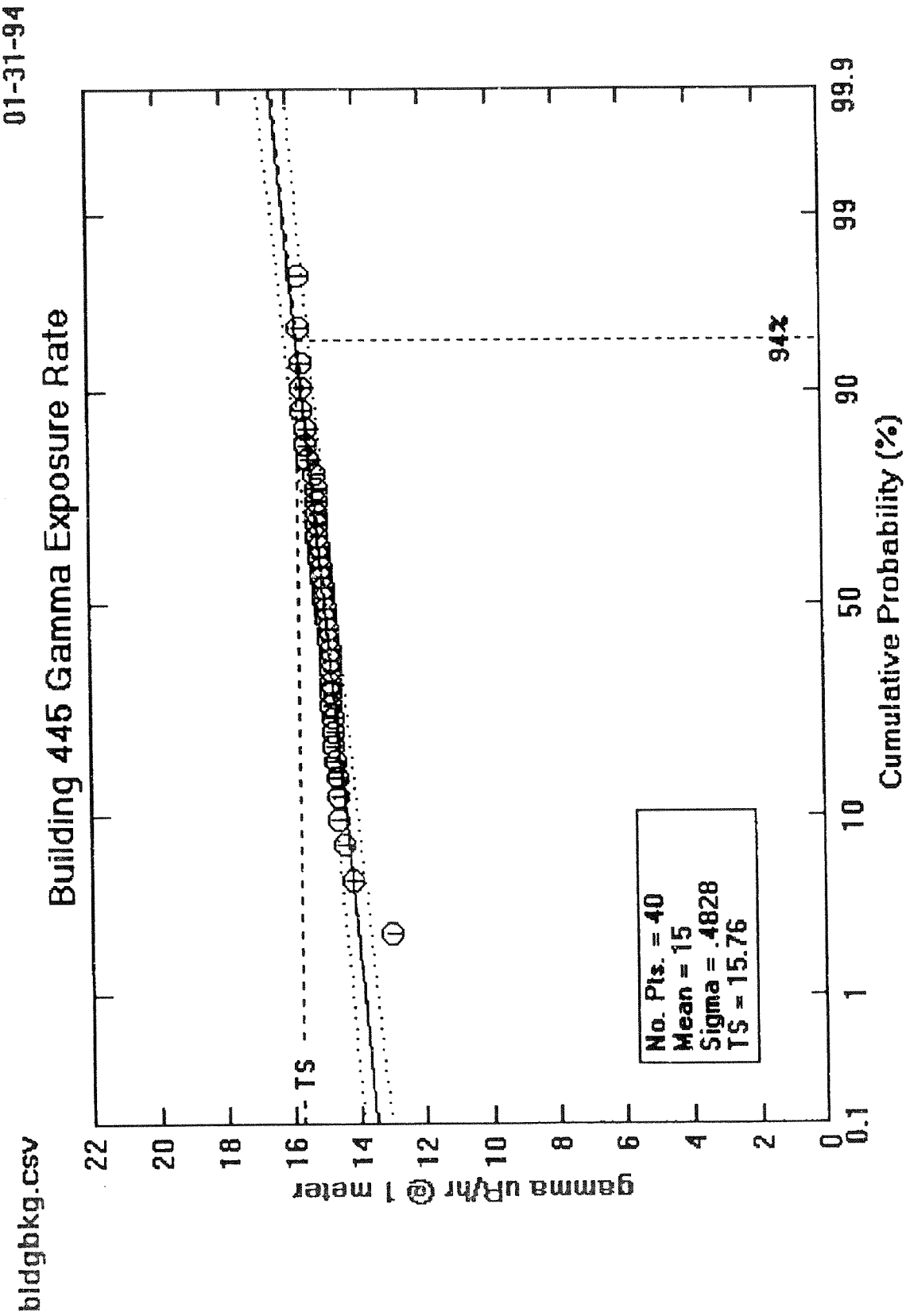



**Figure 8:** Gamma exposure rate measured in Bldg. 445. Concrete building (Bldg. 445) has construction similiar to that of T064 and no radiological history. Confidence bounds (95%) on least-squares fit of data are close to the derived Gaussian line. One value is anomalously low due to measurement near doorway. See Appendix B for data measurements.

## Table 2. Building 064 Contamination Limit Criteria

| Parameter | Limit | | | | Reference |
|---|---|---|---|---|---|
| Allowable Total | Radionuclides[2] | Average[3,4] | Maximum[4,5] | Removable[4,6] | |
| Residual surface contamination for alpha and beta (dpm/100-cm$^2$)[1] | U-natural, U-235, U-238, & associated decay product, alpha emitters | ≤5,000 | ≤15,000 | ≤1,000 | 8,9 |
| Gamma exposure rate | ≤5 μR/hr above background at 1 m interior | | | | 10 |

[1] As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute measured by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

[2] Where surface contamination by both alpha- and beta-gamma-emitting radionuclides exists, the limits established for alpha- and beta-gamma-emitting radionuclides should apply independently.

[3] Measurements of average contamination should not be averaged over an area of more than 1 m$^2$. For objects of less surface area, the average should be derived for each such object.

[4] The average and maximum dose rates associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/h and 1.0 mrad/h, respectively, at 1 cm.

[5] The maximum contamination level applies to an area of not more than 100 cm$^2$.

[6] The amount of removable material per 100 cm$^2$ of surface area should be determined by wiping an area of that size with dry filter or soft absorbent paper, applying moderate pressure, and measuring the amount of radioactive material on the wiping with an appropriate instrument of known efficiency. When removable contamination on objects of surface area less than 100 cm$^2$ is determined, the activity per unit area should be based on the actual area and the entire surface should be wiped. It is not necessary to use wiping techniques to measure removable contamination levels if direct scan surveys indicate that the total residual surface contamination levels are within the limits for removable contamination.

## Table 3. Observed Detection Limits versus Established Limit Criteria

| | Total Alpha (dpm/100 cm$^2$) | Removable Alpa (dpm/100 cm$^2$) | Total Beta (dpm/100 cm$^2$) | Removable Beta (dpm/100 cm$^2$) | Ambient Gamma Exposure Rate (μR/hr) |
|---|---|---|---|---|---|
| Limit criteria | 5000 | 1000 | 5000 | 1000 | <5.0 above background |
| Average obs. detection limit (SSA*) | 10 | 4 | 316 | 12 | 0.60 |
| Obs. detection limit range | 3-36 | 2-19 | 252-373 | 6-23 | 0.49-0.66 |
| Ratio of ave-obs. detection limit to established limit criteria | 0.20% | 0.39% | 6.32% | 1.17% | 12.02% |

*SSA = 1.645 x SQRT (2 x counts) x area factor x efficiency factor/minutes = dpm/100 cm$^2$

2. Data Analyses and Statistical Criteria

A statistical procedure was used to validate the applicability of the raw survey data for selected sample lots or areas. The statistical method known as "sampling inspection by variables" (Ref. 11) was used. This method has been widely applied in industry and the military and is essential where the lot size is impractically large. In the case of determining residual contamination in Building 064, it would be unacceptably time consuming and not cost effective to measure and document 100% of the building. However, by applying sampling inspection by variables methods, acceptable confidence in the conclusion made about the level of contamination can be achieved.

In sampling inspection by variables, the number of data points on which measurements are obtained is first chosen to be large so that the parameters of the distribution are likely to have a normal distribution (i.e., Gaussian). The mean of the distribution, $\bar{x}$, and its standard deviation, s, are then related to a "test statistic," TS, as follows:

$$TS = \bar{x} + ks$$

where $\bar{x}$ = average (arithmetic mean of measured values)

s = observed sample standard deviation

k = tolerance factor calculated from the number of samples to achieve the desired sensitivity for the test

UL = acceptance limit

TS and $\bar{x}$ are then compared with an acceptance limit, UL (such as those shown in Table 2), to determine acceptance or other plans of action, including rejection of the area as contaminated and requiring further remediation.

The sample mean, standard deviation, and acceptance limit are easily calculable quantities; the value of k, the tolerance factor, bears further discussion. Of the various criteria for selecting plans for acceptance sampling by variables, the most appropriate is the method of Lot Tolerance Percent Defective (LTPD), also referred to as the Rejectable Quality Level (RQL). The LTPD is defined as the poorest quality that should be accepted in an individual lot. Associated with the LTPD is a parameter referred to as consumer's risk ($\beta$), the

risk of accepting a lot of quality equal to the LTPD. USNRC Regulatory Guide 6.6 ("Acceptance Sampling Procedures for Exempted and Generally Licensed Items Containing By-Product Material") states that the value for the consumer's risk should be 0.10. Conventionally, the value assigned to the LTPD has been 10%.

The State of California has stated that the consumer's risk of acceptance ($\beta$) at 10% defective (LTPD) must be 0.1. For those choices of $\beta$ and LTPD, $K_\beta = K_2 = 1.282$. The number of samples is n. Values of k for each sample size are calculated in accordance with the following equations:

$$K = \frac{K_2 + \sqrt{K_2^2 - ab}}{a}; \quad a = 1 - \frac{K_\beta^2}{2\,(n-1)}; \quad b = K_2^2 - \frac{K_\beta^2}{n} \quad (Eq.1)$$

where k = tolerance factor

$K_2$ = the normal deviate exceeded with probability of $\beta$, 0.10 (from tables, K = 1.282)[1]

$K_\beta$ = the normal deviate exceeded with probability equal to the LTPD, 10% (from tables, K = 1.282)[1]

n = number of samples

The statistical criteria for acceptance of the Building 064 interior final survey are presented below.

a) Acceptance: If the test statistic ($\bar{x}$ + ks) is less than or equal to the limit (UL), accept the region as clean. (If any single measured value exceeds 80% of the limit, decontaminate that location to as near background as is possible, but do not change the value in the analysis.) See Figure 9 for an example of the sample lot acceptance by the test.

---

[1]The values chosen for these coefficients for the survey correspond to assuring, with 90% confidence, that 90% of the area has residual contamination below 100% of the applicable limit (a 90/90/100 test). The choice of values for the two coefficients is consistent with industrial sampling practices and State of California guidelines (Ref. 8).

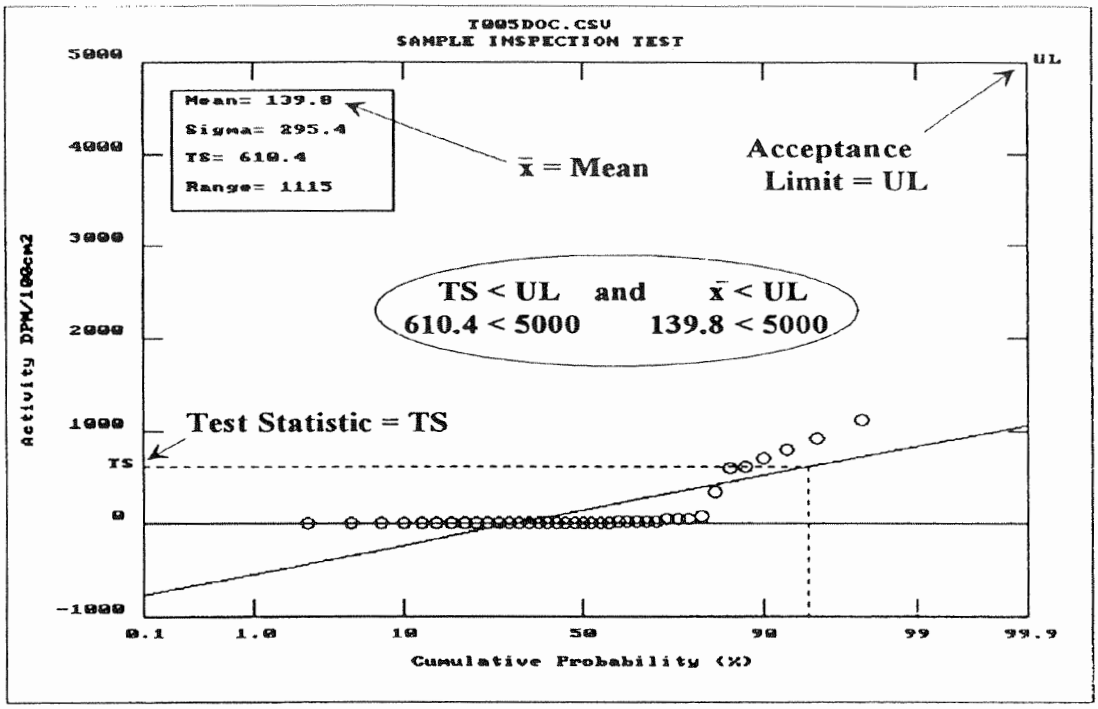



Figure 9. Example of Sample Lot Acceptance, where TS(=$\bar{x}$+ks) ≤ UL and $\bar{x}$ ≤ UL

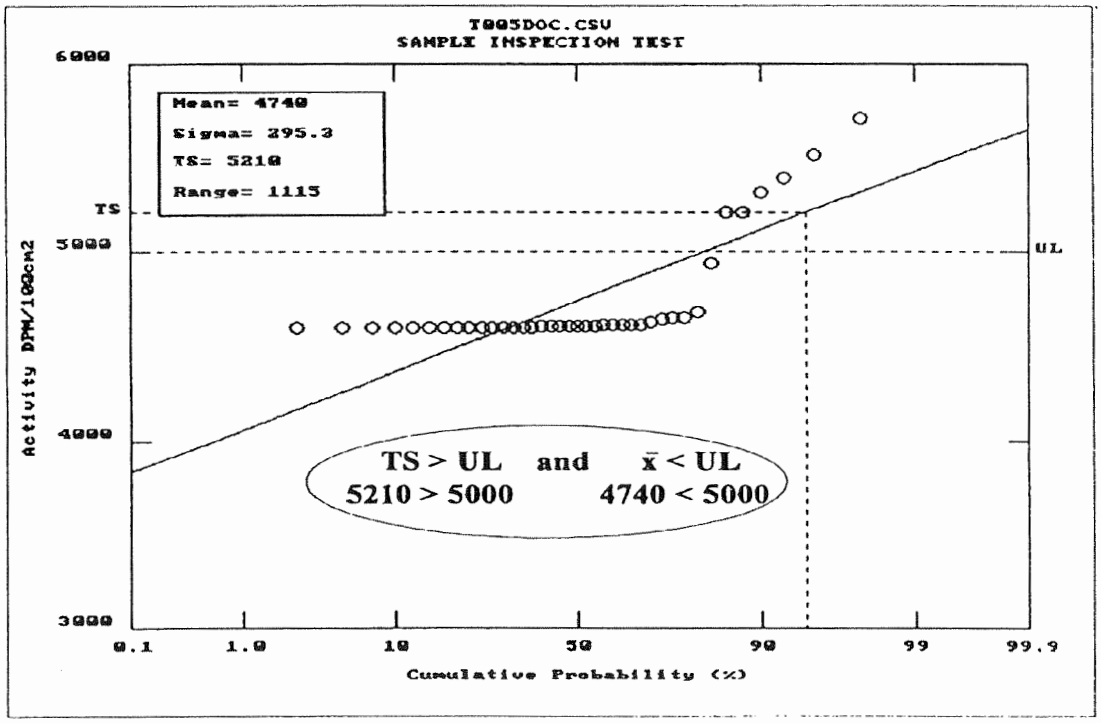



Figure 10. Example of Sample Lot Requiring Additional Measurements, where TS(=$\bar{x}$+ks) > UL and $\bar{x}$ < UL

b) Collect additional measurements: If the test statistic ($\bar{x}$ + ks) is greater that the limit (UL), but $\bar{x}$ itself is less than UL, independently resample and combine all measured values to determine if $\bar{x}$ + ks $\leq$ = UL for the combined set; if so, accept the region as clean. If not, the region is contaminated and must be remediated. See Figure 10 for an example of additional measurements that must be taken in the sample lot to accept or reject it.

c) Rejection: If the test statistic ($\bar{x}$ + ks) is greater than the limit (UL) and $\bar{x}$ > = UL, the region is contaminated and must be remediated. See Figure 11 for an example of sample lot rejection by the test.

Thus, based on sampling inspection, we are willing to accept the hypothesis that the probability of accepting a lot as not being contaminated which is, in fact, 10% defective is 0.10. Or in other words, the Building 064 final survey corresponds to assuring with 90% confidence that 90% of the area has residual contamination below 100% (a 90/90/100 test) of the applicable limits described in Table 2.

## 4.5 Sample Lot Analyses and Results

1. Sample Lot 1

a) Description

Sample Lot 1 consists of room 110 and the southern section of the building, and room 114, where the fume hood had been installed.

b) Analyses of Sample Lot 1 Data

Raw data measurements for Sample Lot 1 were taken, subtracted for daily instrument background (except for ambient gamma exposure rates) and plotted on a cumulative probability graph as explained previously. For statistical comparisons (using the "sampling inspection by variables" method), similar areas within Sample Lot 1 were combined together and then analyzed for the specific type of radiation measurement made on the surface. Individual raw measurement data and instrument backgrounds are provided in Appendix A.

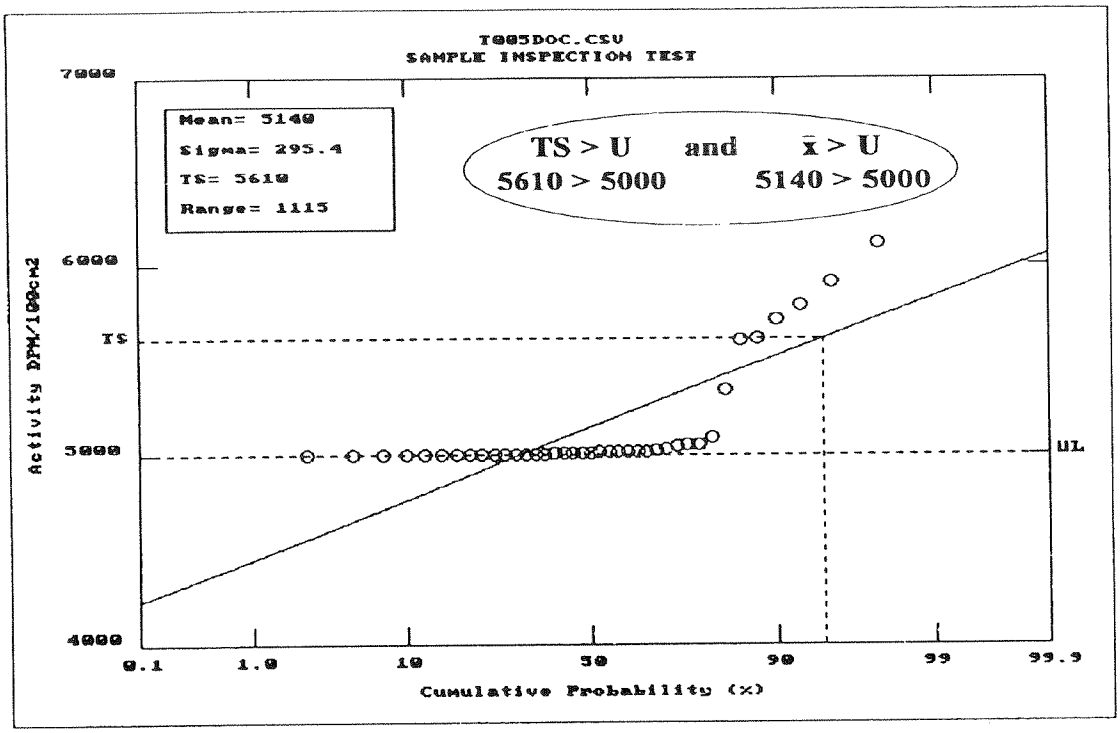



Figure 11. Example of Sample Lot Rejection, where TS(=$\bar{x}$+ks) > UL and $\bar{x}$ > UL

Table 4. Sample Lot 1 Results

| | Calculated Test Statistic (TS = $\bar{x}$ + ks) | | | | |
|---|---|---|---|---|---|
| | Total | | Removable | | Gamma Exposure Rate ($\mu$R/hr @ 1 m) |
| | Alpha (dpm/100 $cm^2$) | Beta (dpm/100 $cm^2$) | Alpha (dpm/100 $cm^2$) | Beta (dpm/100 $cm^2$) | |
| Acceptance Limit (UL) | 5000 | 5000 | 1000 | 1000 | 20.76** |
| Floors only | | | | | 16.25 (16)* |
| Entire area - floors, walls, ceiling, & structure | 74.77 (12)* | 863.5 (14)* | 6.29 (13)* | 12.98 (15)* | |

* Numbers in parenthesis refer to figure numbers.

** The acceptance limit for ambient gamma exposure rate in $\mu$R/hr was determined by calculating the average ambient indoor background (15.76 $\mu$R/hr) from 40 locations inside a known uncontaminated building (Bldg. S445) and adding the acceptance criteria from Table 2 (<5 $\mu$R/hr above background) to achieve a final indoor ambient gamma exposure rate limit of 20.76 $\mu$R/hr. All values, excluding the ambient gamma exposure rate, in this table are subtracted for daily instrument background.

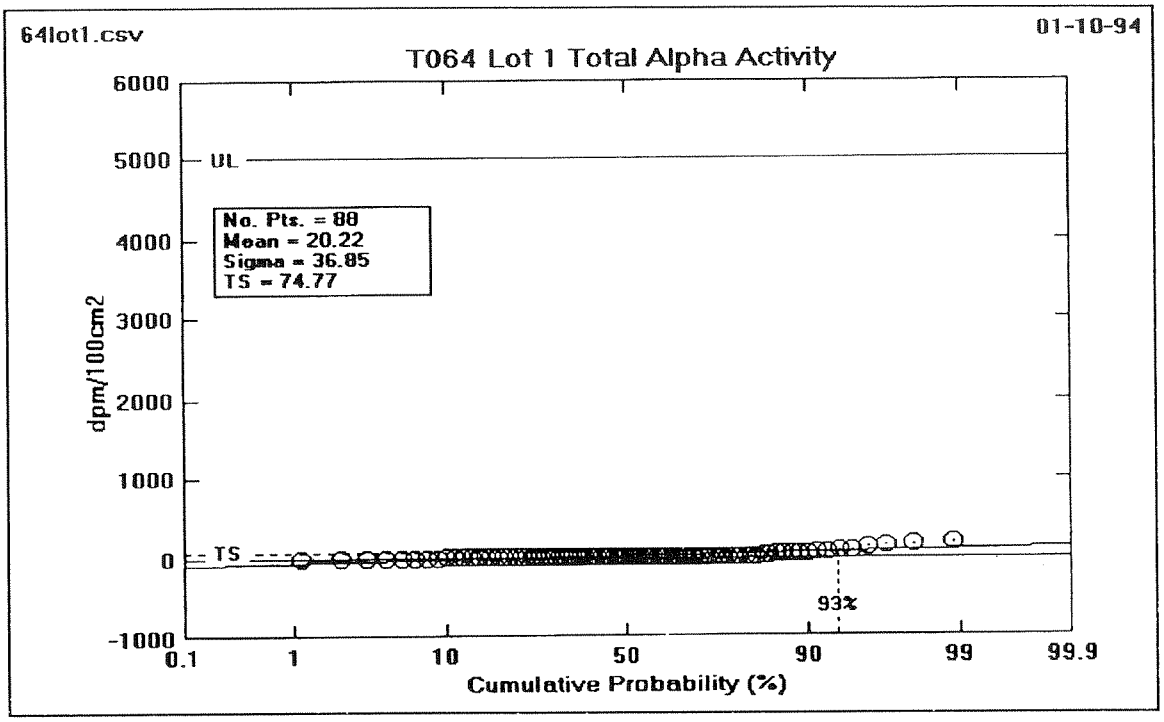
Sample lot results are summarized in Table 4 for comparing the test statistic (TS = $\bar{x}$ + ks) with applicable, established contamination criteria or acceptance limit (UL) from Table 2. The corresponding figures for the graphs of each calculated cumulative probability plot are also provided. Individual sample results used as graph data for Sample Lot 1 are provided in Appendix B.

