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**REPORT OF
RADIOLOGICAL OVER VIEW SURVEY
FOR
THE BARNWELL NUCLEAR FUEL PLANT
DECOMMISSIONING PROJECT**

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1.0 EXECUTIVE SUMMARY

1.1 CONTRACT SCOPE

An independent overcheck radiological survey of the Barnwell Nuclear Fuel Processing (BNFP) Facility was conducted by a survey team from Rockwell International under contract to Allied-General Nuclear Services (AGNS). The independent survey was performed under extension of the contract to perform consulting services. That work is reported separately under the title "Consultant's Final Report, Barnwell Nuclear Fuel Plant Decommissioning Project."

1.2 OBJECTIVES

The objectives of the survey were to (1) provide an independent radiological characterization of the plant at the conclusion of the BNFP decommissioning project, (2) perform survey activities such that the data obtained would be representative of the plant's radiological status, and (3) provide an analysis and report of the survey data.

1.3 SURVEY CONCLUSIONS

Careful analysis of the entire data base has led to the conclusion that only a very small amount of residual radioactive material is present in most areas of the BNFP Facility. Levels of transferable material were found to be very low; nearly every measurement (>95%) was found to be below the guidelines set forth by the Nuclear Regulatory Commission (NRC) for the unrestricted release of facilities.

1.4 SURVEY ACTIVITIES AND RESULTS

The first part of the survey was performed in mid-November and the second part in early December. The first survey was designed to be a comprehensive statistical sampling of accessible plant surfaces and also to emphasize those areas/items that experience has shown to be most likely to show residual

material. Thus, the approach was both statistical and biased towards conservatism. The statistical survey employed 1-m² areas throughout the facility, sited in a random-biased fashion. These were outlined with paint for future identification, and instrument readings were made for alpha, beta, and gamma radiations. Smears were also obtained from the survey areas and measured for transferable alpha and beta activity. The biased survey (summarized as maximum beta in Table 1) searched for and measured localized areas found to have the greatest amounts of residual material present. Total beta and removable alpha and beta were measured for these points. Results of the biased survey subsequently were used to identify locations for further cleanup or fixation of the residual material.

The Rockwell survey team surveyed accessible surfaces. The interiors of piping, processing systems, and sealed glove boxes were not included in this survey. The interior surfaces were, however, cleaned, and data on this effort are available from the BNFP staff.

The area with the largest quantity of residual radioactive material is the Hot and Cold Laboratory Area, located in the Separations Building. The material that remains in this area is located in sealed glove boxes specifically designed to contain radioactive material.

The small quantities of material that remain in other areas have resisted cleanup efforts, and the survey indicates that no significant migration has occurred. Even so, this residue has in most cases been further fixed in place by the application of a coat of paint.

Survey data are presented both graphically and tabularly. The radiological conditions existing at the BNFP after completion of the decommissioning project are summarized in the following table, which shows the November survey results. The subsequent survey activity focused on locations that had received further cleaning or fixation of the residual material. Those later results are given in Table 3, which is presented in Section 6.0.

Documentation of equipment, calibration procedures, survey procedures, and analytical procedures is also provided in the report.

TABLE 1
SUMMARY OF NOVEMBER SURVEY RESULTS

Location	Type of Survey	Number of Values	Average Value (dpm/2 100 cm ²)	Maximum Value (dpm/2 100 cm ²)	Reference ^a Reg. Guide 1.86 Value	Number of Values Greater Than Reg. Guide 1.86 Limit
Uranium Hexafluoride Facility	Total alpha	155	63	1,599	5,000	0
	Total beta	155	2,130	139,767	5,000	7
	Removable alpha	194	38	743	1,000	0
	Removable beta	194	166	3,670	1,000	10
	Gamma (μR/h) ^b	155	5	400		N/A
	Maximum beta	38	337,419	1,382,000		N/A
Subtotal		891				17
Separations Facility	Total alpha	227	274	17,707	5,000	2
	Total beta	227	1,108	43,631	5,000	9
	Removable alpha	280	14	487	1,000	0
	Removable beta	280	55	2,442	1,000	4
	Gamma (μR/h) ^b	227	16	280		N/A
	Maximum beta	30	25,889	165,488		N/A
Subtotal		1,271				15
WTEG and Utility Bldg	Total alpha	19	11	20	5,000	0
	Total beta	19	1,313	4,873	5,000	0
	Removable alpha	19	19	332	1,000	0
	Removable beta	19	72	1,217	1,000	1
Subtotal		76				1
Misc Buildings	Total alpha	33	7	24	5,000	0
	Total beta	33	462	1,165	5,000	0
	Removable alpha	13	0	3	1,000	0
	Removable beta	13	10	30	1,000	0
Subtotal		92				0
Total		2,330				33

^aRegulatory Guide 1.86 acceptable surface contamination levels are shown only to provide perspective. They do not strictly apply to the BNFP decommissioning project objectives, nor have they been adopted by the State of South Carolina.

^bMaximum beta values are presented only to summarize the total surface activity. These values came from a biased search for maximum residual material and resulted in subsequent cleanup or immobilization of material at these locations.

2.0 INTRODUCTION

2.1 PURPOSE

The purpose of this report is to document the radiological overview survey performed by Rockwell International's, Energy Systems Group (ESG) at the Allied-General Nuclear Services (AGNS) Barnwell Nuclear Fuel Processing Facility (BNFP) located near Barnwell, South Carolina, during November and December of 1983. These data are to be used to correlate with data obtained by BNFP personnel and to support the efforts to amend the State of South Carolina Radioactive Materials License to obtain a "Possession Only" license.

2.2 OVERVIEW

Rockwell conducted two radiological surveys at the BNFP Facility. The first survey, conducted by Mr. D. L. Speed and Ms. F. E. Begley of Rockwell and Mr. J. G. Ward, was made between 8 and 19 November 1983. This survey required approximately 240 man-hours to complete. One result of this survey was the discovery of several areas where fixed residual material was in excess of the limits set forth in NRC Regulatory Guide 1.86.

The second survey was conducted by the same personnel between 6 and 10 December 1983. This second survey was conducted to include areas not measured on the first trip and to resurvey areas that had been identified as having removable activity present. This survey effort consumed approximately 72 man-hours.

Much of the information presented in this report concerning the description of buildings on the site and their radiological history prior to the decontamination effort was supplied by the staff at BNFP.

The ESG survey team surveyed accessible surfaces of the plant and did not examine the interior surfaces of piping, of processing systems, or of sealed glove boxes.

Although comparisons are drawn in this report to the criteria set forth in Regulatory Guide 1.85 published by the NRC in June 1974, those criteria are for release for unrestricted use and hence are conservative when applied to a Possession Only license request. They are used as a comparison to show the overall acceptability of this facility in relation to these stringent guidelines. Regulatory Guide 1.86 is reproduced in Appendix B for the convenience of the reader.

3.0 DESCRIPTION OF MAJOR SITE FACILITIES

3.1 SEPARATIONS FACILITY

This massive cast-concrete building contains the hot cells and associated chemical processing systems that were to be used for the separation of spent nuclear fuel. However, no spent fuel was introduced into either this building or any of its associated process systems. The residual material that is present is a result of functional testing of the chemical process system with normal uranium. BNFP personnel have cleaned the interior of the chemical process system by flushing with the appropriate solvents and cleaning agents where applicable.

3.2 HOT AND COLD LABORATORY AREA

This two-story structure is an integral, but separate, part of the Separations Building. There are laboratories on both sides of two long halls (one on each of two levels) that run the length of the structure. There are many hoods and glove boxes, some of which were sealed and, as such, were inaccessible to the Rockwell survey team. On the first floor there are two multilevel rooms known as the Alpha Lab and the Engineering Lab. The Alpha Lab has three large glove boxes, which were sealed and inaccessible. The Engineering Lab has been entirely stripped of its previous equipment.

In the Hot and Cold Laboratory Area, unencapsulated transuranic radioactive materials had been used in gram quantities. These isotopes included Pu-239, Am-241, and Np-237. Tracer amounts of fission products had also been used.

3.3 URANIUM HEXAFLUORIDE (UF-6) FACILITY

This eight-story structure was designed to accept uranium nitrate from the separations facility and convert it into uranium hexafluoride. Equipment

in this structure includes chemical process equipment that had been affected by testing of the equipment with normal uranium.

3.4 URANIUM HEXAFLUORIDE (UF-6) FACILITY SUPPORT STRUCTURES

Two areas near the UF-6 Facility are described here as the Waste Treatment Area and the Tank Farm Area. These areas are considered separately from the UF-6 Facility because of their higher level of residual uranium and because they have no walls and are much more accessible than the rest of the UF-6 structure. These areas received uranium solutions during the testing and cleanup phases of BNFP operations.