Initial review of the gamma exposure rate data, by use of the cumulative probability plot, showed an apparent discrepant value of 17.54 μR/hr at floor grid location 5,12. On investigation, it was found that a wall-mounted smoke alarm unit was approximately 1 meter away from the gamma detector during the measurement.

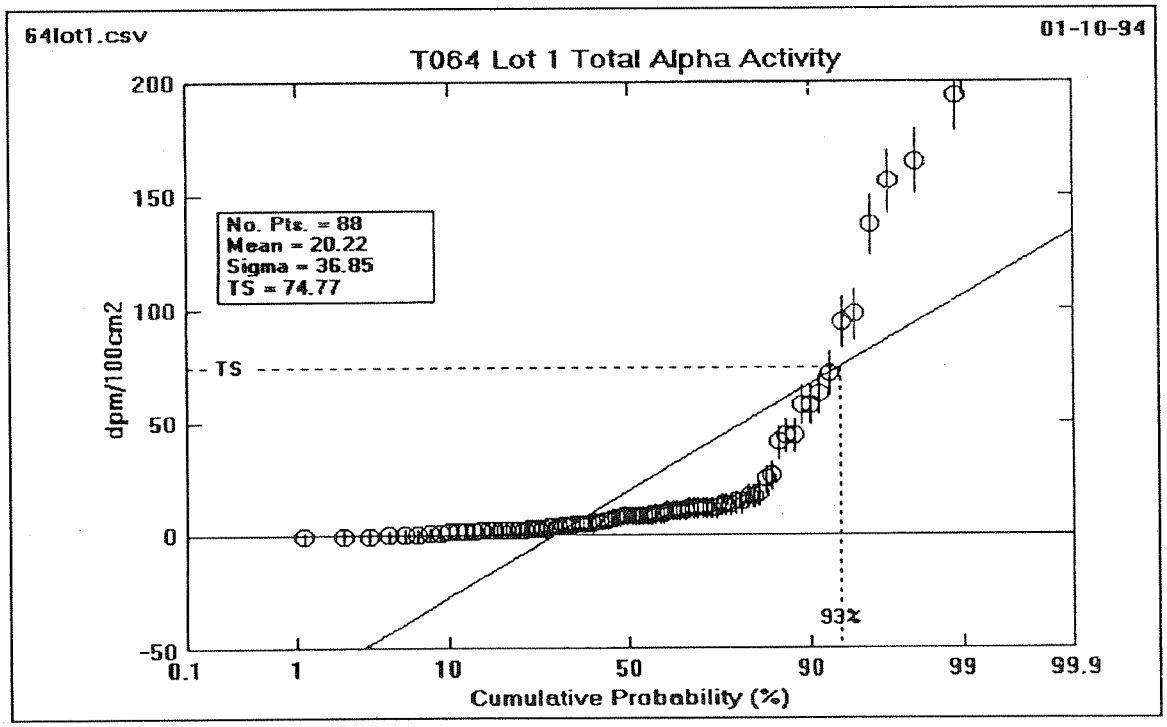
The radioactive source contained in this unit produces an estimated exposure rate of 2.79 μR/hr at the detector location. In the statistical interpretation of the Lot 1 data, this measurement has been reduced from 17.54 to 14.75 μR/hr to correct for this effect. The uncorrected value is listed in the appendix of survey results. (A similar smoke alarm unit is mounted on the wall of room 114 [Lot 2] but no adjacent measurements were made and so no corrections were required. An additional 6 units were mounted on each of the ceilings of rooms 110 and 114 and one unit in room 116, but increase the ambient exposure rate by only about 0.5 μR/hr.)

c) Interpretation of Results for Sample Lot 1

Figures 12 through 16 and Table 4 demonstrate that for each applicable acceptance limit (UL) from Table 2, the corresponding test statistic (TS) value is less than the UL or TS <UL. Therefore, the nine figures for Sample Lot 1 pass the "sampling inspection by variables" test and are "Accepted" as radiologically clean. Or in other words, the Building 064 Sample Lot 1 survey corresponds to assuring with a 90% confidence that 90% of Sample Lot 1 has residual contamination below 100% (a 90/90/100 test) of the applicable NRC, DOE, and State of California limits described in Table 2.

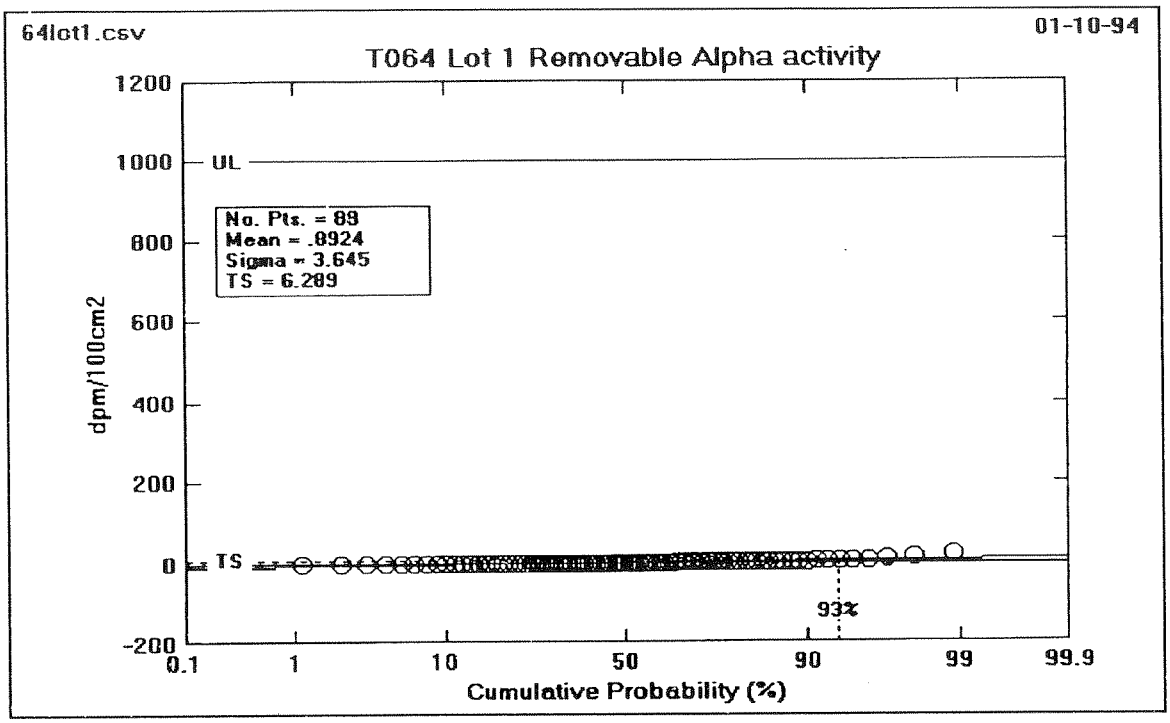



12a.) Scale including Acceptance Limit (UL)

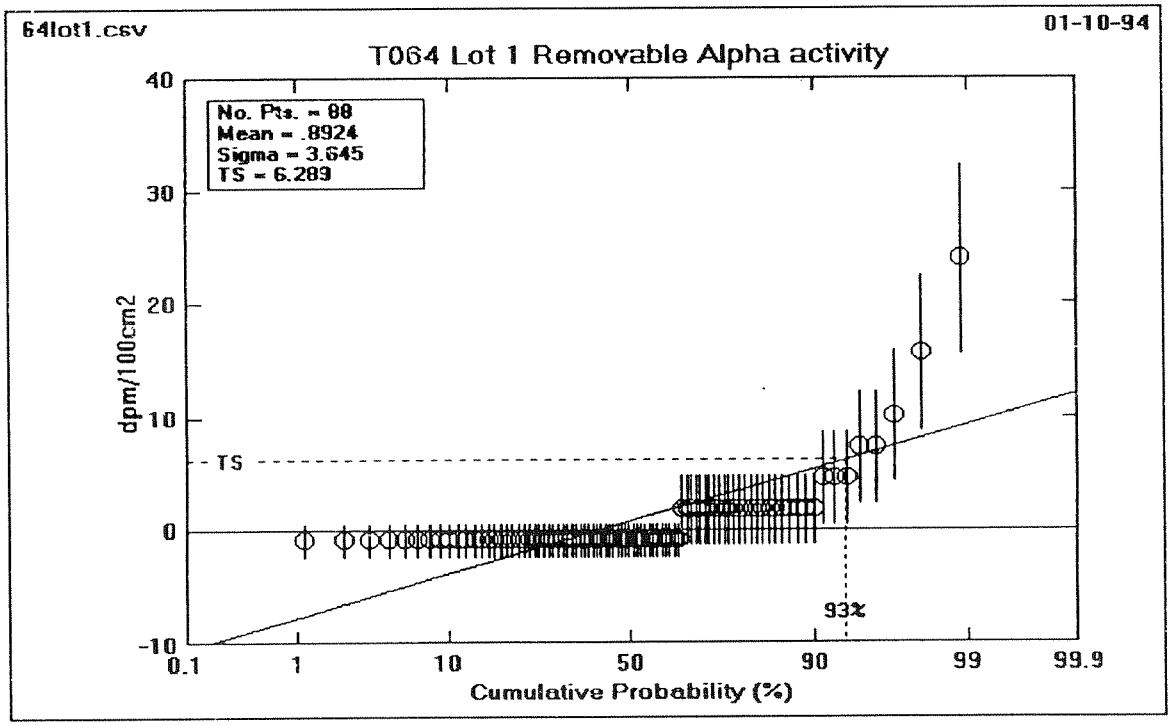



12b.) Expanded Scale

**Figure 12:** T064 - LOT 1 Total Alpha Activity

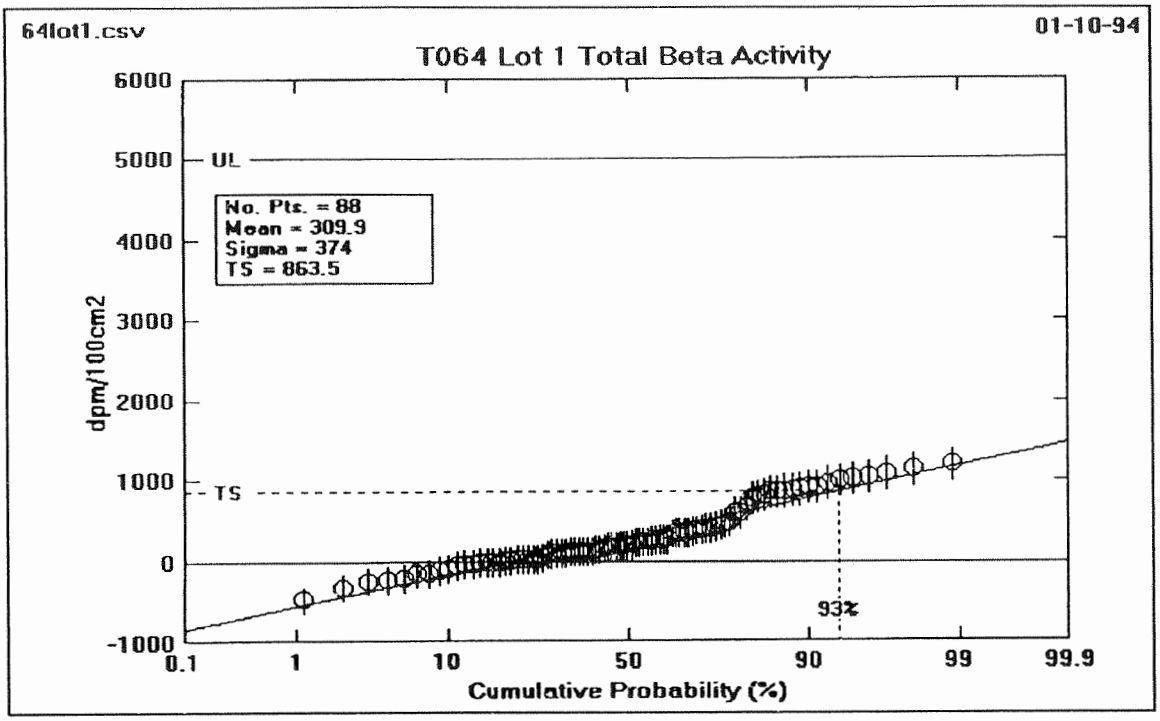



13a.) Scale including Acceptance Limit (UL)

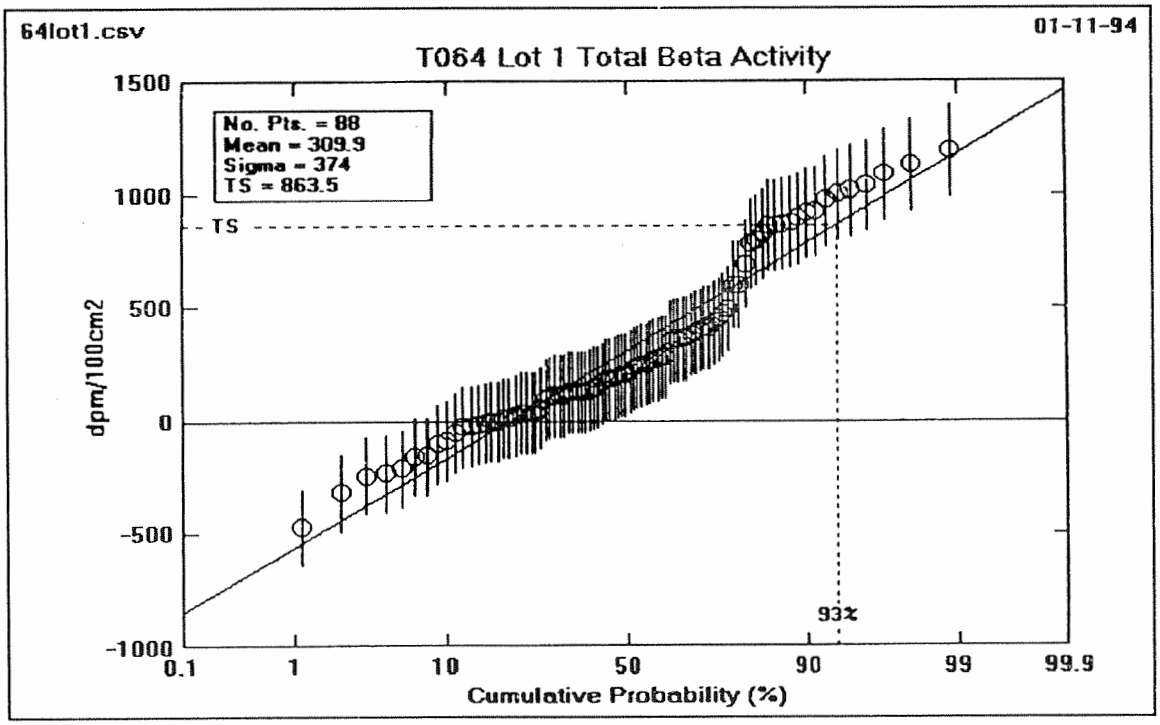



13b.) Expanded Scale

**Figure 13:** T064 - LOT 1 Removable Alpha Activity

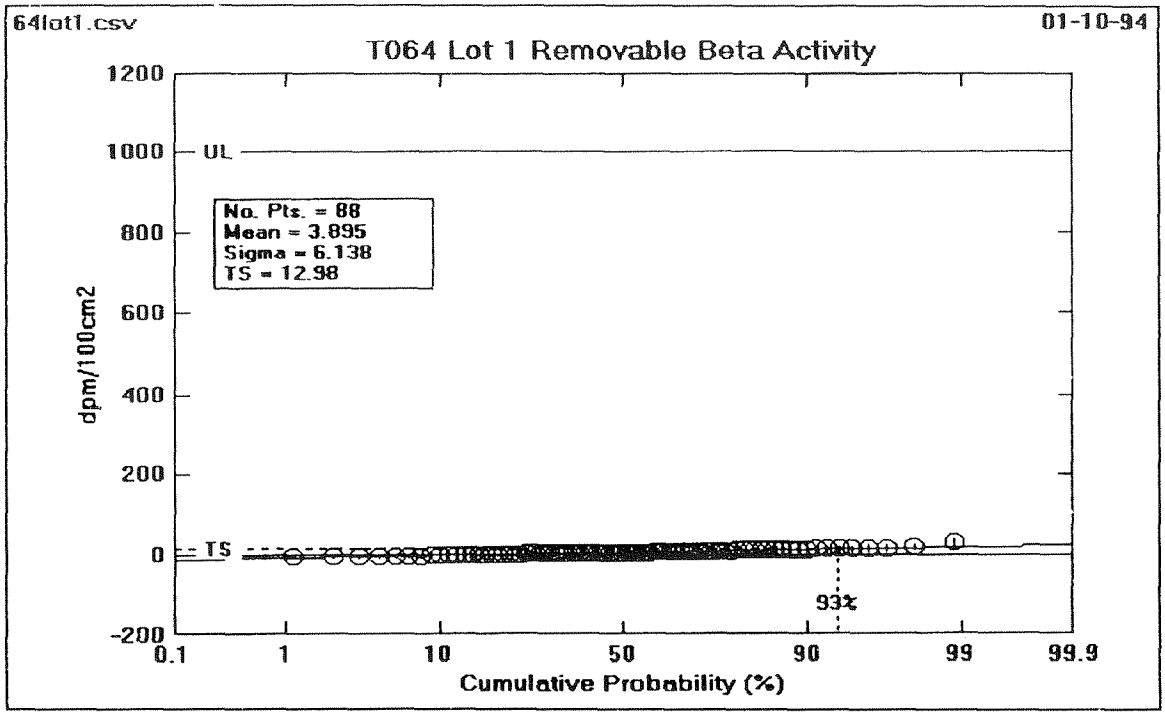



14a.) Scale including Acceptance Limit (UL)

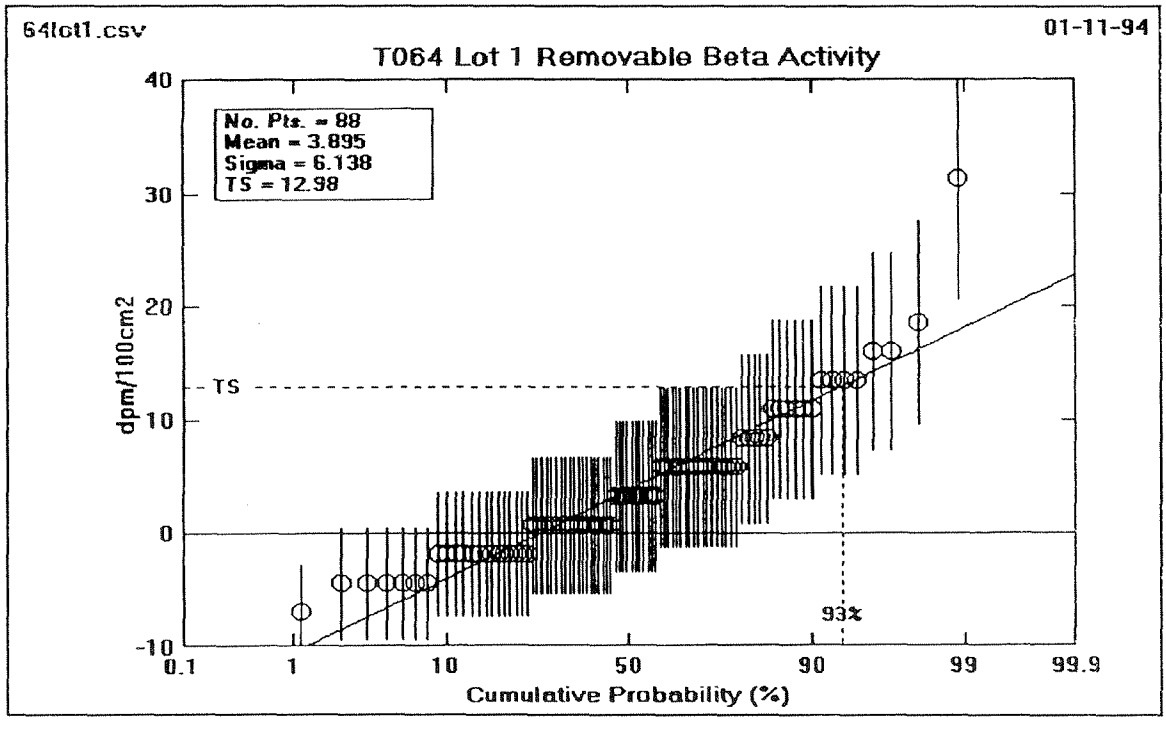



14b.) Expanded Scale

Figure 14: T064 - LOT 1 Total Beta Activity

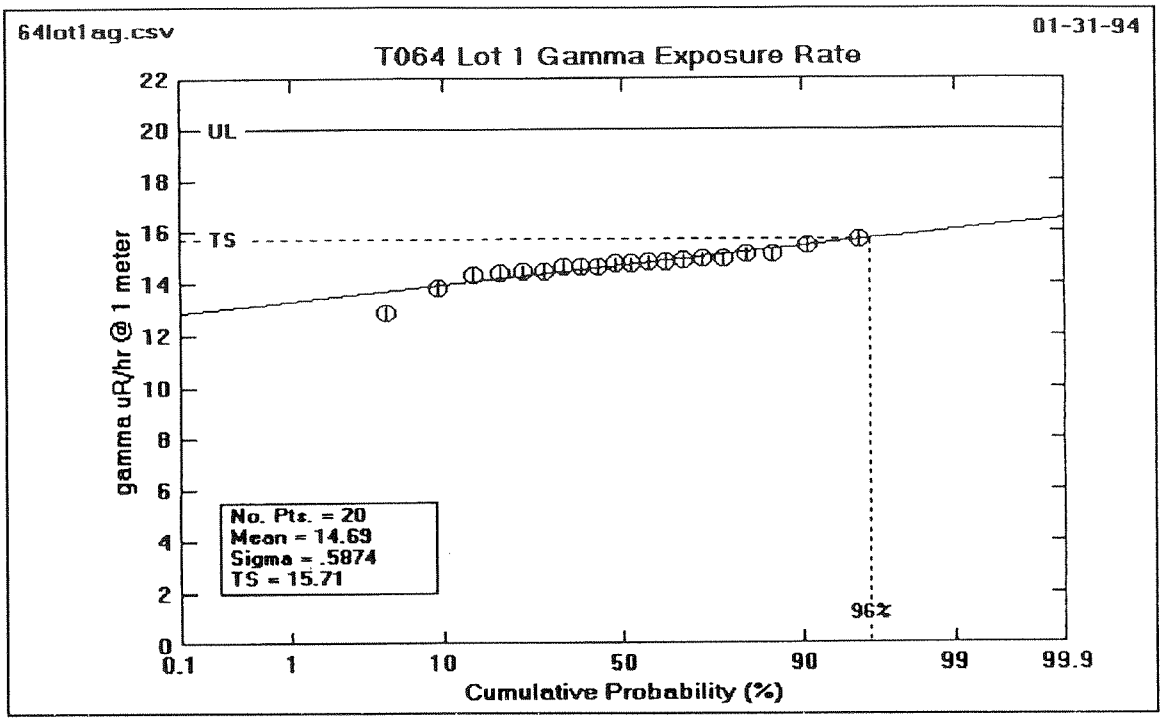



15a.) Scale including Acceptance Limit (UL)




15b.) Expanded Scale

**Figure 15:** T064 - LOT 1 Removable Beta Activity




16) Scale including Acceptance Limit (UL)

**Figure 16:** T064 - LOT 1 Floors Ambient Gamma Exposure Rate

2. Sample Lot 2

a) Description

Sample Lot 2 consists of room 114, the northern section of the building.

b) Analyses of Sample Lot 2 Data

Raw data measurements for Sample Lot 2 were taken, subtracted for daily instrument background (except for ambient gamma exposure rates) and plotted on a cumulative probability graph as explained previously. For statistical comparisons (using the "sampling inspection by variables" method), similar areas within Sample Lot 2 were combined together and then analyzed for the specific type of radiation measurement made on the surface. Individual raw measurement data and instrument backgrounds are provided in Appendix A. (The "total beta" measurements for two wall grid locations in room 110 were lost, and were replaced by measurements made in January 1994 to provide a complete set of data.)

Sample lot results are tabulated in Table 5 for comparing the test statistic ($TS = \bar{x} + ks$) with applicable, established contamination criteria or acceptance limit (UL) from Table 2. The corresponding figures for the graphs of each calculated cumulative probability plot are also provided. Individual sample results used as graph data for Sample Lot 2 are provided in Appendix B.

Table 5. Sample Lot 2 Results

| | Calculated Test Statistic (TS = $\bar{x}$ + ks) | | | | |
|---|---|---|---|---|---|
| | Total | | Removable | | Gamma Exposure Rate ($\mu$R/hr @ 1 m) |
| | Alpha (dpm/100 $cm^2$) | Beta (dpm/100 $cm^2$) | Alpha (dpm/100 $cm^2$) | Beta (dpm/100 $cm^2$) | |
| Acceptance Limit (UL) | 5000 | 5000 | 1000 | 1000 | 20.76** |
| Floors only | | | | | 16.0 (21)* |
| Entire area - floors, walls, ceiling, & structure | 5.51 (17)* | 938.7 (19)* | 1.033 (18)* | 9.067 (20)* | |

* Numbers in parenthesis refer to figure numbers.

** The acceptance limit for ambient gamma exposure rate in $\mu$R/hr was determined by calculating the average ambient indoor background (15.76 $\mu$R/hr) from 40 locations inside a known uncontaminated building (Bldg. S445) and adding the acceptance criteria from Table 2 (<5 $\mu$R/hr above background) to achieve a final indoor ambient gamma exposure rate limit of 20.76 $\mu$R/hr. All values, excluding the ambient gamma exposure rate, in this table are subtracted for daily instrument background.

c) Interpretation of Results for Sample Lot 2

Figures 17 through 21 and Table 4 demonstrate that for each applicable acceptance limit (UL) from Table 2, the corresponding test statistic (TS) value is less than the UL or TS <UL. Therefore, the nine figures for Sample Lot 2 pass the "sampling inspection by variables" test and are "Accepted" as radiologically clean. Or in other words, the Building 064 Sample Lot 2 survey corresponds to assuring with a 90% confidence that 90% of Sample Lot 2 has residual contamination below 100% (a 90/90/100 test) of the applicable NRC, DOE, and State of California limits described in Table 2.

3. Sample Lot 3

a) Description

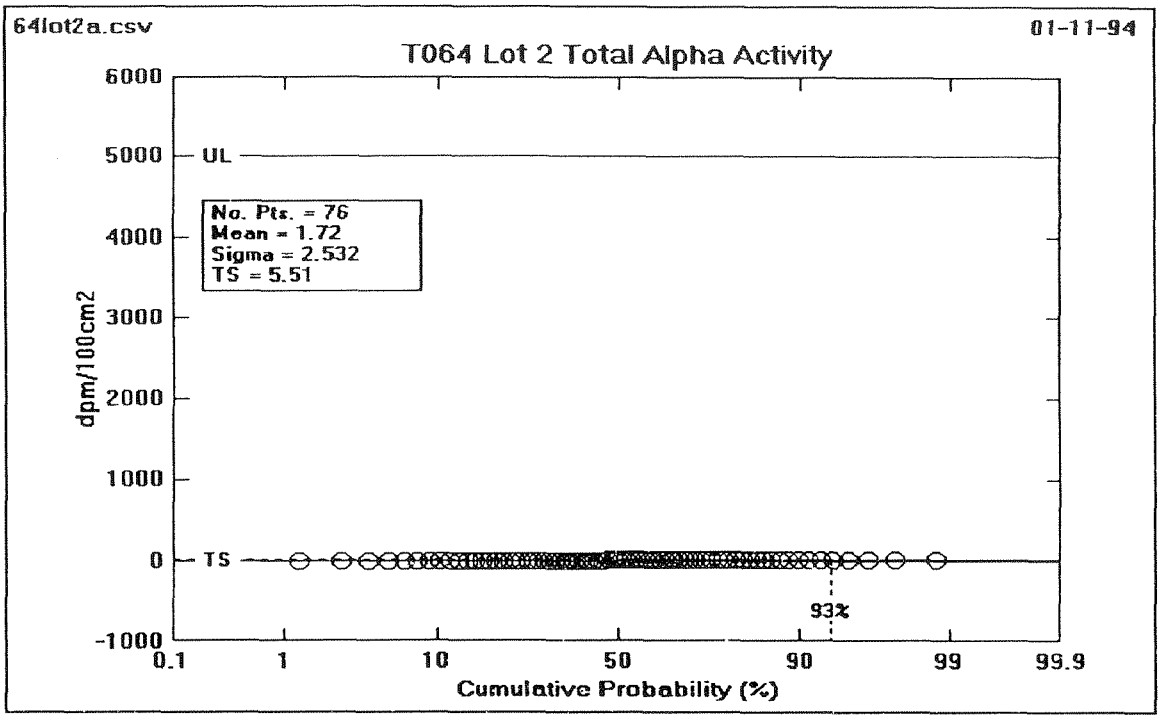
Sample Lot 3 consists of the office (room 120) and rest room, and the storage closet, room 116.

b) Analyses of Sample Lot 3 Data

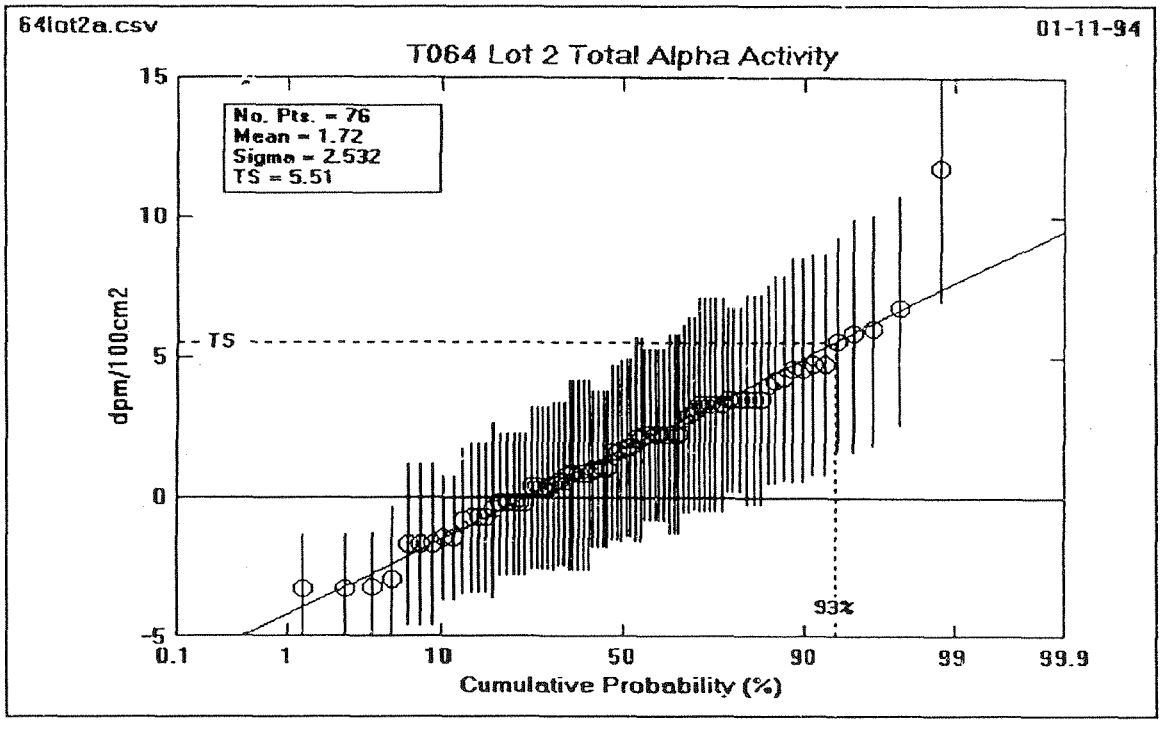
Raw data measurements for Sample Lot 3 were taken, subtracted for daily instrument background (except for ambient gamma exposure rates) and plotted on a cumulative probability graph as explained previously. For statistical comparisons (using the "sampling inspection by variables" method), similar areas within Sample Lot 3 were combined together and then analyzed for the specific type of radiation measurement made on the surface. Individual raw measurement data and instrument backgrounds are provided in Appendix A.

Sample lot results are tabulated in Table 6 for comparing the test statistic ($TS = \bar{x} + ks$) with applicable, established contamination criteria or acceptance limit (UL) from Table 2. The corresponding figures for the graphs of each calculated cumulative probability plot are also provided. Individual sample results used as graph data for Sample Lot 3 are provided in Appendix B.

This lot also showed an outlier in the gamma exposure rate data. As in Lot 1, this elevated value was due to the close proximity of a smoke alarm unit. The measured value, 17.32 $\mu$R/hr, was reduced by 2.79 $\mu$R/hr to 14.53 $\mu$R/hr for statistical interpretation. The original measured value has been left in the tabulational results.

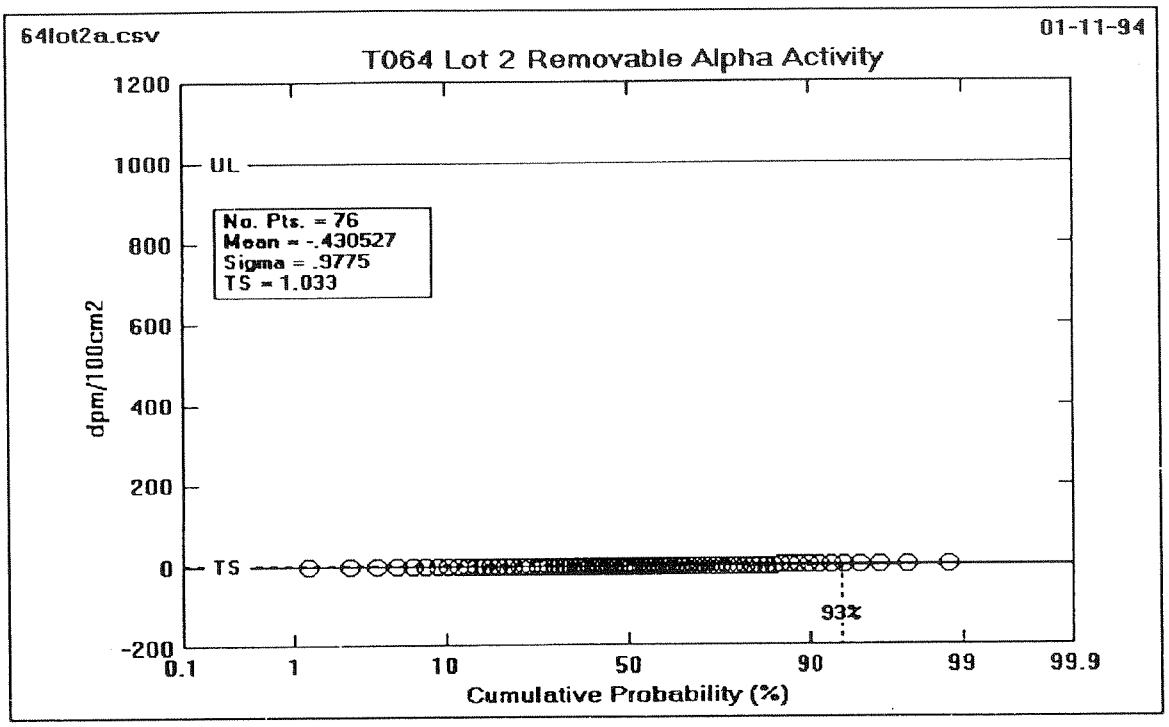



17a.) Scale including Acceptance Limit (UL)

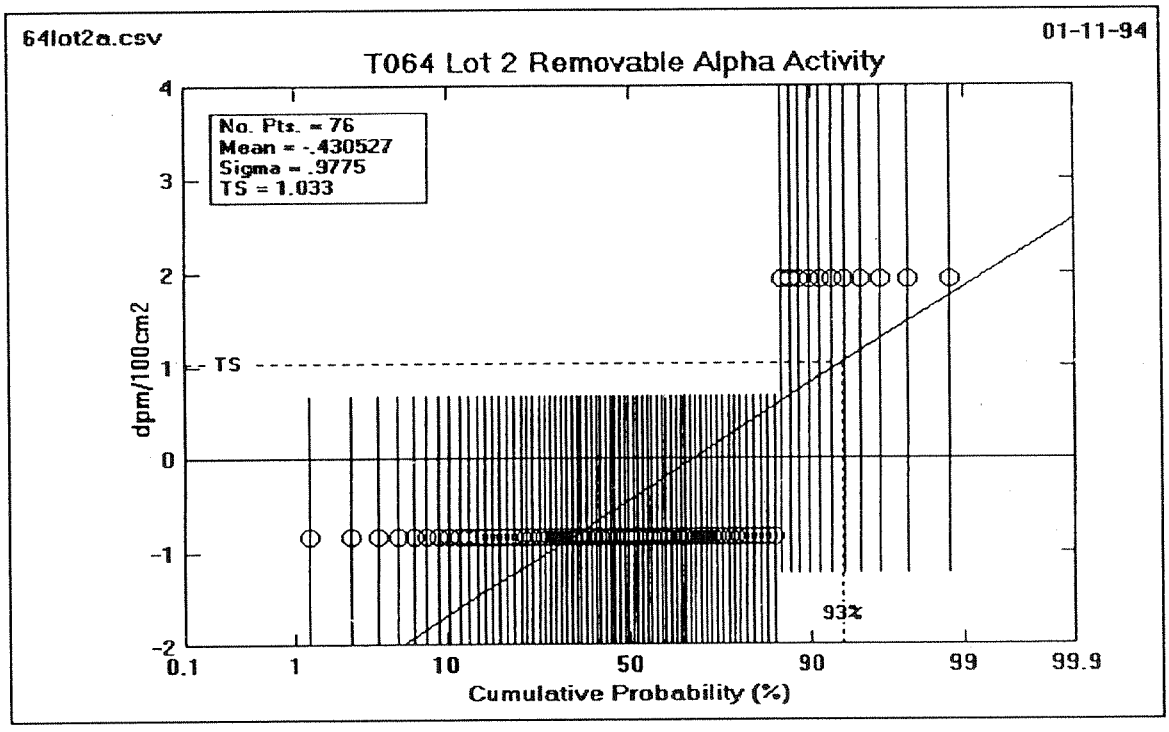



17b.) Expanded Scale

**Figure 17:** T064 - LOT 2 Total Alpha Activity

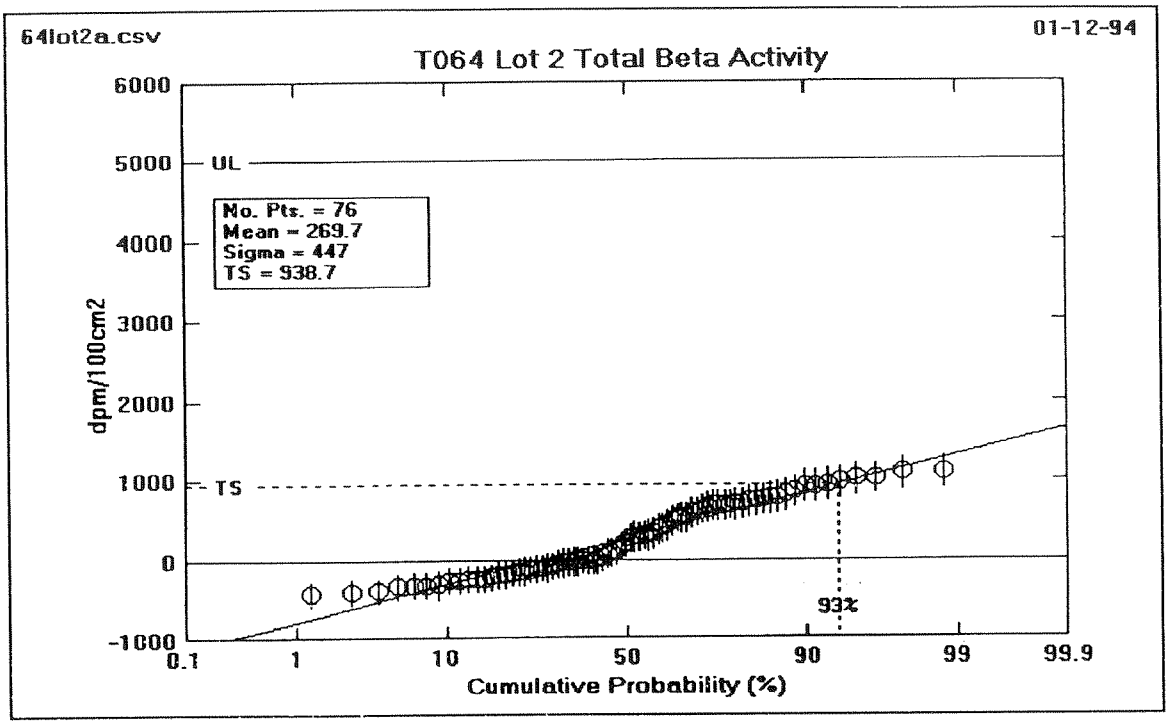



18a.) Scale including Acceptance Limit (UL)

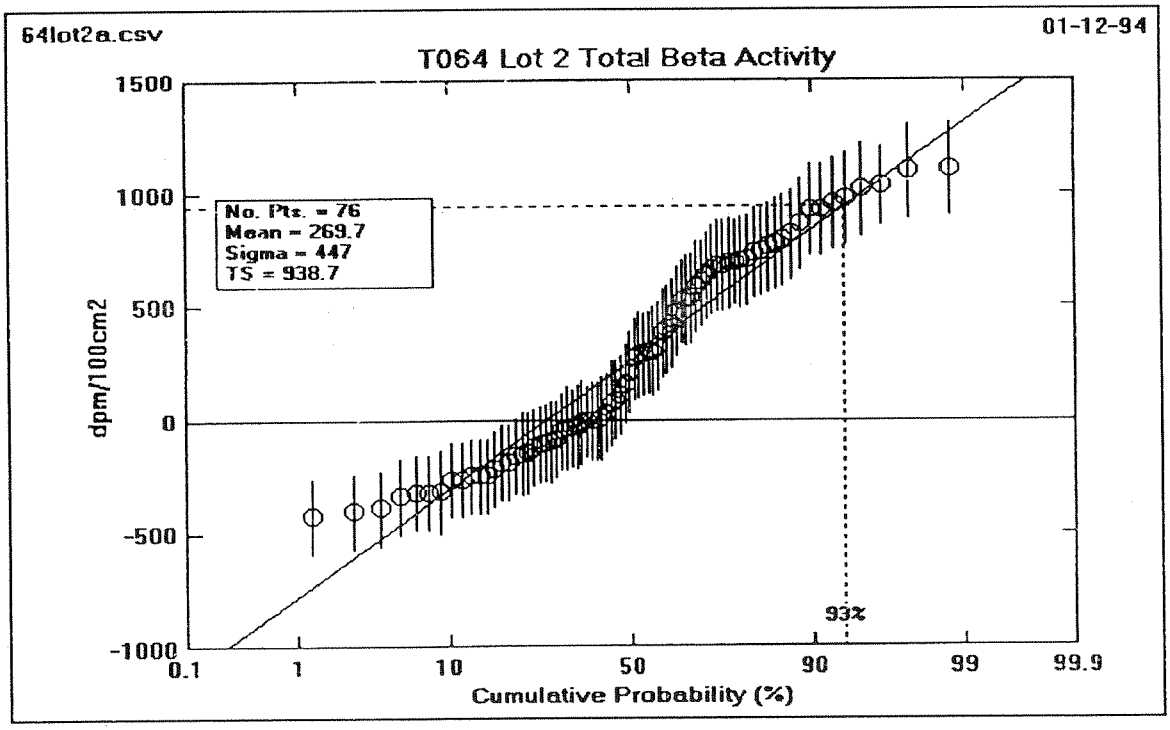



18b.) Expanded Scale

**Figure 18:** T064 - LOT 2 Removable Alpha Activity

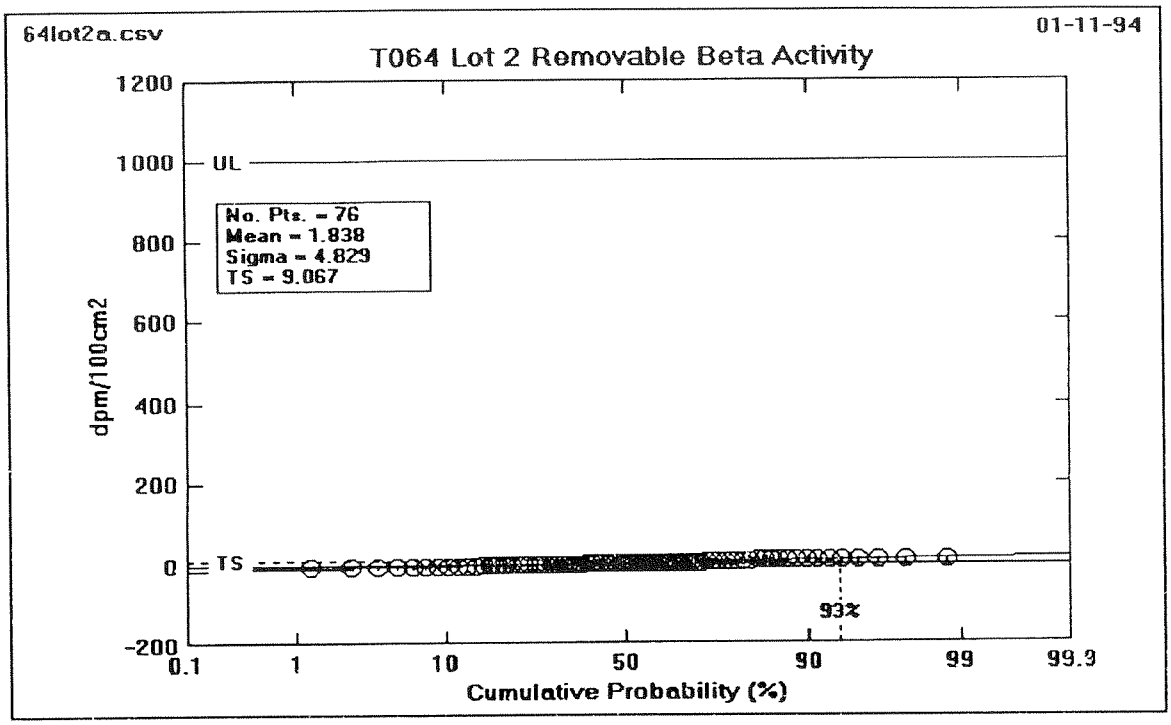



19a.) Scale including Acceptance Limit (UL)