3.5 MISCELLANEOUS BUILDINGS

- 1) Fuel Receiving and Storage Station (FRSS) -- No radioactive materials were used or stored in this facility: It is an integral part of the Separations Facility.
- 2) Waste Tank Equipment Gallery (WTEG) -- This building received contaminated liquid waste from the Separations Facility.
- 3) Emergency Utility Area -- This building housed the final (third stage) HEPA filters, associated blowers, air compression system, and emergency electric generators.
- 4) Radwaste Concentration Area -- Liquid radioactive waste was evaporated in this area. Radioactive materials were present in this area.

3.6 SUPPORT AREAS

- 1) Maintenance Building -- No radioactive materials were used or stored in this building; three confirmatory measurements were made.
- 2) Warehouse -- Although no radioactive materials were used in this building, some were stored here.
- 3) Model Building -- No radioactive materials were used or stored in this building.

- 4) Security Building (main guardhouse) -- No radioactive materials were used or stored in this building.
- 5) Administration Building -- No radioactive materials were used or stored in this building.

4.0 DECONTAMINATION EFFORTS

4.1 BEFORE NOVEMBER 1983

Before the ESG survey team's first visit, AGNS personnel were actively engaged in an effort to decontaminate the plant facility. The interior surfaces of process equipment were flushed with solvents and cleaning solutions until testing showed a low level of residual radioactive material. Many pieces of equipment that would have been difficult to clean were shipped off-site for disposal as radioactive waste or sold to a licensed user.

4.2 AFTER NOVEMBER 1983

As shown in Section 5.0, a small amount of residual radioactivity was detected in the November 1983 survey effort. Additionally, the first floor of the UF-6 Facility, the UF-6 Tank Farm, and the UF-6 Waste Processing Area were still undergoing cleanup and hence were not fully surveyed. Residual material from a spill was noted on one vertical column in the UF-6 Facility. These areas were cleaned and then painted to fix in place any residual material.* The sumps in the UF-6 tank farm area had been cleaned with acid and filled with sand by the December 1983 survey. All areas identified in the Separations Facility in the November survey were cleaned.

*For further information regarding the cleanup activities, the reader may refer to AGNS documents and to the "Consultant's Final Report for the Barnwell Nuclear Fuel Plant Decommissioning Project" by Rockwell.

5.0 SURVEY SCOPE AND PROCEDURES

5.1 SURVEY SCOPE

The scope of this survey was to perform radiological surveys for average total alpha and beta contamination and removable alpha and beta contamination and to perform gamma radiation measurements on a representative portion of the BNFP site. Statistical sampling was used because of the scope of the project and its proven usefulness in describing site conditions. Areas were chosen for survey on the basis of the likelihood of contamination. For instance, the Laboratory Area received the highest frequency of sampling, followed by the Separations Facility and UF-6 Facility (approximately 2% of floor area), miscellaneous facilities (approximately 1% of floor area), and Support Areas (<1% of floor area). With the exception of the Laboratory Area and hot spots in the Separations and UF-6 Facilities, measurements were made only on floor surfaces. This is the appropriate method for the desired sampling, since our experience has shown the floor to be most representative of the radiological conditions of an industrial facility. No data were obtained from the interior of any process equipment, the interior of drain systems, or the interior of any of the sealed glove boxes.

5.2 SURVEY EQUIPMENT

5.2.1 Instrumentation

Instruments used for radiological inspection consisted of field survey instruments, portable scaler counting systems, and nonportable laboratory-grade automatic smear counting systems (located at Rockwell International in Canoga Park, California).

5.2.2 Identification

Each radiological instrument is identified by an ESG property number or metrology number for traceability of calibration and results. For separable devices, such as a scaler and detector probe, a metrology number is assigned to each probe.

5.2.3 Field Instruments

Field instruments were used for average total (fixed and removable radioisotopes) and hot spot measurements. The types of field instruments used for the survey of the BNFP Facility are discussed below.

5.2.3.1. Technical Associates Model FS-8 Automatic Recycling Scaler

The Technical Associates FS-8 is a five decade scaler that can be used with a wide variety of radiation detectors. Provisions are made for using preset time of 0.1 to 9999.9 s or preset counts in the range of 1 to 99999. High voltage is adjustable by a locking ten-turn potentiometer located on the front panel. The FS-8 also has an adjustable audible and visual alarm and an audible count rate indication. Both a low-battery indicator and a count-overflow indicator are provided.

This instrument was used with one of two probes described in the following section to measure average total alpha and beta radiations.