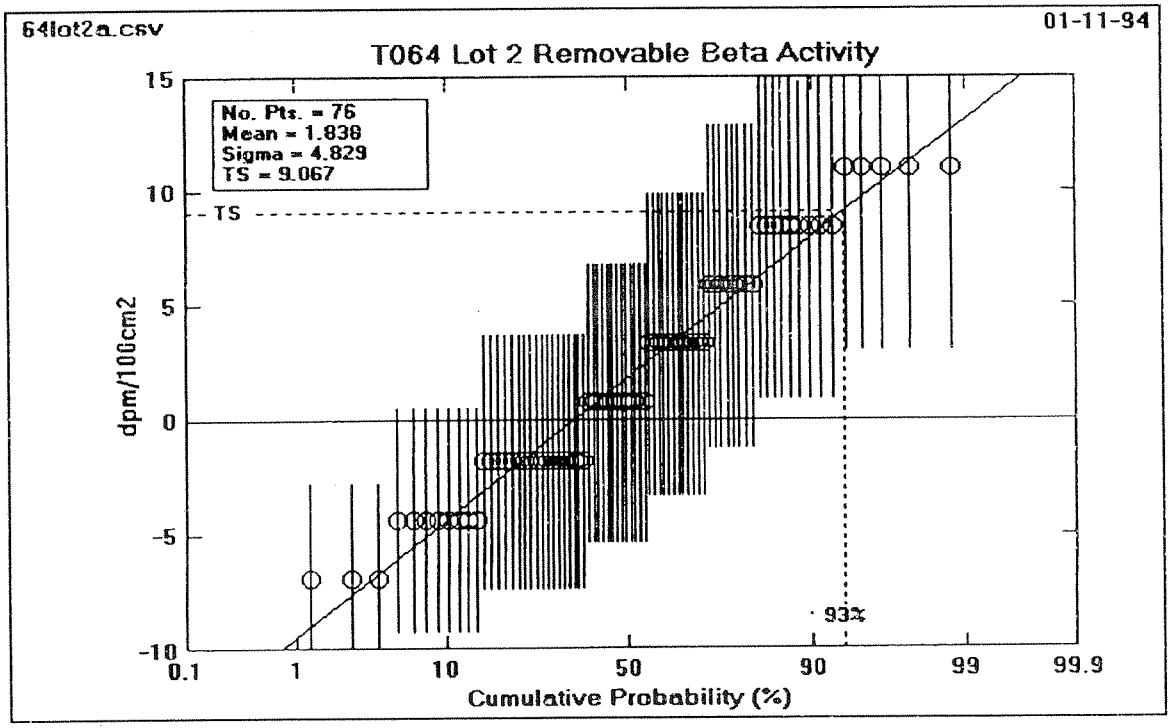



19b.) Expanded Scale

**Figure 19:** T064 - LOT 2 Total Beta Activity

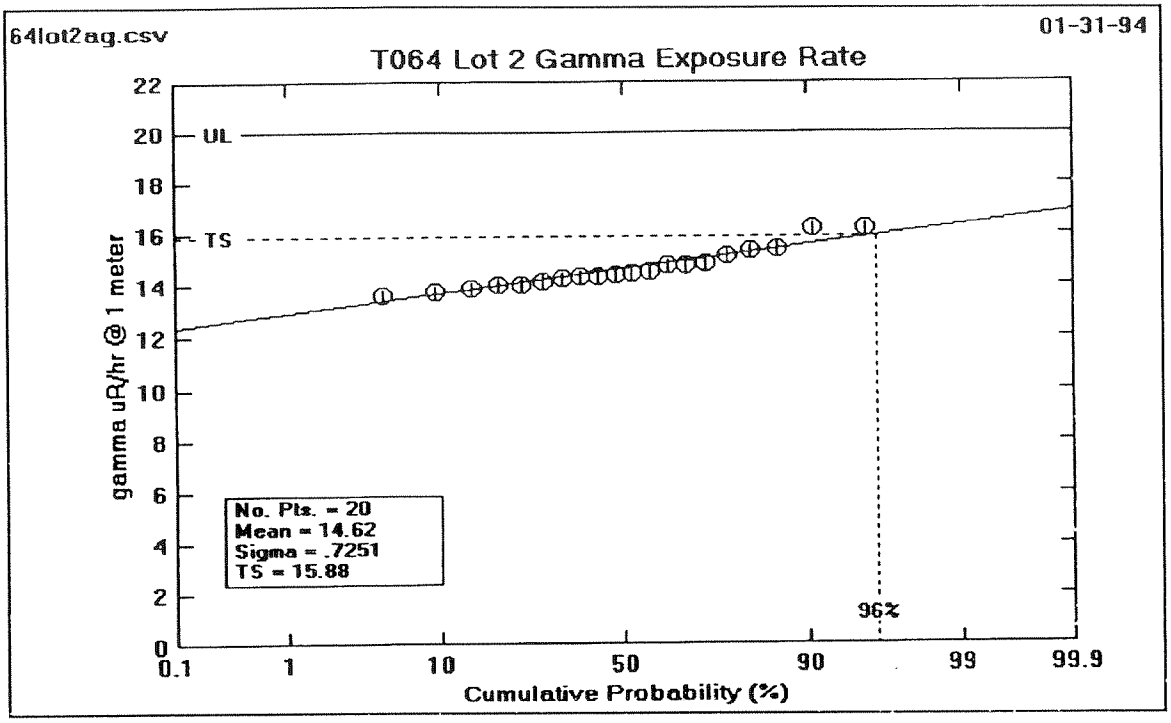



20a.) Scale including Acceptance Limit (UL)




20b.) Expanded Scale

Figure 20: T064 - LOT 2 Removable Beta Activity




21) Scale including Acceptance Limit (UL)

**Figure 21:** T064 - LOT 2 Floors Ambient Gamma Exposure Rate

Table 6. Sample Lot 3 Results

| | Calculated Test Statistic (TS = $\bar{x}$ + ks) | | | | |
|---|---|---|---|---|---|
| | Total | | Removable | | Gamma Exposure Rate ($\mu$R/hr @ 1 m) |
| | Alpha (dpm/100 $cm^2$) | Beta (dpm/100 $cm^2$) | Alpha (dpm/100 $cm^2$) | Beta (dpm/100 $cm^2$) | |
| Acceptance Limit (UL) | 5000 | 5000 | 1000 | 1000 | 20.76** |
| Floors only | | | | | 18.2 (26)* |
| Entire area - floors, walls, ceiling, & structure | 36.3 (22)* | 1246 (24)* | 1.959 (23)* | 15.27 (25)* | |

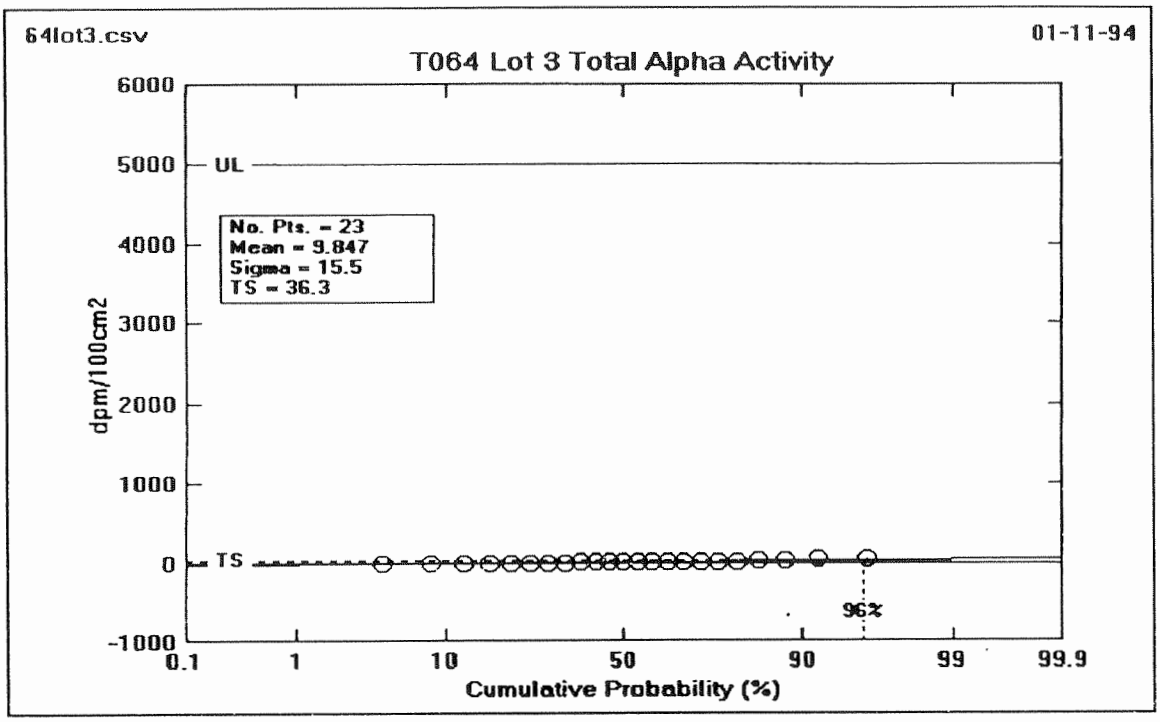
* Numbers in parenthesis refer to figure numbers.

** The acceptance limit for ambient gamma exposure rate in $\mu$R/hr was determined by calculating the average ambient indoor background (15.76 $\mu$R/hr) from 40 locations inside a known uncontaminated building (Bldg. S445) and adding the acceptance criteria from Table 2 (<5 $\mu$R/hr above background) to achieve a final indoor ambient gamma exposure rate limit of 20.76 $\mu$R/hr. All values, excluding the ambient gamma exposure rate, in this table are subtracted for daily instrument background.

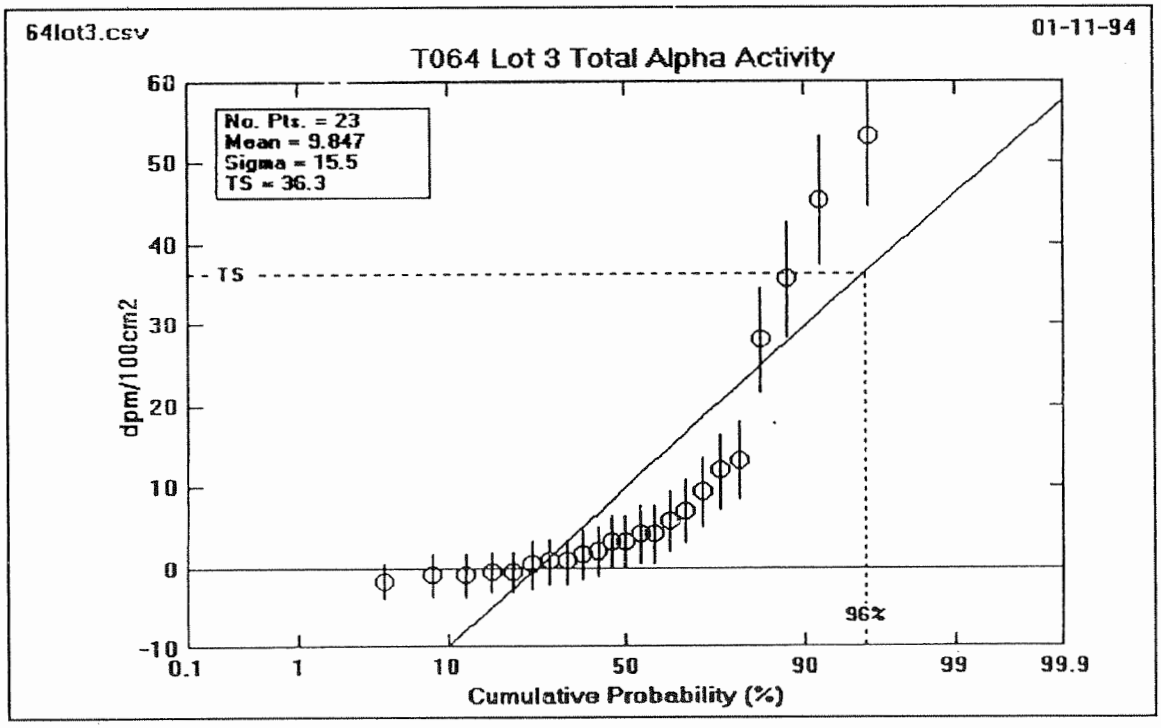
c) Interpretation of Results for Sample Lot 3

Figures 22 through 26 and Table 6 demonstrate that for each applicable acceptance limit (UL) from Table 2, the corresponding test statistic (TS) value is less than the UL or TS <UL. Therefore, the nine figures for Sample Lot 3 pass the "sampling inspection by variables" test and are "Accepted" as radiologically clean. Or in other words, the Building 064 Sample Lot 3 survey corresponds to assuring with a 90% confidence that 90% of Sample Lot 3 has residual contamination below 100% (a 90/90/100 test) of the applicable NRC, DOE, and State of California limits described in Table 2.

SSWA-0001.ZR/bjb

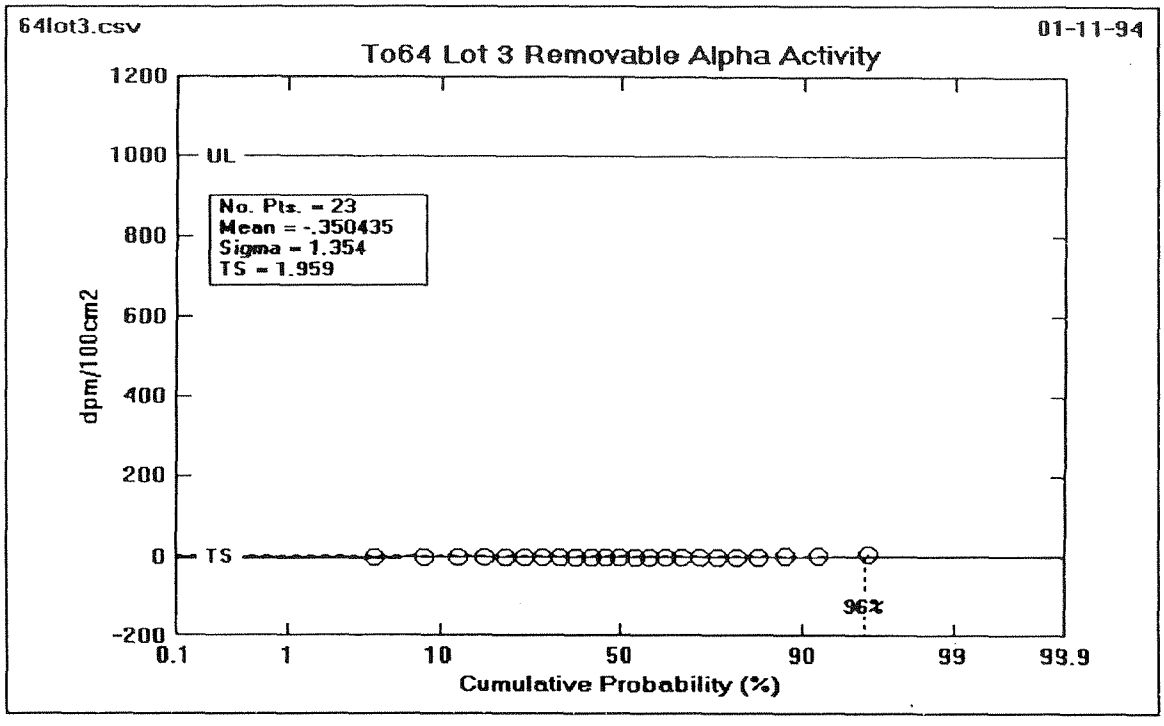



22a.) Scale including Acceptance Limit (UL)

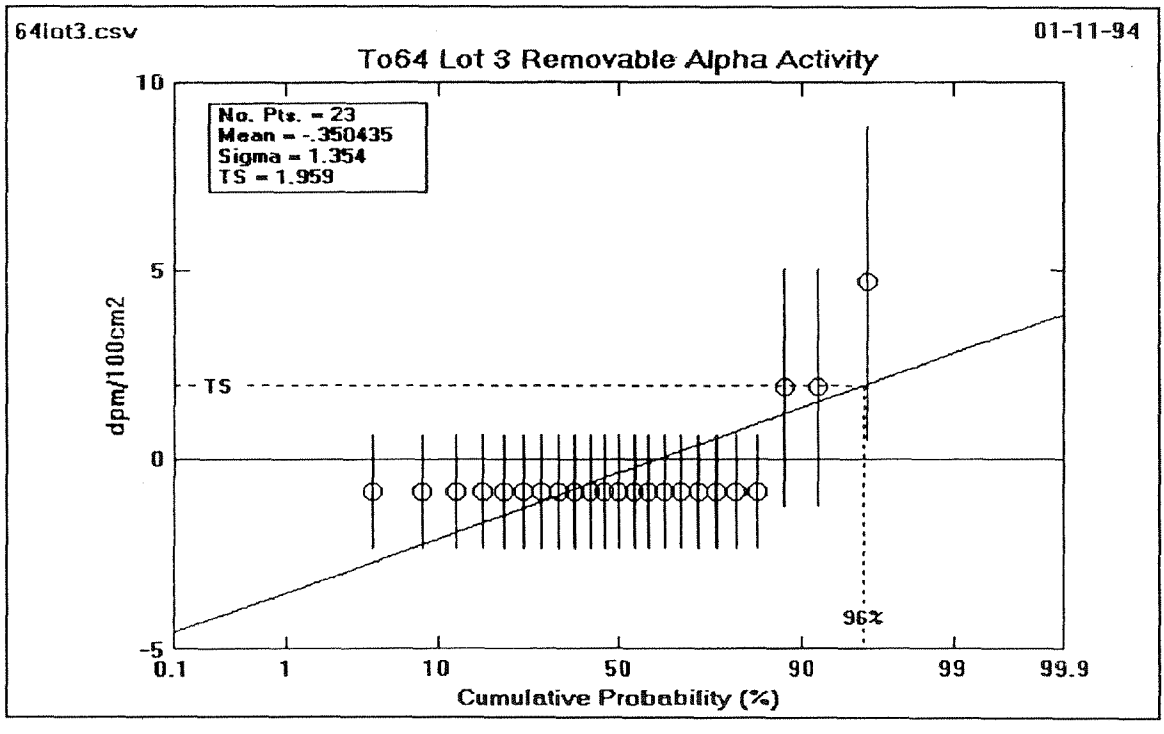



22b.) Expanded Scale

**Figure 22:** T064 - LOT 3 Total Alpha Activity

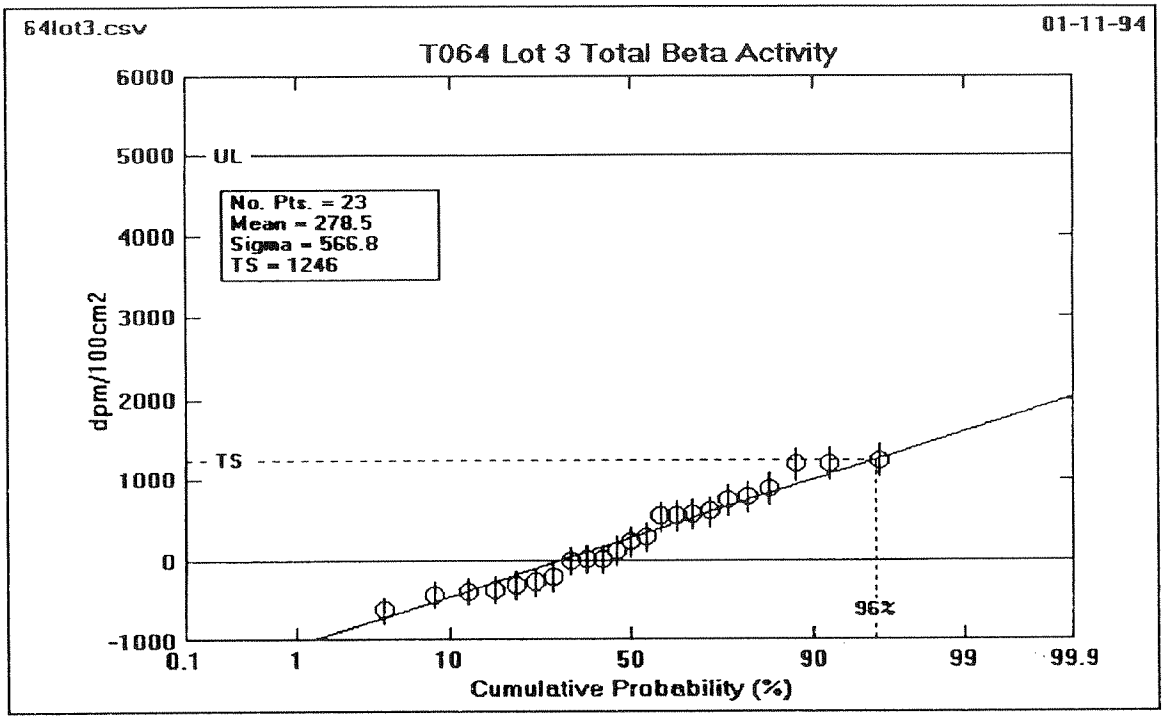



23a.) Scale including Acceptance Limit (UL)

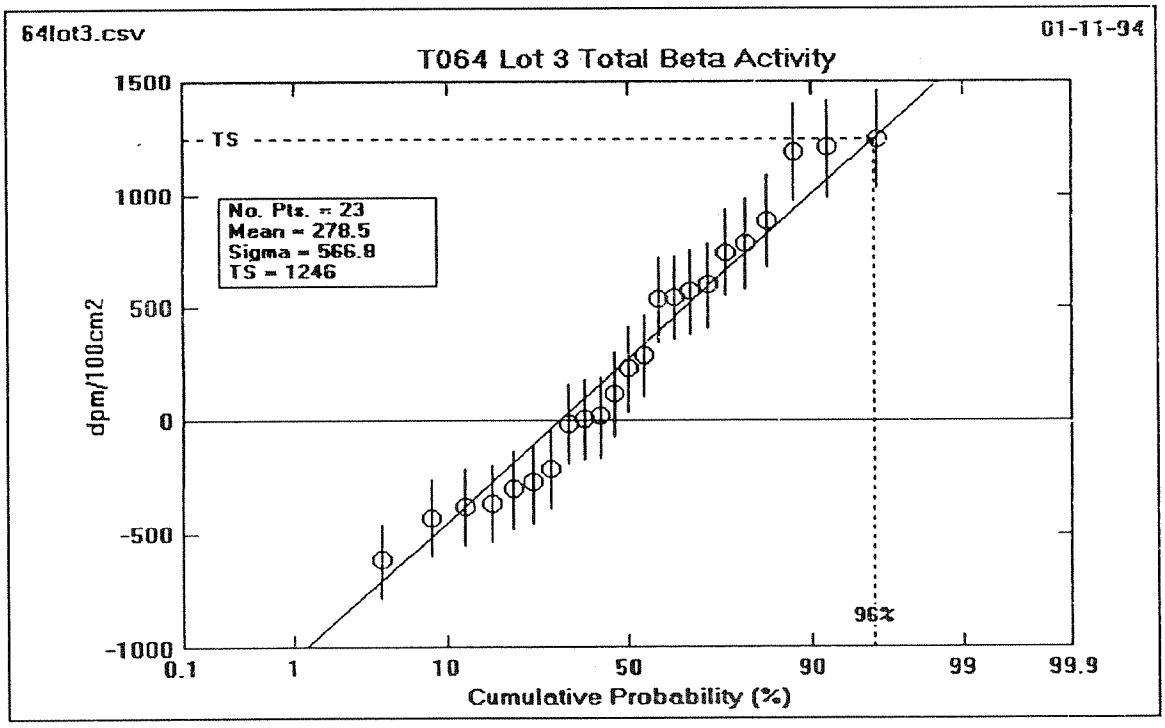



23b.) Expanded Scale

**Figure 23:** T064 - LOT 3 Removable Alpha Activity

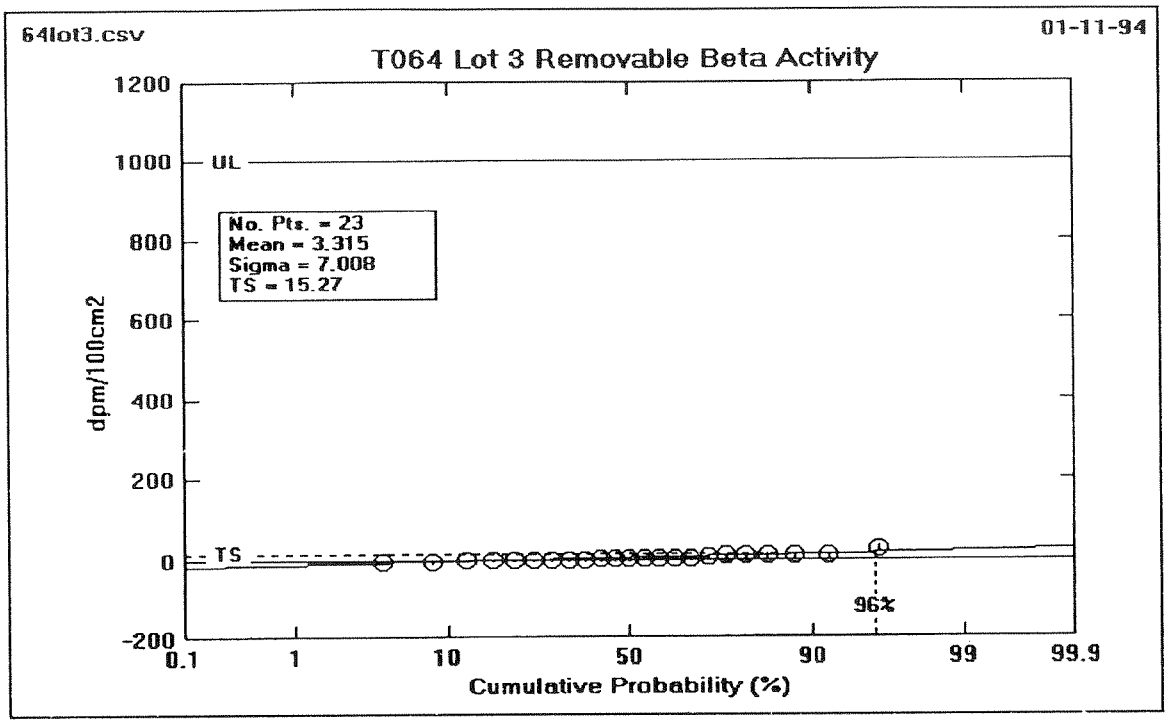



24a.) Scale including Acceptance Limit (UL)

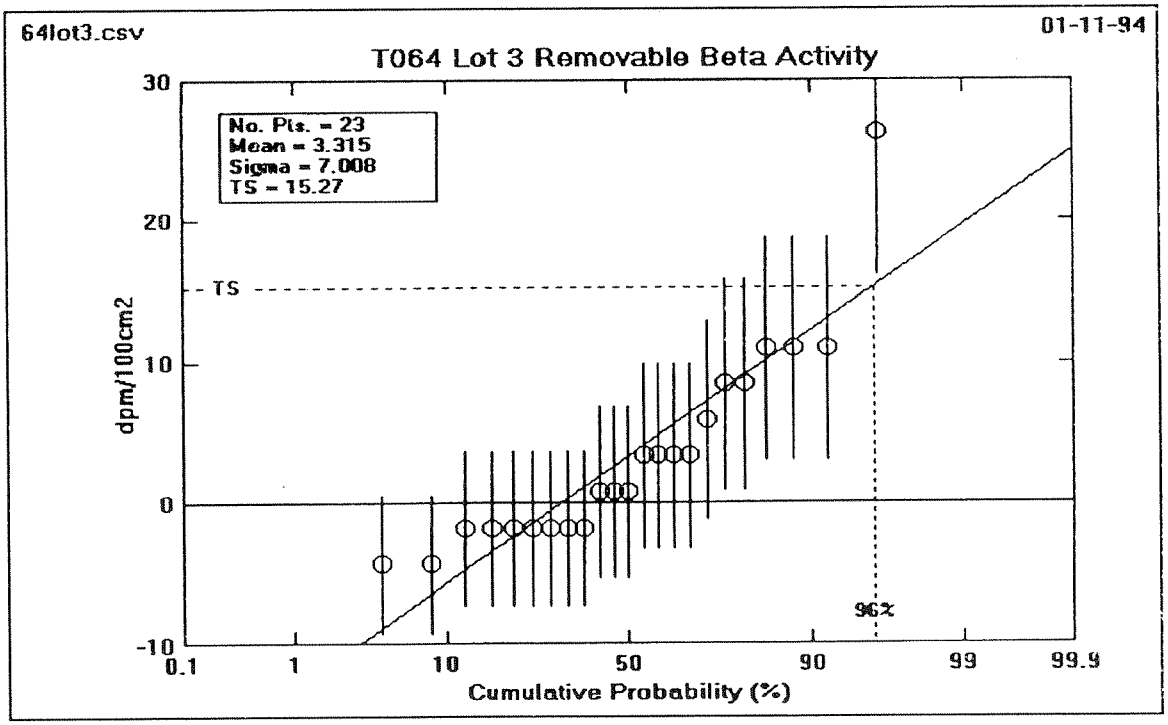



24b.) Expanded Scale

**Figure 24:** T064 - LOT 3 Total Beta Activity

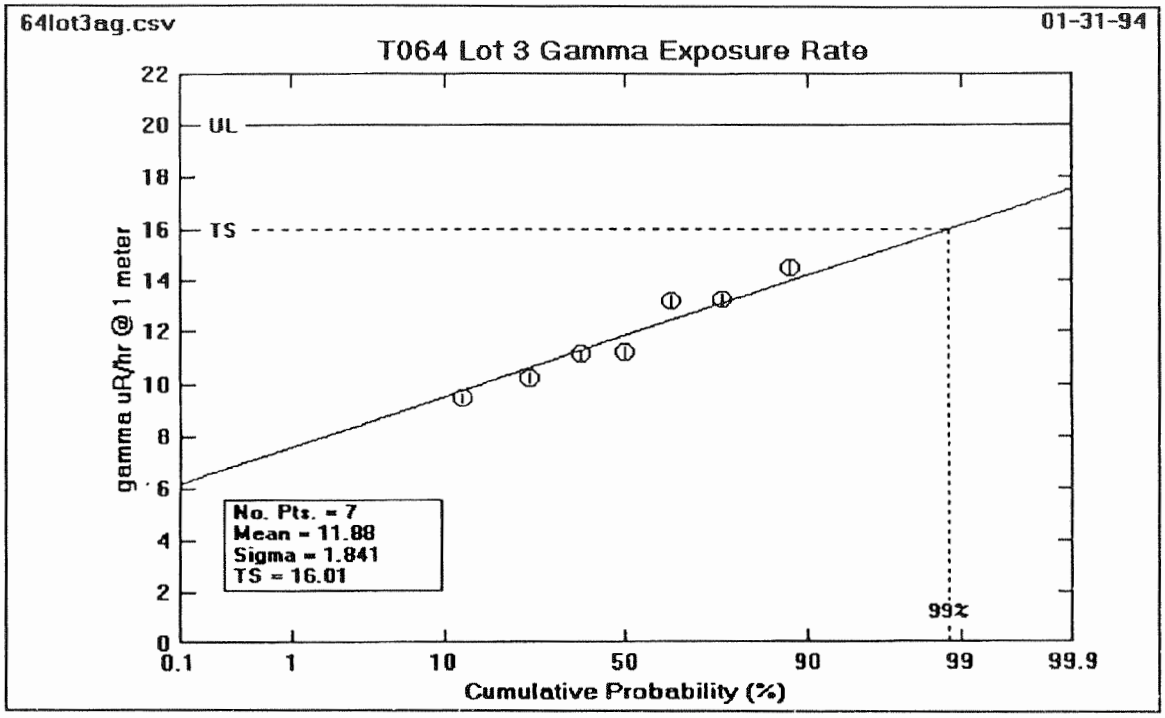



25a.) Scale including Acceptance Limit (UL)




25b.) Expanded Scale

**Figure 25:** T064 - LOT 3 Removable Beta Activity




26) Scale including Acceptance Limit (UL)

**Figure 26:** T064 - LOT 3 Floors Ambient Gamma Exposure Rate

4. Supplemental Measurements

In addition to the standard survey measurements, several supplemental measurements were made to provide additional assurance of the quality of the decontamination effort. Special samples of paint from the walls were analyzed in gamma spectrometry. The detected activities are shown below:

| | Cs-137 | U-234 | U-235 |
|---|---|---|---|
| Paint (Lot 1) | 0.1 dpm/100cm$^2$ | 1.6 dpm/100cm$^2$ | 0.3 dpm/100cm$^2$ |
| Paint (Lot 2) | 2.0 dpm/100cm$^2$ | 1.6 dpm/100cm$^2$ | 0.3 dpm/100cm$^2$ |
| Paint (Lot 3) | 0.4 dpm/100cm$^2$ | 1.5 dpm/100cm$^2$ | 0.1 dpm/100cm$^2$ |

All values are below the applicable limits and in agreement with the measurements for removable alpha and beta measurements results from the smears.

# APPENDIX A

## Building 064 Interior

## Lots 1 through 3

## Final Survey Data

| | | | GROSS COUNTS IN 5 MINUTES | | | | | In 1 MIN | | | ALPHA | | | | | BETA | | | GAMMA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE | GRID | | ALPHA | | | BETA | | GAMMA | | INSTRUMENT | | SMEAR | | | INSTRUMENT | | SMEAR | | |
| NAME | NAME | TOTAL | MAX | REM | TOTAL | MAX | REM | TOTAL | BACKG | EFACT | AFACT | BACKG | EFACT | BACKG | EFACT | AFACT | BACKG | EFACT | EFACT |
| Floors - Rms 104 & 110 | 1,1 | 7 | | 0 | 358 | | 0 | 3148 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 279.759 | 7.705 | 5 | 2.7 | 2.55 | 0.00465 |
| Floors - Rms 104 & 110 | 1,11 | 8 | | 0 | 394 | | 6 | 3207 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 279.759 | 7.705 | 5 | 2.7 | 2.55 | 0.00465 |
| Floors - Rms 104 & 110 | 2,6 | 4 | | 0 | 427 | | 9 | 3258 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 279.759 | 7.705 | 5 | 2.7 | 2.55 | 0.00465 |
| Floors - Rms 104 & 110 | 3,9 | 7 | | 0 | 370 | | 3 | 3217 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 279.759 | 7.705 | 5 | 2.7 | 2.55 | 0.00465 |
| Floors - Rms 104 & 110 | 4,7 | 5 | | 0 | 400 | | 2 | 3103 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 279.759 | 7.705 | 5 | 2.7 | 2.55 | 0.00465 |
| Floors - Rms 104 & 110 | 5,4 | 9 | | 0 | 435 | | 5 | 3116 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 279.759 | 7.705 | 5 | 2.7 | 2.55 | 0.00465 |
| Floors - Rms 104 & 110 | 5,12 | 10 | | 1 | 412 | | 2 | 3773 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 279.759 | 7.705 | 5 | 2.7 | 2.55 | 0.00465 |
| Floors - Rms 104 & 110 | 6,5 | 5 | | 0 | 406 | | 5 | 3087 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 279.759 | 7.705 | 5 | 2.7 | 2.55 | 0.00465 |
| Floors - Rms 104 & 110 | 7,2 | 2 | | 0 | 410 | | 2 | 3319 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 279.759 | 7.705 | 5 | 2.7 | 2.55 | 0.00465 |
| Floors - Rms 104 & 110 | 7,12 | 8 | | 0 | 383 | | 3 | 3094 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 279.759 | 7.705 | 5 | 2.7 | 2.55 | 0.00465 |
| Floors - Rms 104 & 110 | 8,8 | 5 | | 0 | 393 | | 2 | 3171 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 279.759 | 7.705 | 5 | 2.7 | 2.55 | 0.00465 |
| Floors - Rms 104 & 110 | 9,3 | 7 | | 0 | 396 | | 3 | 3171 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 279.759 | 7.705 | 5 | 2.7 | 2.55 | 0.00465 |
| Floors - Rms 104 & 110 | 10,6 | 3 | | 0 | 392 | | 7 | 3196 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 279.759 | 7.705 | 5 | 2.7 | 2.55 | 0.00465 |
| Floors - Rms 104 & 110 | 11,4 | 4 | | 1 | 421 | | 2 | 3219 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 279.759 | 7.705 | 5 | 2.7 | 2.55 | 0.00465 |
| Floors - Rms 104 & 110 | 12,7 | 3 | | 0 | 382 | | 5 | 3144 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 279.759 | 7.705 | 5 | 2.7 | 2.55 | 0.00465 |
| Floors - Rms 104 & 110 | 12,10 | 4 | | 0 | 399 | | 5 | 2973 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 279.759 | 7.705 | 5 | 2.7 | 2.55 | 0.00465 |
| Floors - Rms 104 & 110 | 13,5 | 4 | | 0 | 387 | | 3 | 3154 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 279.759 | 7.705 | 5 | 2.7 | 2.55 | 0.00465 |
| Floors - Rms 104 & 110 | 14,11 | 9 | | 0 | 415 | | 1 | 3186 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 279.759 | 7.705 | 5 | 2.7 | 2.55 | 0.00465 |
| Floors - Rms 104 & 110 | 14,2 | 7 | | 0 | 358 | | 6 | 3259 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 279.759 | 7.705 | 5 | 2.7 | 2.55 | 0.00465 |
| Floors - Rms 104 & 110 | 15,5 | 5 | | 0 | 392 | | 4 | 2769 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 279.759 | 7.705 | 5 | 2.7 | 2.55 | 0.00465 |
| Ceiling - Rms 104 & 110 | 1,5 | 4 | | 0 | 272 | | 2 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Ceiling - Rms 104 & 110 | 2,8 | 2 | | 0 | 289 | | 4 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Ceiling - Rms 104 & 110 | 3,12 | 6 | | 0 | 334 | | 8 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Ceiling - Rms 104 & 110 | 3,2 | 3 | | 0 | 289 | | 4 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Ceiling - Rms 104 & 110 | 4,6 | 2 | | 1 | 287 | | 8 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Ceiling - Rms 104 & 110 | 5,9 | 4 | | 0 | 287 | | 6 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Ceiling - Rms 104 & 110 | 6,4 | 5 | | 0 | 274 | | 3 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Ceiling - Rms 104 & 110 | 6,11 | 4 | | 0 | 289 | | 2 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Ceiling - Rms 104 & 110 | 7,1 | 9 | | 0 | 320 | | 5 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Ceiling - Rms 104 & 110 | 8,3 | 5 | | 0 | 272 | | 7 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Ceiling - Rms 104 & 110 | 9,7 | 4 | | 0 | 299 | | 2 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Ceiling - Rms 104 & 110 | 9,12 | 8 | | 1 | 304 | | 1 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Ceiling - Rms 104 & 110 | 10,5 | 4 | | 0 | 305 | | 4 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Ceiling - Rms 104 & 110 | 11,2 | 5 | | 0 | 319 | | 5 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Ceiling - Rms 104 & 110 | 11,11 | 3 | | 0 | 299 | | 2 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Ceiling - Rms 104 & 110 | 12,9 | 4 | | 1 | 287 | | 7 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Ceiling - Rms 104 & 110 | 13,2 | 6 | | 6 | 322 | | 5 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Ceiling - Rms 104 & 110 | 14,3 | 4 | | 1 | 326 | | 4 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Ceiling - Rms 104 & 110 | 15,1 | 7 | | 1 | 318 | | 8 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |

| | | | GROSS COUNTS IN 5 MINUTES | | | | | In 1 MIN | | | ALPHA | | | | BETA | | | | GAMMA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE | GRID | | ALPHA | | | BETA | | GAMMA | | INSTRUMENT | | SMEAR | | | INSTRUMENT | | SMEAR | | |
| NAME | NAME | TOTAL | MAX | REM | TOTAL | MAX | REM | TOTAL | BACKG | EFACT | AFACT | BACKG | EFACT | BACKG | EFACT | AFACT | BACKG | EFACT | EFACT |
| Ceiling - Rms 104 & 110 | 14,10 | 6 | | 0 | 301 | | 4 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall North - Rm 110 | 1,3 | 9 | | 3 | 252 | | 3 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall North - Rm 110 | 3,2 | 12 | | 1 | 297 | | 4 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall North - Rm 110 | 6,1 | 13 | | 1 | 270 | | 3 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall North - Rm 110 | 8,3 | 11 | | 0 | 245 | | 3 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall North - Rm 110 | 10,4 | 9 | | 0 | 241 | | 3 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall North - Rm 110 | 11,1 | 14 | | 0 | 274 | | 5 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall North - Rm 110 | 13,2 | 10 | | 0 | 266 | | 1 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall North - Rm 110 | 15,3 | 11 | | 0 | 269 | | 3 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall East - Rm 110 | 18,4 | 14 | | 0 | 290 | | 7 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall East - Rm 110 | 19,1 | 16 | | 1 | 285 | | 5 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall East - Rm 110 | 21,2 | 22 | | 0 | 296 | | 1 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall East - Rm 110 | 23,2 | 11 | | 1 | 211 | | 5 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall East - Rm 110 | 25,2 | 11 | | 2 | 296 | | 7 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall East - Rm 110 | 27,3 | 9 | | 1 | 277 | | 7 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall South - Rm 110 | 2,3 | 12 | | 0 | 309 | | 5 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall South - Rm 110 | 4,2 | 12 | | 1 | 309 | | 5 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall South - Rm 110 | 6,1 | 10 | | 0 | 319 | | 3 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall South - Rm 110 | 7-8,5 | 9 | | 0 | 289 | | 3 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall South - Rm 110 | 10,3 | 16 | | 0 | 292 | | 4 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall West - Rm 110 | 12,2 | 17 | | 1 | 289 | | 4 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall West - Rm 110 | 14,3 | 7 | | 0 | 277 | | 5 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall West - Rm 110 | 16,2 | 12 | | 1 | 277 | | 4 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall West - Rm 110 | 18,3 | 9 | | 1 | 306 | | 5 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall West - Rm 110 | 20,1 | 12 | | 0 | 294 | | 3 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall West - Rm 110 | 22,4 | 11 | | 0 | 325 | | 6 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall West - Rm 110 | 23,3 | 13 | | 0 | 271 | | 2 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall East - Rm 104(deconned) | 2,2 | 52 | 376 | 4 | 333 | 311 | 10 | | 2.000 | 4.459 | 1.41 | 0.3 | 2.75 | 268.833 | 7.742 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall East - Rm 104 | 4,2 | 12 | | 1 | 307 | | 5 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall South - Rm 104(deconned) | 5,1 | 13 | 227 | 1 | 301 | 284 | 1 | | 2.000 | 4.459 | 1.41 | 0.3 | 2.75 | 268.833 | 7.742 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall West - Rm 104 | 8,3 | 9 | | 0 | 261 | | 6 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall West - Rm 104 | 10,1 | 35 | | 9 | 280 | | 15 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall North - Rm 104 | 12,3 | 12 | | 0 | 298 | | 3 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Wall North - Rm 104 | 14,2-3 | 10 | | 1 | 277 | | 3 | | 2.167 | 4.445 | 1.41 | 0.3 | 2.75 | 272.333 | 7.648 | 5 | 2.7 | 2.55 | 0.00465 |
| Structure - Trusses Rm 104 | St-1 | 156 | | 1 | 327 | | 5 | | 2.000 | 4.459 | 1.41 | 0.3 | 2.75 | 268.833 | 7.742 | 5 | 2.7 | 2.55 | 0.00465 |
| Structure - Trusses Rm 104 | St-2 | 133 | | 0 | 322 | | 9 | | 2.000 | 4.459 | 1.41 | 0.3 | 2.75 | 268.833 | 7.742 | 5 | 2.7 | 2.55 | 0.00465 |
| Structure - Trusses Exit Rm 110 | St-3 | 48 | | 3 | 228 | | 2 | | 2.000 | 4.459 | 1.41 | 0.3 | 2.75 | 268.833 | 7.742 | 5 | 2.7 | 2.55 | 0.00465 |
| Structure - Trusses NE corner Rm 110 | St-4 | 80 | | 0 | 325 | | 1 | | 2.000 | 4.459 | 1.41 | 0.3 | 2.75 | 268.833 | 7.742 | 5 | 2.7 | 2.55 | 0.00465 |
| Structure - Trusses near C(4,10) | St-5 | 48 | | 1 | 319 | | 3 | | 2.000 | 4.459 | 1.41 | 0.3 | 2.75 | 268.833 | 7.742 | 5 | 2.7 | 2.55 | 0.00465 |

T64L1DAT.WB1

| | | | GROSS COUNTS IN 5 MINUTES | | | | | In 1 MIN | | ALPHA | | | | | BETA | | | | GAMMA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE | GRID | | ALPHA | | | BETA | | GAMMA | | INSTRUMENT | | SMEAR | | | INSTRUMENT | | SMEAR | | |
| NAME | NAME | TOTAL | MAX | REM | TOTAL | MAX | REM | TOTAL | BACKG | EFACT | AFACT | BACKG | EFACT | BACKG | EFACT | AFACT | BACKG | EFACT | EFACT |
| Structure - Trusses near Center | St-6 | 37 | | 0 | 304 | | 2 | | 2.000 | 4.459 | 1.41 | 0.3 | 2.75 | 268.833 | 7.742 | 5 | 2.7 | 2.55 | 0.00465 |
| Structure - Trusses C(6,4) near HTR | St-7 | 23 | | 1 | 316 | | 8 | | 2.000 | 4.459 | 1.41 | 0.3 | 2.75 | 268.833 | 7.742 | 5 | 2.7 | 2.55 | 0.00465 |
| Structure - Beam Ledges - West | Sb-1 | 77 | | 2 | 256 | | 3 | | 2.000 | 4.459 | 1.41 | 0.3 | 2.75 | 268.833 | 7.742 | 5 | 2.7 | 2.55 | 0.00465 |
| Structure - Beam Ledges - Center Wes | Sb-2 | 37 | | 1 | 249 | | 3 | | 2.000 | 4.459 | 1.41 | 0.3 | 2.75 | 268.833 | 7.742 | 5 | 2.7 | 2.55 | 0.00465 |
| Structure - Beam Ledges - Center | Sb-3 | 59 | | 2 | 282 | | 5 | | 2.000 | 4.459 | 1.41 | 0.3 | 2.75 | 268.833 | 7.742 | 5 | 2.7 | 2.55 | 0.00465 |
| Structure - Beam Ledges - Center Eas | Sb-4 | 111 | | 0 | 268 | | 4 | | 2.000 | 4.459 | 1.41 | 0.3 | 2.75 | 268.833 | 7.742 | 5 | 2.7 | 2.55 | 0.00465 |
| Structure - Beam Ledges - East | Sb-5 | 126 | | 0 | 299 | | 2 | | 2.000 | 4.459 | 1.41 | 0.3 | 2.75 | 268.833 | 7.742 | 5 | 2.7 | 2.55 | 0.00465 |
| Structure - Heater Outside Wall | Sh-1 | 6 | | 0 | 266 | | 2 | | 2.000 | 4.459 | 1.41 | 0.3 | 2.75 | 268.833 | 7.742 | 5 | 2.7 | 2.55 | 0.00465 |
| Structure - Heater Inside Grating | Sh-2 | 4 | | 1 | 272 | | 3 | | 2.000 | 4.459 | 1.41 | 0.3 | 2.75 | 268.833 | 7.742 | 5 | 2.7 | 2.55 | 0.00465 |
| Structure - Heater Inside Wall | Sh-3 | 2 | | 0 | 239 | | 5 | | 2.000 | 4.459 | 1.41 | 0.3 | 2.75 | 268.833 | 7.742 | 5 | 2.7 | 2.55 | 0.00465 |

| | | | | | GROSS COUNTS IN 5 MINUTES | | | | | ALPHA | | | | | BETA | | | | | GAMMA | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE | GRID | | ALPHA | | | BETA | | GAMMA | | INSTRUMENT | | SMEAR | | | INSTRUMENT | | | SMEAR | | | |
| NAME | NAME | TOTAL | MAX | REM | TOTAL | MAX | REM | TOTAL | BACKG | EFACT | AFACT | BACKG | EFACT | BACKG | EFACT | AFACT | BACKG | EFACT | BACKG | EFACT |
| Floors - Rm 114 | 1,4 | 3 | | 1 | 397 | | 5 | 3294 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 274.833 | 7.995 | 5 | 2.7 | 2.55 | | 0.00465 |
| Floors - Rm 114 | 2,1 | 2 | | 0 | 402 | | 4 | 3314 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 274.833 | 7.995 | 5 | 2.7 | 2.55 | | 0.00465 |
| Floors - Rm 114 | 3,7 | 6 | | 0 | 360 | | 2 | 3172 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 274.833 | 7.995 | 5 | 2.7 | 2.55 | | 0.00465 |
| Floors - Rm 114 | 2,10 | 0 | | 0 | 391 | | 4 | 3487 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 274.833 | 7.995 | 5 | 2.7 | 2.55 | | 0.00465 |
| Floors - Rm 114 | 5,12 | 4 | | 0 | 412 | | 1 | 3373 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 274.833 | 7.995 | 5 | 2.7 | 2.55 | | 0.00465 |
| Floors - Rm 114 | 4,5 | 7 | | 0 | 383 | | 7 | 2966 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 274.833 | 7.995 | 5 | 2.7 | 2.55 | | 0.00465 |
| Floors - Rm 114 | 5,2 | 4 | | 0 | 377 | | 2 | 3110 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 274.833 | 7.995 | 5 | 2.7 | 2.55 | | 0.00465 |
| Floors - Rm 114 | 6,6 | 3 | | 0 | 394 | | 6 | 3102 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 274.833 | 7.995 | 5 | 2.7 | 2.55 | | 0.00465 |
| Floors - Rm 114 | 7,3 | 5 | | 0 | 367 | | 5 | 3120 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 274.833 | 7.995 | 5 | 2.7 | 2.55 | | 0.00465 |
| Floors - Rm 114 | 8,8 | 2 | | 0 | 413 | | 3 | 3083 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 274.833 | 7.995 | 5 | 2.7 | 2.55 | | 0.00465 |
| Floors - Rm 114 | 7,11 | 2 | | 0 | 391 | | 2 | 3192 | 2.563 | 4.407 | 1.41 | 0.3 | 2.75 | 274.833 | 7.995 | 5 | 2.7 | 2.55 | | 0.00465 |
| Floors - Rm 114 | 9,4 | 6 | | 0 | 393 | | 6 | 3079 | 3.167 | 4.394 | 1.41 | 0.3 | 2.75 | 293.167 | 7.775 | 5 | 2.7 | 2.55 | | 0.00465 |
| Floors - Rm 114 | 10,1 | 5 | | 0 | 355 | | 6 | 2932 | 3.167 | 4.394 | 1.41 | 0.3 | 2.75 | 293.167 | 7.775 | 5 | 2.7 | 2.55 | | 0.00465 |
| Floors - Rm 114 | 11,7 | 7 | | 0 | 382 | | 6 | 2983 | 3.167 | 4.394 | 1.41 | 0.3 | 2.75 | 293.167 | 7.775 | 5 | 2.7 | 2.55 | | 0.00465 |
| Floors - Rm 114 | 12,6 | 6 | | 0 | 395 | | 2 | 3017 | 3.167 | 4.394 | 1.41 | 0.3 | 2.75 | 293.167 | 7.775 | 5 | 2.7 | 2.55 | | 0.00465 |
| Floors - Rm 114 | 12,10 | 6 | | 1 | 335 | | 4 | 3252 | 3.167 | 4.394 | 1.41 | 0.3 | 2.75 | 293.167 | 7.775 | 5 | 2.7 | 2.55 | | 0.00465 |
| Floors - Rm 114 | 13,1 | 8 | | 0 | 362 | | 3 | 3047 | 3.167 | 4.394 | 1.41 | 0.3 | 2.75 | 293.167 | 7.775 | 5 | 2.7 | 2.55 | | 0.00465 |
| Floors - Rm 114 | 14,5 | 7 | | 0 | 369 | | 2 | 3065 | 3.167 | 4.394 | 1.41 | 0.3 | 2.75 | 293.167 | 7.775 | 5 | 2.7 | 2.55 | | 0.00465 |
| Floors - Rm 114 | 15,2 | 5 | | 0 | 348 | | 3 | 3010 | 3.167 | 4.394 | 1.41 | 0.3 | 2.75 | 293.167 | 7.775 | 5 | 2.7 | 2.55 | | 0.00465 |
| Floors - Rm 114 | 15,11 | 5 | | 1 | 384 | | 4 | 3481 | 3.167 | 4.394 | 1.41 | 0.3 | 2.75 | 293.167 | 7.775 | 5 | 2.7 | 2.55 | | 0.00465 |
| Ceiling - Rm 114 | 1,1 | 4 | | 0 | 268 | | 5 | | 3.333 | 4.434 | 1.41 | 0.3 | 2.75 | 281.333 | 7.358 | 5 | 2.7 | 2.55 | | 0.00465 |
| Ceiling - Rm 114 | 2,4 | 6 | | 1 | 256 | | 2 | | 3.333 | 4.434 | 1.41 | 0.3 | 2.75 | 281.333 | 7.358 | 5 | 2.7 | 2.55 | | 0.00465 |
| Ceiling - Rm 114 | 3,6 | 4 | | 0 | 229 | | 7 | | 3.333 | 4.434 | 1.41 | 0.3 | 2.75 | 281.333 | 7.358 | 5 | 2.7 | 2.55 | | 0.00465 |
| Ceiling - Rm 114 | 4,3 | 5 | | 0 | 252 | | 2 | | 3.333 | 4.434 | 1.41 | 0.3 | 2.75 | 281.333 | 7.358 | 5 | 2.7 | 2.55 | | 0.00465 |
| Ceiling - Rm 114 | 5,2 | 6 | | 0 | 275 | | 5 | | 3.333 | 4.434 | 1.41 | 0.3 | 2.75 | 281.333 | 7.358 | 5 | 2.7 | 2.55 | | 0.00465 |
| Ceiling - Rm 114 | 6,6 | 1 | | 1 | 236 | | 4 | | 3.333 | 4.434 | 1.41 | 0.3 | 2.75 | 281.333 | 7.358 | 5 | 2.7 | 2.55 | | 0.00465 |
| Ceiling - Rm 114 | 7,7 | 8 | | 0 | 224 | | 1 | | 3.333 | 4.434 | 1.41 | 0.3 | 2.75 | 281.333 | 7.358 | 5 | 2.7 | 2.55 | | 0.00465 |
| Ceiling - Rm 114 | 8,9 | 3 | | 0 | 238 | | 5 | | 3.333 | 4.434 | 1.41 | 0.3 | 2.75 | 281.333 | 7.358 | 5 | 2.7 | 2.55 | | 0.00465 |
| Ceiling - Rm 114 | 9,4 | 6 | | 1 | 256 | | 4 | | 3.333 | 4.434 | 1.41 | 0.3 | 2.75 | 281.333 | 7.358 | 5 | 2.7 | 2.55 | | 0.00465 |
| Ceiling - Rm 114 | 10,5 | 7 | | 0 | 248 | | 2 | | 3.333 | 4.434 | 1.41 | 0.3 | 2.75 | 281.333 | 7.358 | 5 | 2.7 | 2.55 | | 0.00465 |
| Ceiling - Rm 114 | 11,9 | 4 | | 0 | 246 | | 4 | | 3.333 | 4.434 | 1.41 | 0.3 | 2.75 | 281.333 | 7.358 | 5 | 2.7 | 2.55 | | 0.00465 |
| Ceiling - Rm 114 | 12,2 | 6 | | 0 | 246 | | 2 | | 3.333 | 4.434 | 1.41 | 0.3 | 2.75 | 281.333 | 7.358 | 5 | 2.7 | 2.55 | | 0.00465 |
| Ceiling - Rm 114 | 13,4 | 4 | | 1 | 227 | | 4 | | 3.333 | 4.434 | 1.41 | 0.3 | 2.75 | 281.333 | 7.358 | 5 | 2.7 | 2.55 | | 0.00465 |
| Ceiling - Rm 114 | 14,7 | 5 | | 0 | 277 | | 7 | | 3.333 | 4.434 | 1.41 | 0.3 | 2.75 | 281.333 | 7.358 | 5 | 2.7 | 2.55 | | 0.00465 |
| Ceiling - Rm 114 | 15,6 | 2 | | 1 | 248 | | 3 | | 3.333 | 4.434 | 1.41 | 0.3 | 2.75 | 281.333 | 7.358 | 5 | 2.7 | 2.55 | | 0.00465 |
| Ceiling - Rm 114 | 13,12 | 7 | | 0 | 265 | | 2 | | 3.333 | 4.434 | 1.41 | 0.3 | 2.75 | 281.333 | 7.358 | 5 | 2.7 | 2.55 | | 0.00465 |
| Ceiling - Rm 114 | 10,10 | 6 | | 0 | 238 | | 4 | | 3.333 | 4.434 | 1.41 | 0.3 | 2.75 | 281.333 | 7.358 | 5 | 2.7 | 2.55 | | 0.00465 |
| Ceiling - Rm 114 | 8,12 | 4 | | 0 | 267 | | 3 | | 3.333 | 4.434 | 1.41 | 0.3 | 2.75 | 281.333 | 7.358 | 5 | 2.7 | 2.55 | | 0.00465 |
| Ceiling - Rm 114 | 4,11 | 2 | | 0 | 270 | | 0 | | 3.333 | 4.434 | 1.41 | 0.3 | 2.75 | 281.333 | 7.358 | 5 | 2.7 | 2.55 | | 0.00465 |

| | | | | | GROSS COUNTS IN 5 MINUTES | | | | | ALPHA | | | | | BETA | | | | GAMMA | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE | GRID | | ALPHA | | | BETA | | GAMMA | | INSTRUMENT | | SMEAR | | | INSTRUMENT | | SMEAR | | | |
| NAME | NAME | TOTAL | MAX | REM | TOTAL | MAX | REM | TOTAL | BACKG | EFACT | AFACT | BACKG | EFACT | BACKG | EFACT | AFACT | BACKG | EFACT | BACKG | EFACT |
| Ceiling - Rm 114 | 1,10 | 2 | | 1 | 248 | | 2 | | 3.333 | 4.434 | 1.41 | 0.3 | 2.75 | 281.333 | 7.358 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - South Rm 114 | 3,1 | 5 | | 0 | 311 | | 5 | | 2.167 | 4.379 | 1.41 | 0.3 | 2.75 | 274.833 | 7.995 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - South Rm 114 | 4,4 | 5 | | 0 | 278 | | 2 | | 2.167 | 4.379 | 1.41 | 0.3 | 2.75 | 278.333 | 7.421 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - South Rm 114 | 5,2 | 3 | | 0 | 276 | | 7 | | 2.167 | 4.379 | 1.41 | 0.3 | 2.75 | 274.833 | 7.995 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - South Rm 114 | 8,3 | 2 | | 0 | 257 | | 1 | | 2.167 | 4.379 | 1.41 | 0.3 | 2.75 | 274.833 | 7.995 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - South Rm 114 | 8,5 | 2 | | 0 | 257 | | 3 | | 2.167 | 4.379 | 1.41 | 0.3 | 2.75 | 278.333 | 7.421 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - South Rm 114 | 10,1 | 4 | | 0 | 263 | | 2 | | 2.167 | 4.379 | 1.41 | 0.3 | 2.75 | 274.833 | 7.995 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - South Rm 114 | 11,4 | 4 | | 0 | 283 | | 1 | | 2.167 | 4.379 | 1.41 | 0.3 | 2.75 | 278.333 | 7.421 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - South Rm 114 | 13,3 | 2 | | 0 | 278 | | 1 | | 2.167 | 4.379 | 1.41 | 0.3 | 2.75 | 278.333 | 7.421 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - South Rm 114 | 15,5 | 3 | | 0 | 293 | | 3 | | 2.167 | 4.379 | 1.41 | 0.3 | 2.75 | 278.333 | 7.421 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - West Rm 114 | 17,2 | 4 | | 0 | 362 | | 5 | | 2.167 | 4.379 | 1.41 | 0.3 | 2.75 | 274.833 | 7.995 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - West Rm 114 | 20,2 | 4 | | 0 | 370 | | 2 | | 2.167 | 4.379 | 1.41 | 0.3 | 2.75 | 274.833 | 7.995 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - West Rm 114 | 23,1 | 3 | | 0 | 341 | | 2 | | 2.667 | 4.290 | 1.41 | 0.3 | 2.75 | 274.833 | 7.995 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - West Rm 114 | 26,3 | 3 | | 0 | 339 | | 6 | | 2.667 | 4.290 | 1.41 | 0.3 | 2.75 | 287.833 | 7.808 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - West Rm 114 | 21,4 | 2 | | 0 | 300 | | 4 | | 2.167 | 4.379 | 1.41 | 0.3 | 2.75 | 278.333 | 7.421 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - West Rm 114 | 25,4 | 3 | | 0 | 349 | | 3 | | 2.667 | 4.290 | 1.41 | 0.3 | 2.75 | 278.333 | 7.421 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - North Rm 114 | 2,2 | 5 | | 0 | 368 | | 6 | | 2.167 | 4.379 | 1.41 | 0.3 | 2.75 | 274.833 | 7.995 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - North Rm 114 | 4,3 | 3 | | 1 | 307 | | 6 | | 2.667 | 4.290 | 1.41 | 0.3 | 2.75 | 278.333 | 7.421 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - North Rm 114 | 7,1 | 1 | | 0 | 360 | | 3 | | 2.167 | 4.379 | 1.41 | 0.3 | 2.75 | 274.833 | 7.995 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - North Rm 114 | 10,3 | 2 | | 0 | 318 | | 3 | | 2.667 | 4.290 | 1.41 | 0.3 | 2.75 | 278.333 | 7.421 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - North Rm 114 | 13,1 | 1 | | 1 | 358 | | 2 | | 2.167 | 4.379 | 1.41 | 0.3 | 2.75 | 274.833 | 7.995 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - North Rm 114 | 3,4 | 5 | | 0 | 372 | | 2 | | 2.667 | 4.290 | 1.41 | 0.3 | 2.75 | 278.333 | 7.421 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - North Rm 114 | 9,5 | 4 | | 0 | 291 | | 6 | | 2.667 | 4.290 | 1.41 | 0.3 | 2.75 | 278.333 | 7.421 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - North Rm 114 | 11,4 | 3 | | 0 | 364 | | 0 | | 2.167 | 4.379 | 1.41 | 0.3 | 2.75 | 278.333 | 7.421 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - North Rm 114 | 15,4 | 6 | | 0 | 319 | | 2 | | 2.667 | 4.290 | 1.41 | 0.3 | 2.75 | 278.333 | 7.421 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - East Rm 114 | 17,2 | 4 | | 0 | 313 | | 6 | | 2.167 | 4.379 | 1.41 | 0.3 | 2.75 | 274.833 | 7.995 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - East Rm 114 | 20,2 | 2 | | 0 | 323 | | 1 | | 2.167 | 4.379 | 1.41 | 0.3 | 2.75 | 274.833 | 7.995 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - East Rm 114 | 23,1 | 5 | | 0 | 234 | | 4 | | 2.200 | 3.082 | 1.41 | 0.3 | 2.75 | 233.5 | 7.051 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - East Rm 114 | 26,1 | 3 | | 0 | 315 | | 3 | | 2.167 | 4.379 | 1.41 | 0.3 | 2.75 | 278.333 | 7.421 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - East Rm 114 | 19,1 | 8 | | 0 | 376 | | 5 | | 2.200 | 3.082 | 1.41 | 0.3 | 2.75 | 233.5 | 7.051 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - East Rm 114 | 27,4 | 4 | | 0 | 360 | | 0 | | 2.667 | 4.290 | 1.41 | 0.3 | 2.75 | 278.333 | 7.421 | 5 | 2.7 | 2.55 | | 0.00465 |
| Structure - Trusses Rm 114 NW | St-1 | 4 | | 0 | 242 | | 3 | | 2.667 | 4.467 | 1.41 | 0.3 | 2.75 | 281.333 | 8.015 | 5 | 2.7 | 2.55 | | 0.00465 |
| Structure - Trusses Rm114 Center | St-2 | 3 | | 0 | 278 | | 7 | | 2.667 | 4.467 | 1.41 | 0.3 | 2.75 | 281.333 | 8.015 | 5 | 2.7 | 2.55 | | 0.00465 |
| Structure - Trusses Rm114 SE | St-3 | 5 | | 0 | 280 | | 4 | | 2.667 | 4.467 | 1.41 | 0.3 | 2.75 | 281.333 | 8.015 | 5 | 2.7 | 2.55 | | 0.00465 |
| Structure - Beams Rm 114 North | Sb-1 | 8 | | 0 | 263 | | 3 | | 2.667 | 4.467 | 1.41 | 0.3 | 2.75 | 281.333 | 8.015 | 5 | 2.7 | 2.55 | | 0.00465 |
| Structure - Beams Rm 114 Center | Sb-2 | 6 | | 0 | 277 | | 1 | | 2.667 | 4.467 | 1.41 | 0.3 | 2.75 | 281.333 | 8.015 | 5 | 2.7 | 2.55 | | 0.00465 |
| Structure - Beams Rm 114 South | Sb-3 | 12 | | 0 | 291 | | 1 | | 2.667 | 4.467 | 1.41 | 0.3 | 2.75 | 281.333 | 8.015 | 5 | 2.7 | 2.55 | | 0.00465 |

# BUILDING 064 - FINAL SURVEY DATA FOR LOT 3



| | | | GROSS COUNTS IN 5 MINUTES | | | | | 1 MIN | | | ALPHA | | | | BETA | | | | GAMMA | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE | GRID | | ALPHA | | | BETA | | GAMMA | | INSTRUMENT | | SMEAR | | | INSTRUMENT | | SMEAR | | | |
| NAME | NAME | TOTAL | MAX | REM | TOTAL | MAX | REM | TOTAL | BACKG | EFACT | AFACT | BACKG | EFACT | BACKG | EFACT | AFACT | BACKG | EFACT | BACKG | EFACT |
| Floors - Rm 116 | F-1 | 6 | | 0 | 437 | | 7 | 3725 | 2.667 | 4.467 | 1.41 | 0.3 | 2.75 | 281.333 | 8.015 | 5 | 2.7 | 2.55 | | 0.00465 |
| Floors - Rm 116 | F-2 | 45 | | 0 | 432 | | 7 | 2861 | 2.667 | 4.467 | 1.41 | 0.3 | 2.75 | 281.333 | 8.015 | 5 | 2.7 | 2.55 | | 0.00465 |
| Ceiling - Rm 116 | C-1 | 2 | | 1 | 296 | | 2 | | 2.667 | 4.467 | 1.41 | 0.3 | 2.75 | 281.333 | 8.015 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - West Rm 116 | 2,2 | 2 | | 2 | 392 | | 5 | | 2.667 | 4.467 | 1.41 | 0.3 | 2.75 | 281.333 | 8.015 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - North Rm 116 | 5,1 | 3 | | 0 | 430 | | 1 | | 2.667 | 4.467 | 1.41 | 0.3 | 2.75 | 281.333 | 8.015 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - East Rm 116 | 7,3 | 4 | | 0 | 379 | | 4 | | 2.667 | 4.467 | 1.41 | 0.3 | 2.75 | 281.333 | 8.015 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - South Rm 116 | 10,2 | 6 | | 0 | 310 | | 3 | | 2.667 | 4.467 | 1.41 | 0.3 | 2.75 | 281.333 | 8.015 | 5 | 2.7 | 2.55 | | 0.00465 |
| Floors - Rm 120 | 3,1 | 8 | | 0 | 378 | | 2 | 2848 | 2.333 | 4.393 | 1.41 | 0.3 | 2.75 | 279.833 | 7.579 | 5 | 2.7 | 2.55 | | 0.00465 |
| Floors - Rm 120 | 4,3 | 10 | | 0 | 351 | | 2 | 2414 | 2.333 | 4.393 | 1.41 | 0.3 | 2.75 | 279.833 | 7.579 | 5 | 2.7 | 2.55 | | 0.00465 |
| Floors - Rm 120 | 7,3 | 25 | | 0 | 352 | | 3 | 2395 | 2.333 | 4.393 | 1.41 | 0.3 | 2.75 | 279.833 | 7.579 | 5 | 2.7 | 2.55 | | 0.00465 |
| Floors - Rm 120 | 8,1 | 39 | | 0 | 359 | | 4 | 2038 | 2.333 | 4.393 | 1.41 | 0.3 | 2.75 | 279.833 | 7.579 | 5 | 2.7 | 2.55 | | 0.00465 |
| Ceiling - Rm 120 | 1,4 | 5 | | 0 | 244 | | 3 | | 2.333 | 4.393 | 1.41 | 0.3 | 2.75 | 279.833 | 7.579 | 5 | 2.7 | 2.55 | | 0.00465 |
| Ceiling - Rm 120 | 3,1 | 5 | | 0 | 278 | | 2 | | 2.333 | 4.393 | 1.41 | 0.3 | 2.75 | 279.833 | 7.579 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - West Rm 120 | 1,2 | 4 | | 0 | 224 | | 6 | | 2.333 | 4.393 | 1.41 | 0.3 | 2.75 | 279.833 | 7.579 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - West Rm 120 | 4,3 | 7 | | 1 | 240 | | 4 | | 2.333 | 4.393 | 1.41 | 0.3 | 2.75 | 279.833 | 7.579 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - East Rm 120 | 9,1 | 3 | | 0 | 282 | | 2 | | 2.333 | 4.393 | 1.41 | 0.3 | 2.75 | 279.833 | 7.579 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - East Rm 120 | 12,2 | 3 | | 0 | 232 | | 13 | | 2.333 | 4.393 | 1.41 | 0.3 | 2.75 | 279.833 | 7.579 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - South Rm 120 | 14,1 | 1 | | 0 | 199 | | 2 | | 2.333 | 4.393 | 1.41 | 0.3 | 2.75 | 279.833 | 7.579 | 5 | 2.7 | 2.55 | | 0.00465 |
| Floors - Restroom | F-1 | 13 | | 0 | 355 | | 7 | 2200 | 2.333 | 4.393 | 1.41 | 0.3 | 2.75 | 279.833 | 7.579 | 5 | 2.7 | 2.55 | | 0.00465 |
| Ceiling - Restroom | C-1 | 2 | | 0 | 230 | | 4 | | 2.333 | 4.393 | 1.41 | 0.3 | 2.75 | 279.833 | 7.579 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - West Restroom | 3,2 | 12 | | 0 | 252 | | 1 | | 2.333 | 4.393 | 1.41 | 0.3 | 2.75 | 279.833 | 7.579 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - North Restroom | 5,2 | 31 | | 0 | 318 | | 2 | | 2.333 | 4.393 | 1.41 | 0.3 | 2.75 | 279.833 | 7.579 | 5 | 2.7 | 2.55 | | 0.00465 |
| Wall - East Restroom | 7,1 | 2 | | 0 | 281 | | 6 | | 2.333 | 4.393 | 1.41 | 0.3 | 2.75 | 279.833 | 7.579 | 5 | 2.7 | 2.55 | | 0.00465 |

# APPENDIX B

## Building 064 Interior

## Lots 1 through 3

## Final Survey Results

# BUILDING 064 - FINAL SURVEY CALCULATED RESULTS FOR LOT 1



| SAMPLE | GRID | ALPHA (DPM/100CM2) | | | | | | BETA ( DPM/100CM2) | | | | | | GAMMA (uR/hr) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NAME | NAME | TOTAL | STD DEV | MAX | STD DEV | REM | STD DEV | TOTAL | STD DEV | MAX | STD DEV | REM | STD DEV | TOTAL | STD DEV |
| Floors - Rms 104 & 110 | 1,1 | 5.52 | 3.84 | | | -0.83 | 1.51 | 602.81 | 194.57 | | | -6.89 | 4.19 | 14.64 | 0.26 |
| Floors - Rms 104 & 110 | 1,11 | 6.76 | 4.04 | | | -0.83 | 1.51 | 880.18 | 199.99 | | | 8.42 | 7.52 | 14.91 | 0.26 |
| Floors - Rms 104 & 110 | 2,6 | 1.79 | 3.18 | | | -0.83 | 1.51 | 1134.43 | 204.83 | | | 16.07 | 8.72 | 15.15 | 0.27 |
| Floors - Rms 104 & 110 | 3,9 | 5.52 | 3.84 | | | -0.83 | 1.51 | 695.27 | 196.39 | | | 0.76 | 6.09 | 14.96 | 0.26 |
| Floors - Rms 104 & 110 | 4,7 | 3.03 | 3.42 | | | -0.83 | 1.51 | 926.40 | 200.87 | | | -1.79 | 5.53 | 14.43 | 0.26 |
| Floors - Rms 104 & 110 | 5,4 | 8.00 | 4.23 | | | -0.83 | 1.51 | 1196.06 | 205.98 | | | 5.87 | 7.08 | 14.49 | 0.26 |
| Floors - Rms 104 & 110 | 5,12 | 9.24 | 4.41 | | | 1.93 | 3.14 | 1018.86 | 202.64 | | | -1.79 | 5.53 | 17.54 | 0.29 |
| Floors - Rms 104 & 110 | 6,5 | 3.03 | 3.42 | | | -0.83 | 1.51 | 972.63 | 201.76 | | | 5.87 | 7.08 | 14.35 | 0.26 |
| Floors - Rms 104 & 110 | 7,2 | -0.70 | 2.65 | | | -0.83 | 1.51 | 1003.45 | 202.35 | | | -1.79 | 5.53 | 15.43 | 0.27 |
| Floors - Rms 104 & 110 | 7,12 | 6.76 | 4.04 | | | -0.83 | 1.51 | 795.43 | 198.35 | | | 0.76 | 6.09 | 14.39 | 0.26 |
| Floors - Rms 104 & 110 | 8,8 | 3.03 | 3.42 | | | -0.83 | 1.51 | 872.47 | 199.84 | | | -1.79 | 5.53 | 14.75 | 0.26 |
| Floors - Rms 104 & 110 | 9,3 | 5.52 | 3.84 | | | -0.83 | 1.51 | 895.58 | 200.28 | | | 0.76 | 6.09 | 14.75 | 0.26 |
| Floors - Rms 104 & 110 | 10,6 | 0.54 | 2.93 | | | -0.83 | 1.51 | 864.77 | 199.69 | | | 10.96 | 7.94 | 14.86 | 0.26 |
| Floors - Rms 104 & 110 | 11,4 | 1.79 | 3.18 | | | 1.93 | 3.14 | 1088.20 | 203.95 | | | -1.79 | 5.53 | 14.97 | 0.26 |
| Floors - Rms 104 & 110 | 12,7 | 0.54 | 2.93 | | | -0.83 | 1.51 | 787.72 | 198.20 | | | 5.87 | 7.08 | 14.62 | 0.26 |
| Floors - Rms 104 & 110 | 12,10 | 1.79 | 3.18 | | | -0.83 | 1.51 | 918.70 | 200.73 | | | 5.87 | 7.08 | 13.82 | 0.25 |
| Floors - Rms 104 & 110 | 13,5 | 1.79 | 3.18 | | | -0.83 | 1.51 | 826.24 | 198.94 | | | 0.76 | 6.09 | 14.67 | 0.26 |
| Floors - Rms 104 & 110 | 14,11 | 8.00 | 4.23 | | | -0.83 | 1.51 | 1041.97 | 203.08 | | | -4.34 | 4.91 | 14.81 | 0.26 |
| Floors - Rms 104 & 110 | 14,2 | 5.52 | 3.84 | | | -0.83 | 1.51 | 602.81 | 194.57 | | | 8.42 | 7.52 | 15.15 | 0.27 |
| Floors - Rms 104 & 110 | 15,5 | 3.03 | 3.42 | | | -0.83 | 1.51 | 864.77 | 199.69 | | | 3.31 | 6.60 | 12.88 | 0.24 |
| Ceiling - Rms 104 & 110 | 1,5 | 2.30 | 3.11 | | | -0.83 | 1.51 | -2.55 | 178.44 | | | -1.79 | 5.53 | | |
| Ceiling - Rms 104 & 110 | 2,8 | -0.21 | 2.56 | | | -0.83 | 1.51 | 127.47 | 181.21 | | | 3.31 | 6.60 | | |
| Ceiling - Rms 104 & 110 | 3,12 | 4.80 | 3.58 | | | -0.83 | 1.51 | 471.64 | 188.33 | | | 13.52 | 8.34 | | |
| Ceiling - Rms 104 & 110 | 3,2 | 1.04 | 2.85 | | | -0.83 | 1.51 | 127.47 | 181.21 | | | 3.31 | 6.60 | | |
| Ceiling - Rms 104 & 110 | 4,6 | -0.21 | 2.56 | | | 1.93 | 3.14 | 112.17 | 180.88 | | | 13.52 | 8.34 | | |
| Ceiling - Rms 104 & 110 | 5,9 | 2.30 | 3.11 | | | -0.83 | 1.51 | 112.17 | 180.88 | | | 8.42 | 7.52 | | |
| Ceiling - Rms 104 & 110 | 6,4 | 3.55 | 3.36 | | | -0.83 | 1.51 | 12.75 | 178.77 | | | 0.76 | 6.09 | | |
| Ceiling - Rms 104 & 110 | 6,11 | 2.30 | 3.11 | | | -0.83 | 1.51 | 127.47 | 181.21 | | | -1.79 | 5.53 | | |
| Ceiling - Rms 104 & 110 | 7,1 | 8.57 | 4.19 | | | -0.83 | 1.51 | 364.57 | 186.14 | | | 5.87 | 7.08 | | |
| Ceiling - Rms 104 & 110 | 8,3 | 3.55 | 3.36 | | | -0.83 | 1.51 | -2.55 | 178.44 | | | 10.96 | 7.94 | | |
| Ceiling - Rms 104 & 110 | 9,7 | 2.30 | 3.11 | | | -0.83 | 1.51 | 203.95 | 182.81 | | | -1.79 | 5.53 | | |
| Ceiling - Rms 104 & 110 | 9,12 | 7.31 | 4.00 | | | 1.93 | 3.14 | 242.19 | 183.61 | | | -4.34 | 4.91 | | |
| Ceiling - Rms 104 & 110 | 10,5 | 2.30 | 3.11 | | | -0.83 | 1.51 | 249.84 | 183.77 | | | 3.31 | 6.60 | | |
| Ceiling - Rms 104 & 110 | 11,2 | 3.55 | 3.36 | | | -0.83 | 1.51 | 356.92 | 185.99 | | | 5.87 | 7.08 | | |

# BUILDING 064 - FINAL SURVEY CALCULATED RESULTS FOR LOT 1



| SAMPLE NAME | GRID NAME | ALPHA (DPM/100CM2) | | | | | | BETA ( DPM/100CM2) | | | | | | GAMMA (uR/hr) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | TOTAL | STD DEV | MAX | STD DEV | REM | STD DEV | TOTAL | STD DEV | MAX | STD DEV | REM | STD DEV | TOTAL | STD DEV |
| Ceiling - Rms 104 & 110 | 11,11 | 1.04 | 2.85 | | | -0.83 | 1.51 | 203.95 | 182.81 | | | -1.79 | 5.53 | | |
| Ceiling - Rms 104 & 110 | 12,9 | 2.30 | 3.11 | | | 1.93 | 3.14 | 112.17 | 180.88 | | | 10.96 | 7.94 | | |
| Ceiling - Rms 104 & 110 | 13,2 | 4.80 | 3.58 | | | 15.68 | 6.90 | 379.86 | 186.46 | | | 5.87 | 7.08 | | |
| Ceiling - Rms 104 & 110 | 14,3 | 2.30 | 3.11 | | | 1.93 | 3.14 | 410.46 | 187.08 | | | 3.31 | 6.60 | | |
| Ceiling - Rms 104 & 110 | 15,1 | 6.06 | 3.79 | | | 1.93 | 3.14 | 349.27 | 185.83 | | | 13.52 | 8.34 | | |
| Ceiling - Rms 104 & 110 | 14,10 | 4.80 | 3.58 | | | -0.83 | 1.51 | 219.25 | 183.13 | | | 3.31 | 6.60 | | |
| Wall North - Rm 110 | 1,3 | 8.57 | 4.19 | | | 7.43 | 5.00 | -155.51 | 175.13 | | | 0.76 | 6.09 | | |
| Wall North - Rm 110 | 3,2 | 12.33 | 4.72 | | | 1.93 | 3.14 | 188.66 | 182.49 | | | 3.31 | 6.60 | | |
| Wall North - Rm 110 | 6,1 | 13.58 | 4.88 | | | 1.93 | 3.14 | -17.85 | 178.11 | | | 0.76 | 6.09 | | |
| Wall North - Rm 110 | 8,3 | 11.07 | 4.55 | | | -0.83 | 1.51 | -209.05 | 173.96 | | | 0.76 | 6.09 | | |
| Wall North - Rm 110 | 10,4 | 8.57 | 4.19 | | | -0.83 | 1.51 | -239.65 | 173.29 | | | 0.76 | 6.09 | | |
| Wall North - Rm 110 | 11,1 | 14.83 | 5.04 | | | -0.83 | 1.51 | 12.75 | 178.77 | | | 5.87 | 7.08 | | |
| Wall North - Rm 110 | 13,2 | 9.82 | 4.37 | | | -0.83 | 1.51 | -48.44 | 177.45 | | | -4.34 | 4.91 | | |
| Wall North - Rm 110 | 15,3 | 11.07 | 4.55 | | | -0.83 | 1.51 | -25.49 | 177.95 | | | 0.76 | 6.09 | | |
| Wall East - Rm 110 | 18,4 | 14.83 | 5.04 | | | -0.83 | 1.51 | 135.12 | 181.37 | | | 10.96 | 7.94 | | |
| Wall East - Rm 110 | 19,1 | 17.34 | 5.34 | | | 1.93 | 3.14 | 96.88 | 180.56 | | | 5.87 | 7.08 | | |
| Wall East - Rm 110 | 21,2 | 24.86 | 6.16 | | | -0.83 | 1.51 | 181.01 | 182.33 | | | -4.34 | 4.91 | | |
| Wall East - Rm 110 | 23,2 | 11.07 | 4.55 | | | 1.93 | 3.14 | -469.09 | 168.15 | | | 5.87 | 7.08 | | |
| Wall East - Rm 110 | 25,2 | 11.07 | 4.55 | | | 4.68 | 4.17 | 181.01 | 182.33 | | | 10.96 | 7.94 | | |
| Wall East - Rm 110 | 27,3 | 8.57 | 4.19 | | | 1.93 | 3.14 | 35.69 | 179.26 | | | 10.96 | 7.94 | | |
| Wall South - Rm 110 | 2,3 | 12.33 | 4.72 | | | -0.83 | 1.51 | 280.44 | 184.41 | | | 5.87 | 7.08 | | |
| Wall South - Rm 110 | 4,2 | 12.33 | 4.72 | | | 1.93 | 3.14 | 280.44 | 184.41 | | | 5.87 | 7.08 | | |
| Wall South - Rm 110 | 6,1 | 9.82 | 4.37 | | | -0.83 | 1.51 | 356.92 | 185.99 | | | 0.76 | 6.09 | | |
| Wall South - Rm 110 | 7-8,5 | 8.57 | 4.19 | | | -0.83 | 1.51 | 127.47 | 181.21 | | | 0.76 | 6.09 | | |
| Wall South - Rm 110 | 10,3 | 17.34 | 5.34 | | | -0.83 | 1.51 | 150.42 | 181.69 | | | 3.31 | 6.60 | | |
| Wall West - Rm 110 | 12,2 | 18.59 | 5.49 | | | 1.93 | 3.14 | 127.47 | 181.21 | | | 3.31 | 6.60 | | |
| Wall West - Rm 110 | 14,3 | 6.06 | 3.79 | | | -0.83 | 1.51 | 35.69 | 179.26 | | | 5.87 | 7.08 | | |
| Wall West - Rm 110 | 16,2 | 12.33 | 4.72 | | | 1.93 | 3.14 | 35.69 | 179.26 | | | 3.31 | 6.60 | | |
| Wall West - Rm 110 | 18,3 | 8.57 | 4.19 | | | 1.93 | 3.14 | 257.49 | 183.93 | | | 5.87 | 7.08 | | |
| Wall West - Rm 110 | 20,1 | 12.33 | 4.72 | | | -0.83 | 1.51 | 165.71 | 182.01 | | | 0.76 | 6.09 | | |
| Wall West - Rm 110 | 22,4 | 11.07 | 4.55 | | | -0.83 | 1.51 | 402.81 | 186.93 | | | 8.42 | 7.52 | | |
| Wall West - Rm 110 | 23,3 | 13.58 | 4.88 | | | -0.83 | 1.51 | -10.20 | 178.28 | | | -1.79 | 5.53 | | |
| Wall East - Rm 104(deconned) | 2,2 | 62.87 | 9.24 | 470.27 | 24.45 | 10.18 | 5.70 | 496.77 | 189.93 | 326 | 186 | 18.62 | 9.09 | | |
| Wall East - Rm 104 | 4,2 | 12.33 | 4.72 | | | 1.93 | 3.14 | 265.14 | 184.09 | | | 5.87 | 7.08 | | |

| | | | | ALPHA | | | | | | BETA | | | | GAMMA | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE | GRID | | | (DPM/100CM2) | | | | | | ( DPM/100CM2) | | | | (uR/hr) | |
| NAME | NAME | TOTAL | STD DEV | MAX | STD DEV | REM | STD DEV | TOTAL | STD DEV | MAX | STD DEV | REM | STD DEV | TOTAL | STD DEV |
| | | | | | | | | | | | | | | | |
| Wall South - Rm 104(deconned) | 5,1 | 13.83 | 4.87 | 282.91 | 19.03 | 1.93 | 3.14 | 249.03 | 184.81 | 117 | 182 | -4.34 | 4.91 | | |
| Wall West - Rm 104 | 8,3 | 8.57 | 4.19 | | | -0.83 | 1.51 | -86.68 | 176.63 | | | 8.42 | 7.52 | | |
| Wall West - Rm 104 | 10,1 | 41.15 | 7.64 | | | 23.93 | 8.39 | 58.64 | 179.75 | | | 31.37 | 10.73 | | |
| Wall North - Rm 104 | 12,3 | 12.33 | 4.72 | | | -0.83 | 1.51 | 196.30 | 182.65 | | | 0.76 | 6.09 | | |
| Wall North - Rm 104 | 14,2-3 | 9.82 | 4.37 | | | 1.93 | 3.14 | 35.69 | 179.26 | | | 0.76 | 6.09 | | |
| Structure - Trusses Rm 104 | St-1 | 193.64 | 15.81 | | | 1.93 | 3.14 | 450.32 | 188.98 | | | 5.87 | 7.08 | | |
| Structure - Trusses Rm 104 | St-2 | 164.72 | 14.61 | | | -0.83 | 1.51 | 411.61 | 188.18 | | | 16.07 | 8.72 | | |
| Structure - Trusses Exit Rm 110 | St-3 | 57.84 | 8.89 | | | 7.43 | 5.00 | -316.13 | 172.57 | | | -1.79 | 5.53 | | |
| Structure - Trusses NE corner Rm 110 | St-4 | 98.08 | 11.39 | | | -0.83 | 1.51 | 434.84 | 188.66 | | | -4.34 | 4.91 | | |
| Structure - Trusses near C(4,10) | St-5 | 57.84 | 8.89 | | | 1.93 | 3.14 | 388.39 | 187.70 | | | 0.76 | 6.09 | | |
| Structure - Trusses near Center | St-6 | 44.01 | 7.85 | | | -0.83 | 1.51 | 272.26 | 185.29 | | | -1.79 | 5.53 | | |
| Structure - Trusses C(6,4) near HTR | St-7 | 26.41 | 6.29 | | | 1.93 | 3.14 | 365.16 | 187.23 | | | 13.52 | 8.34 | | |
| Structure - Beam Ledges - West | Sb-1 | 94.30 | 11.18 | | | 4.68 | 4.17 | -99.35 | 177.36 | | | 0.76 | 6.09 | | |
| Structure - Beam Ledges - Center West | Sb-2 | 44.01 | 7.85 | | | 1.93 | 3.14 | -153.55 | 176.17 | | | 0.76 | 6.09 | | |
| Structure - Beam Ledges - Center | Sb-3 | 71.67 | 9.82 | | | 4.68 | 4.17 | 101.94 | 181.70 | | | 5.87 | 7.08 | | |
| Structure - Beam Ledges - Center East | Sb-4 | 137.06 | 13.37 | | | -0.83 | 1.51 | 148.39 | 182.69 | | | 3.31 | 6.60 | | |
| Structure - Beam Ledges - East | Sb-5 | 155.92 | 14.23 | | | -0.83 | 1.51 | 233.55 | 184.48 | | | -1.79 | 5.53 | | |
| Structure - Heater Outside Wall | Sh-1 | 5.03 | 3.56 | | | -0.83 | 1.51 | -21.94 | 179.04 | | | -1.79 | 5.53 | | |
| Structure - Heater Inside Grating | Sh-2 | 2.51 | 3.08 | | | 1.93 | 3.14 | 24.52 | 180.04 | | | 0.76 | 6.09 | | |
| Structure - Heater Inside Wall | Sh-3 | 0.00 | 2.51 | | | -0.83 | 1.51 | -230.97 | 174.47 | | | 5.87 | 7.08 | | |

# BUILDING 064 - FINAL SURVEY CALCULATED RESULTS FOR LOT 2



| SAMPLE NAME | GRID NAME | ALPHA (DPM/100CM2) TOTAL | ALPHA STD DEV | ALPHA MAX | ALPHA STD DEV | ALPHA REM | ALPHA STD DEV | BETA ( DPM/100CM2) TOTAL | BETA STD DEV | BETA MAX | BETA STD DEV | BETA REM | BETA STD DEV | GAMMA (uR/h) TOTAL | GAMMA STD DEV |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | |
| Floors - Rm 114 | 1,4 | 0.54 | 2.93 | | | 1.93 | 3.14 | 976.67 | 207.22 | | | 5.87 | 7.08 | 15.32 | 0.27 |
| Floors - Rm 114 | 2,1 | -0.70 | 2.65 | | | -0.83 | 1.51 | 1016.64 | 207.99 | | | 3.31 | 6.60 | 15.41 | 0.27 |
| Floors - Rm 114 | 3,7 | 4.27 | 3.64 | | | -0.83 | 1.51 | 680.87 | 201.43 | | | -1.79 | 5.53 | 14.75 | 0.26 |
| Floors - Rm 114 | 2,10 | -3.18 | 1.99 | | | -0.83 | 1.51 | 928.70 | 206.29 | | | 3.31 | 6.60 | 16.21 | 0.27 |
| Floors - Rm 114 | 5,12 | 1.79 | 3.18 | | | -0.83 | 1.51 | 1096.58 | 209.52 | | | -4.34 | 4.91 | 15.68 | 0.27 |
| Floors - Rm 114 | 4,5 | 5.52 | 3.84 | | | -0.83 | 1.51 | 864.74 | 205.05 | | | 10.96 | 7.94 | 13.79 | 0.25 |
| Floors - Rm 114 | 5,2 | 1.79 | 3.18 | | | -0.83 | 1.51 | 816.78 | 204.11 | | | -1.79 | 5.53 | 14.46 | 0.26 |
| Floors - Rm 114 | 6,6 | 0.54 | 2.93 | | | -0.83 | 1.51 | 952.68 | 206.75 | | | 8.42 | 7.52 | 14.42 | 0.26 |
| Floors - Rm 114 | 7,3 | 3.03 | 3.42 | | | -0.83 | 1.51 | 736.83 | 202.54 | | | 5.87 | 7.08 | 14.51 | 0.26 |
| Floors - Rm 114 | 8,8 | -0.70 | 2.65 | | | -0.83 | 1.51 | 1104.58 | 209.67 | | | 0.76 | 6.09 | 14.34 | 0.26 |
| Floors - Rm 114 | 7,11 | -0.70 | 2.65 | | | -0.83 | 1.51 | 928.70 | 206.29 | | | -1.79 | 5.53 | 14.84 | 0.26 |
| Floors - Rm 114 | 9,4 | 3.51 | 3.75 | | | -0.83 | 1.51 | 776.23 | 203.67 | | | 8.42 | 7.52 | 14.32 | 0.26 |
| Floors - Rm 114 | 10,1 | 2.27 | 3.54 | | | -0.83 | 1.51 | 480.77 | 197.95 | | | 8.42 | 7.52 | 13.63 | 0.25 |
| Floors - Rm 114 | 11,7 | 4.75 | 3.95 | | | -0.83 | 1.51 | 690.70 | 202.03 | | | 8.42 | 7.52 | 13.87 | 0.25 |
| Floors - Rm 114 | 12,6 | 3.51 | 3.75 | | | -0.83 | 1.51 | 791.78 | 203.97 | | | -1.79 | 5.53 | 14.03 | 0.26 |
| Floors - Rm 114 | 12,10 | 3.51 | 3.75 | | | 1.93 | 3.14 | 325.26 | 194.87 | | | 3.31 | 6.60 | 15.12 | 0.27 |
| Floors - Rm 114 | 13,1 | 5.99 | 4.14 | | | -0.83 | 1.51 | 535.19 | 199.02 | | | 0.76 | 6.09 | 14.17 | 0.26 |
| Floors - Rm 114 | 14,5 | 4.75 | 3.95 | | | -0.83 | 1.51 | 589.62 | 200.08 | | | -1.79 | 5.53 | 14.25 | 0.26 |
| Floors - Rm 114 | 15,2 | 2.27 | 3.54 | | | -0.83 | 1.51 | 426.34 | 196.88 | | | 0.76 | 6.09 | 14.00 | 0.26 |
| Floors - Rm 114 | 15,11 | 2.27 | 3.54 | | | 1.93 | 3.14 | 706.25 | 202.33 | | | 3.31 | 6.60 | 16.19 | 0.27 |
| Ceiling - Rm 114 | 1,1 | 0.83 | 3.39 | | | -0.83 | 1.51 | -98.11 | 172.46 | | | 5.87 | 7.08 | | |
| Ceiling - Rm 114 | 2,4 | 3.33 | 3.82 | | | 1.93 | 3.14 | -186.41 | 170.56 | | | -1.79 | 5.53 | | |
| Ceiling - Rm 114 | 3,6 | 0.83 | 3.39 | | | -0.83 | 1.51 | -385.07 | 166.22 | | | 10.96 | 7.94 | | |
| Ceiling - Rm 114 | 4,3 | 2.08 | 3.61 | | | -0.83 | 1.51 | -215.84 | 169.93 | | | -1.79 | 5.53 | | |
| Ceiling - Rm 114 | 5,2 | 3.33 | 3.82 | | | -0.83 | 1.51 | -46.60 | 173.55 | | | 5.87 | 7.08 | | |
| Ceiling - Rm 114 | 6,6 | -2.92 | 2.60 | | | 1.93 | 3.14 | -333.57 | 167.36 | | | 3.31 | 6.60 | | |
| Ceiling - Rm 114 | 7,7 | 5.83 | 4.21 | | | -0.83 | 1.51 | -421.86 | 165.41 | | | -4.34 | 4.91 | | |
| Ceiling - Rm 114 | 8,9 | -0.42 | 3.15 | | | -0.83 | 1.51 | -318.85 | 167.68 | | | 5.87 | 7.08 | | |
| Ceiling - Rm 114 | 9,4 | 3.33 | 3.82 | | | 1.93 | 3.14 | -186.41 | 170.56 | | | 3.31 | 6.60 | | |
| Ceiling - Rm 114 | 10,5 | 4.58 | 4.02 | | | -0.83 | 1.51 | -245.27 | 169.29 | | | -1.79 | 5.53 | | |
| Ceiling - Rm 114 | 11,9 | 0.83 | 3.39 | | | -0.83 | 1.51 | -259.99 | 168.97 | | | 3.31 | 6.60 | | |
| Ceiling - Rm 114 | 12,2 | 3.33 | 3.82 | | | -0.83 | 1.51 | -259.99 | 168.97 | | | -1.79 | 5.53 | | |
| Ceiling - Rm 114 | 13,4 | 0.83 | 3.39 | | | 1.93 | 3.14 | -399.79 | 165.90 | | | 3.31 | 6.60 | | |

| SAMPLE NAME | GRID NAME | ALPHA (DPM/100CM2) TOTAL | STD DEV | MAX | STD DEV | REM | STD DEV | BETA ( DPM/100CM2) TOTAL | STD DEV | MAX | STD DEV | REM | STD DEV | GAMMA (uR/h) TOTAL | STD DEV |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ceiling - Rm 114 | 14,7 | 2.08 | 3.61 | | | -0.83 | 1.51 | -31.89 | 173.87 | | | 10.96 | 7.94 | | |
| Ceiling - Rm 114 | 15,6 | -1.67 | 2.89 | | | 1.93 | 3.14 | -245.27 | 169.29 | | | 0.76 | 6.09 | | |
| Ceiling - Rm 114 | 13,12 | 4.58 | 4.02 | | | -0.83 | 1.51 | -120.18 | 171.99 | | | -1.79 | 5.53 | | |
| Ceiling - Rm 114 | 10,10 | 3.33 | 3.82 | | | -0.83 | 1.51 | -318.85 | 167.68 | | | 3.31 | 6.60 | | |
| Ceiling - Rm 114 | 8,12 | 0.83 | 3.39 | | | -0.83 | 1.51 | -105.47 | 172.30 | | | 0.76 | 6.09 | | |
| Ceiling - Rm 114 | 4,11 | -1.67 | 2.89 | | | -0.83 | 1.51 | -83.39 | 172.77 | | | -6.89 | 4.19 | | |
| Ceiling - Rm 114 | 1,10 | -1.67 | 2.89 | | | 1.93 | 3.14 | -245.27 | 169.29 | | | -1.79 | 5.53 | | |
| Wall - South Rm 114 | 3,1 | 3.50 | 3.31 | | | -0.83 | 1.51 | 289.14 | 193.50 | | | 5.87 | 7.08 | | |
| Wall - South Rm 114 | 4,4 | 3.50 | 3.31 | | | -0.83 | 1.51 | -2.47 | 175.03 | | | -1.79 | 5.53 | | |
| Wall - South Rm 114 | 5,2 | 1.03 | 2.81 | | | -0.83 | 1.51 | 9.33 | 187.63 | | | 10.96 | 7.94 | | |
| Wall - South Rm 114 | 8,3 | -0.21 | 2.52 | | | -0.83 | 1.51 | -142.57 | 184.37 | | | -4.34 | 4.91 | | |
| Wall - South Rm 114 | 8,5 | -0.21 | 2.52 | | | -0.83 | 1.51 | -158.31 | 171.69 | | | 0.76 | 6.09 | | |
| Wall - South Rm 114 | 10,1 | 2.26 | 3.07 | | | -0.83 | 1.51 | -94.60 | 185.40 | | | -1.79 | 5.53 | | |
| Wall - South Rm 114 | 11,4 | 2.26 | 3.07 | | | -0.83 | 1.51 | 34.63 | 175.81 | | | -4.34 | 4.91 | | |
| Wall - South Rm 114 | 13,3 | -0.21 | 2.52 | | | -0.83 | 1.51 | -2.47 | 175.03 | | | -4.34 | 4.91 | | |
| Wall - South Rm 114 | 15,5 | 1.03 | 2.81 | | | -0.83 | 1.51 | 108.84 | 177.37 | | | 0.76 | 6.09 | | |
| Wall - West Rm 114 | 17,2 | 2.26 | 3.07 | | | -0.83 | 1.51 | 696.86 | 201.75 | | | 5.87 | 7.08 | | |
| Wall - West Rm 114 | 20,2 | 2.26 | 3.07 | | | -0.83 | 1.51 | 760.81 | 203.01 | | | -1.79 | 5.53 | | |
| Wall - West Rm 114 | 23,1 | 0.40 | 2.88 | | | -0.83 | 1.51 | 528.97 | 198.39 | | | -1.79 | 5.53 | | |
| Wall - West Rm 114 | 26,3 | 0.40 | 2.88 | | | -0.83 | 1.51 | 399.53 | 195.50 | | | 8.42 | 7.52 | | |
| Wall - West Rm 114 | 21,4 | -0.21 | 2.52 | | | -0.83 | 1.51 | 160.78 | 178.46 | | | 3.31 | 6.60 | | |
| Wall - West Rm 114 | 25,4 | 0.40 | 2.88 | | | -0.83 | 1.51 | 524.39 | 185.86 | | | 0.76 | 6.09 | | |
| Wall - North Rm 114 | 2,2 | 3.50 | 3.31 | | | -0.83 | 1.51 | 744.82 | 202.69 | | | 8.42 | 7.52 | | |
| Wall - North Rm 114 | 4,3 | 0.40 | 2.88 | | | 1.93 | 3.14 | 212.73 | 179.53 | | | 8.42 | 7.52 | | |
| Wall - North Rm 114 | 7,1 | -1.44 | 2.20 | | | -0.83 | 1.51 | 680.87 | 201.43 | | | 0.76 | 6.09 | | |
| Wall - North Rm 114 | 10,3 | -0.81 | 2.61 | | | -0.83 | 1.51 | 294.35 | 181.21 | | | 0.76 | 6.09 | | |
| Wall - North Rm 114 | 13,1 | -1.44 | 2.20 | | | 1.93 | 3.14 | 664.88 | 201.11 | | | -1.79 | 5.53 | | |
| Wall - North Rm 114 | 3,4 | 2.82 | 3.35 | | | -0.83 | 1.51 | 695.07 | 189.24 | | | -1.79 | 5.53 | | |
| Wall - North Rm 114 | 9,5 | 1.61 | 3.12 | | | -0.83 | 1.51 | 93.99 | 177.06 | | | 8.42 | 7.52 | | |
| Wall - North Rm 114 | 11,4 | 1.03 | 2.81 | | | -0.83 | 1.51 | 635.70 | 188.07 | | | -6.89 | 4.19 | | |
| Wall - North Rm 114 | 15,4 | 4.03 | 3.56 | | | -0.83 | 1.51 | 301.77 | 181.36 | | | -1.79 | 5.53 | | |
| Wall - East Rm 114 | 17,2 | 2.26 | 3.07 | | | -0.83 | 1.51 | 305.12 | 193.83 | | | 8.42 | 7.52 | | |
| Wall - East Rm 114 | 20,2 | -0.21 | 2.52 | | | -0.83 | 1.51 | 385.07 | 195.47 | | | -4.34 | 4.91 | | |

# BUILDING 064 - FINAL SURVEY CALCULATED RESULTS FOR LOT 2



| SAMPLE NAME | GRID NAME | ALPHA (DPM/100CM2) TOTAL | ALPHA STD DEV | ALPHA MAX | ALPHA STD DEV | ALPHA REM | ALPHA STD DEV | BETA ( DPM/100CM2) TOTAL | BETA STD DEV | BETA MAX | BETA STD DEV | BETA REM | BETA STD DEV | GAMMA (uR/h) TOTAL | GAMMA STD DEV |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Wall - East Rm 114 | 23,1 | 2.43 | 2.33 | | | -0.83 | 1.51 | 3.53 | 152.45 | | | 3.31 | 6.60 | | |
| Wall - East Rm 114 | 26,1 | 1.03 | 2.81 | | | -0.83 | 1.51 | 272.09 | 180.76 | | | 0.76 | 6.09 | | |
| Wall - East Rm 114 | 19,1 | 5.04 | 2.78 | | | -0.83 | 1.51 | 1004.76 | 174.07 | | | 5.87 | 7.08 | | |
| Wall - East Rm 114 | 27,4 | 1.61 | 3.12 | | | -0.83 | 1.51 | 606.02 | 187.48 | | | -6.89 | 4.19 | | |
| Structure - Trusses Rm 114 NW | St-1 | 1.68 | 3.25 | | | -0.83 | 1.51 | -315.27 | 183.36 | | | 0.76 | 6.09 | | |
| Structure - Trusses Rm114 Center | St-2 | 0.42 | 3.00 | | | -0.83 | 1.51 | -26.72 | 189.57 | | | 10.96 | 7.94 | | |
| Structure - Trusses Rm114 SE | St-3 | 2.94 | 3.49 | | | -0.83 | 1.51 | -10.69 | 189.90 | | | 3.31 | 6.60 | | |
| Structure - Beams Rm 114 North | Sb-1 | 6.72 | 4.11 | | | -0.83 | 1.51 | -146.95 | 187.01 | | | 0.76 | 6.09 | | |
| Structure - Beams Rm 114 Center | Sb-2 | 4.20 | 3.71 | | | -0.83 | 1.51 | -34.73 | 189.40 | | | -4.34 | 4.91 | | |
| Structure - Beams Rm 114 South | Sb-3 | 11.76 | 4.82 | | | -0.83 | 1.51 | 77.48 | 191.76 | | | -4.34 | 4.91 | | |
| Maximum: | | 11.76 | 4.82 | | | 1.93 | 3.14 | 1104.58 | 209.67 | | | 10.96 | 7.94 | 16.21 | 0.27 |
| Minimum: | | -3.18 | 1.99 | | | -0.83 | 1.51 | -421.86 | 152.45 | | | -6.89 | 4.19 | 13.63 | 0.25 |
| Average: | | 1.91 | 3.23 | | | -0.43 | 1.74 | 269.40 | 186.41 | | | 1.84 | 6.23 | 14.67 | 0.26 |

# BUILDING 064 - FINAL SURVEY CALCULATED RESULTS FOR LOT 3



| | | | | ALPHA | | | | | | BETA | | | | GAMMA | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE | GRID | | | (DPM/100CM2) | | | | | | ( DPM/100CM2) | | | | (uR/h) | |
| NAME | NAME | TOTAL | STD DEV | MAX | STD DEV | REM | STD DEV | TOTAL | STD DEV | MAX | STD DEV | REM | STD DEV | TOTAL | STD DEV |
| | | | | | | | | | | | | | | | |
| Floors - Rm 116 | F-1 | 4.20 | 3.71 | | | -0.83 | 1.51 | 1247.73 | 214.83 | | | 10.96 | 7.94 | 17.32 | 0.28 |
| Floors - Rm 116 | F-2 | 53.33 | 8.70 | | | -0.83 | 1.51 | 1207.65 | 214.08 | | | 10.96 | 7.94 | 13.30 | 0.25 |
| Ceiling - Rm 116 | C-1 | -0.84 | 2.72 | | | 1.93 | 3.14 | 117.56 | 192.59 | | | -1.79 | 5.53 | | |
| Wall - West Rm 116 | 2,2 | -0.84 | 2.72 | | | 4.68 | 4.17 | 887.04 | 207.99 | | | 5.87 | 7.08 | | |
| Wall - North Rm 116 | 5,1 | 0.42 | 3.00 | | | -0.83 | 1.51 | 1191.62 | 213.78 | | | -4.34 | 4.91 | | |
| Wall - East Rm 116 | 7,3 | 1.68 | 3.25 | | | -0.83 | 1.51 | 782.84 | 205.97 | | | 3.31 | 6.60 | | |
| Wall - South Rm 116 | 10,2 | 4.20 | 3.71 | | | -0.83 | 1.51 | 229.77 | 194.91 | | | 0.76 | 6.09 | | |
| Floors - Rm 120 | 3,1 | 7.02 | 3.98 | | | -0.83 | 1.51 | 743.97 | 194.38 | | | -1.79 | 5.53 | 13.24 | 0.25 |
| Floors - Rm 120 | 4,3 | 9.50 | 4.35 | | | -0.83 | 1.51 | 539.35 | 190.35 | | | -1.79 | 5.53 | 11.23 | 0.23 |
| Floors - Rm 120 | 7,3 | 28.08 | 6.48 | | | -0.83 | 1.51 | 546.92 | 190.50 | | | 0.76 | 6.09 | 11.14 | 0.23 |
| Floors - Rm 120 | 8,1 | 45.42 | 7.96 | | | -0.83 | 1.51 | 599.97 | 191.55 | | | 3.31 | 6.60 | 9.48 | 0.21 |
| Ceiling - Rm 120 | 1,4 | 3.30 | 3.35 | | | -0.83 | 1.51 | -271.57 | 173.46 | | | 0.76 | 6.09 | | |
| Ceiling - Rm 120 | 3,1 | 3.30 | 3.35 | | | -0.83 | 1.51 | -13.89 | 179.00 | | | -1.79 | 5.53 | | |
| Wall - West Rm 120 | 1,2 | 2.06 | 3.12 | | | -0.83 | 1.51 | -423.14 | 170.11 | | | 8.42 | 7.52 | | |
| Wall - West Rm 120 | 4,3 | 5.78 | 3.78 | | | 1.93 | 3.14 | -301.88 | 172.79 | | | 3.31 | 6.60 | | |
| Wall - East Rm 120 | 9,1 | 0.83 | 2.86 | | | -0.83 | 1.51 | 16.42 | 179.64 | | | -1.79 | 5.53 | | |
| Wall - East Rm 120 | 12,2 | 0.83 | 2.86 | | | -0.83 | 1.51 | -362.51 | 171.46 | | | 26.27 | 10.10 | | |
| Wall - South Rm 120 | 14,1 | -1.65 | 2.26 | | | -0.83 | 1.51 | -612.61 | 165.84 | | | -1.79 | 5.53 | | |
| Floors - Restroom | F-1 | 13.21 | 4.85 | | | -0.83 | 1.51 | 569.66 | 190.95 | | | 10.96 | 7.94 | 10.23 | 0.22 |
| Ceiling - Restroom | C-1 | -0.41 | 2.58 | | | -0.83 | 1.51 | -377.67 | 171.12 | | | 3.31 | 6.60 | | |
| Wall - West Restroom | 3,2 | 11.97 | 4.69 | | | -0.83 | 1.51 | -210.94 | 174.77 | | | -4.34 | 4.91 | | |
| Wall - North Restroom | 5,2 | 35.51 | 7.15 | | | -0.83 | 1.51 | 289.25 | 185.30 | | | -1.79 | 5.53 | | |
| Wall - East Restroom | 7,1 | -0.41 | 2.58 | | | -0.83 | 1.51 | 8.84 | 179.48 | | | 8.42 | 7.52 | | |
| | | | | | | | | | | | | | | | |
| Maximum: | | 53.33 | 8.70 | | | 4.68 | 4.17 | 1247.73 | 214.83 | | | 26.27 | 10.10 | 17.32 | 0.28 |
| Minimum: | | -1.65 | 2.26 | | | -0.83 | 1.51 | -612.61 | 165.84 | | | -4.34 | 4.91 | 9.48 | 0.21 |
| Average: | | 9.85 | 4.09 | | | -0.35 | 1.76 | 278.45 | 188.04 | | | 3.31 | 6.49 | 12.28 | 0.24 |

Gamma exposure rate in Bldg. 445

| counts/1 min | uR/hr | uncertainty |
|---|---|---|
| 3205 | 14.91 | 0.26 |
| 3189 | 14.83 | 0.26 |
| 3362 | 15.64 | 0.27 |
| 3366 | 15.66 | 0.27 |
| 3149 | 14.65 | 0.26 |
| 3194 | 14.86 | 0.26 |
| 3187 | 14.82 | 0.26 |
| 3109 | 14.46 | 0.26 |
| 3261 | 15.17 | 0.27 |
| 3365 | 15.65 | 0.27 |
| 3150 | 14.65 | 0.26 |
| 3181 | 14.80 | 0.26 |
| 3183 | 14.80 | 0.26 |
| 3237 | 15.06 | 0.26 |
| 3252 | 15.13 | 0.27 |
| 3380 | 15.72 | 0.27 |
| 3179 | 14.79 | 0.26 |
| 3231 | 15.03 | 0.26 |
| 3264 | 15.18 | 0.27 |
| 3242 | 15.08 | 0.26 |
| 3322 | 15.45 | 0.27 |
| 3274 | 15.23 | 0.27 |
| 3263 | 15.18 | 0.27 |
| 3191 | 14.84 | 0.26 |
| 3336 | 15.52 | 0.27 |
| 3228 | 15.01 | 0.26 |
| 3275 | 15.23 | 0.27 |
| 3174 | 14.76 | 0.26 |
| 3209 | 14.93 | 0.26 |
| 3212 | 14.94 | 0.26 |
| 3162 | 14.71 | 0.26 |
| 3264 | 15.18 | 0.27 |
| 3144 | 14.62 | 0.26 |
| 2794 | 13.00 | 0.25 |
| 3332 | 15.50 | 0.27 |
| 3277 | 15.24 | 0.27 |
| 3219 | 14.97 | 0.26 |
| 3376 | 15.70 | 0.27 |
| 3191 | 14.84 | 0.26 |
| 3049 | 14.18 | 0.26 |

BUILDING 064 - FINAL SURVEY CALCULATED DAILY INSTRUMENT BACKGROUNDS

| | | | | | |
|---|---|---|---|---|---|
| | Instrument Background Qualification Data | | | | |
| DATE | BKGD-A | EFACT-A | BKGD-B | EFACT-B | |
| | AVE for 5 min | | AVE for 5 min | | |
| | | | | | |
| 07-Sep-93 | 2.563 | 4.407 | 279.759 | 7.705 | ave plex |
| 08-Sep-93 | 2.563 | 4.407 | 279.759 | 7.705 | ave plex |
| 09-Sep-93 | 2.563 | 4.407 | 279.759 | 7.705 | ave plex |
| 10-Sep-93 | 2.563 | 4.407 | 279.759 | 7.705 | ave plex |
| 14-Sep-93 | 2.167 | 4.445 | 272.333 | 7.648 | |
| 15-Sep-93 | 2.000 | 4.459 | 268.833 | 7.742 | |
| 16-Sep-93 | 2.563 | 4.407 | 274.833 | 7.995 | |
| 17-Sep-93 | 3.167 | 4.394 | 293.167 | 7.775 | |
| 20-Sep-93 | 2.167 | 4.379 | 278.333 | 7.421 | |
| 21-Sep-93 | 2.667 | 4.290 | 287.833 | 7.808 | |
| 22-Sep-93 | 3.333 | 4.434 | 281.333 | 7.358 | |
| 23-Sep-93 | 2.667 | 4.467 | 281.333 | 8.015 | |
| 24-Sep-93 | 2.333 | 4.393 | 279.833 | 7.579 | |
| ave plex | 0.513 | 4.407 | 55.952 | 7.705 | |