- 1) Ludlum Model 43-5 Alpha Scintillation Probe -- This probe has an active surface area of 63 cm² and a nominal efficiency of 4 dpm/cpm. These detectors are sensitive only to alpha particles. These particles must have an energy of approximately 1.5 MeV at the window surface.
- 2) Ludlum Model 44-9 Geiger-Mueller Pancake Probe -- This probe is used for the detection of beta particles and has an active surface area of 20 cm². Nominal efficiency is 10 dpm/cpm. Background will vary greatly with natural background radiation but should be in the range of 30 to 120 cpm. This

detector will detect alpha particles with an energy greater than 3 MeV. It will also detect gamma-emitting radionuclides distributed within materials as a result of kinetic electrons produced by gamma interactions within that material and/or the material of the probe.

5.2.3.2 Ludlum Model 12S MicroR Meter

This instrument was used to detect gamma radiation above the energy of 60 keV. Thus, it cannot be used to detect the low-energy penetrating radiations from plutonium. This instrument uses a 1-in. by 1-in. NaI(Tl) scintillation crystal with photomultiplier tube. It is calibrated according to the manufacturer's recommendations to cesium-137 gamma radiation. This meter has a scale of 0 to 3 $\mu\text{R/h}$ and range-switched multipliers of X1, X10, X100, and X1000.

5.2.4 Laboratory Instruments

Laboratory instruments were used to measure removable radioactive material (both alpha and beta measurements) obtained on disposable smear papers. Due to its size, this equipment remained in Canoga Park, California, at the Rockwell International facility. Smears from the BNFP survey were analyzed at the Rockwell facility.

5.2.4.1 Nuclear Measurement Corporation Model ACS-77 Automatic Counting System

This system employs a 2-in.-diameter planchet transport system and a 2-in. 2- π geometry gas-flow proportional detector. This detector is operated at a voltage of 1600 to 1800 V. This is a windowed detector with a window thickness of 180 $\mu\text{g/cm}^2$. This enables the system to detect both alpha and beta particles.

Alpha and beta counts are automatically identified and separately indicated. Counting time is selectable from 0.1 to 9999 min. The alpha efficiency factor is nominally 3.3 dpm/cpm with a background of 1 cpm or less. The beta efficiency factor is nominally 3.2 dpm/cpm with a background of approximately 25 cpm.

5.2.5 Instrument Calibration

Maintenance and calibration of all battery-powered (field instruments) systems are performed on a quarterly basis by the Inspection and Test Department. Batteries may be replaced without recalibration. Laboratory instruments are serviced and calibrated semiannually.

Daily qualification tests were performed by Radiation and Nuclear Safety. Before an instrument was used, the calibration label was checked to assure that the instrument was in current calibration.

5.2.6 Instrument Qualification

Instruments were checked before their first use each day. The check consisted of a background reading and a reading obtained from a standard source and source-detector geometry. Those that indicated a significant change or were erratic or otherwise malfunctioning were repaired and recalibrated before further use.

5.3 SURVEY PROCEDURES

5.3.1 Selection of Sampling Points

5.3.1.1 Partial Inspection

As the task of the ESG survey team was to provide an overview rather than a comprehensive radiological survey of the BNFP facility, a partial inspection plan was used. The aim was to provide a statistically significant number of

survey points for each area that would represent a reasonable statistical "population." For Gaussian statistics, this number of samples (n) should be chosen so that $n > 20$ for each population. Using this guidance, approximately 2% of the floor area of the facilities surveyed were sampled.

5.3.1.2 Siting

Survey points were selected on a random-biased basis. Due to instrumentation considerations and time constraints, it was decided to concentrate the statistical sampling on the floor surfaces only. It has been our experience that the floor is the most appropriately conservative population to sample in cases such as this. (Walls and ceilings tend to harbor less contamination than floors.) Sampling points were selected randomly, but biased by the expert judgement of the surveyors, so that many "suspicious" spots such as obvious leaks from process equipment and areas of the floor that would be difficult to clean on an ordinary basis were sampled. Survey points were also sited in the traffic patterns to determine the occurrence and extent of tracking of contamination.

5.3.2 Measurement Procedures

The following procedures were used to make the measurements discussed in this document. These procedures have been employed by Rockwell and have proven to be extremely effective for documentation for release for unrestricted use of facilities previously contaminated with radioactive materials. These procedures have been accepted by NRC for this purpose.

5.3.2.1 Average Total Alpha and Beta

- 1) Identify the spot to be surveyed.
- 2) Identify the area by painting an outline around a 1-m² area.

- 3) With a portable scaler (Technical Associates FS-8 or equivalent) set for a 5-min count time, use an alpha and a beta probe set in a holding device to scan the marked area uniformly. The audio indication should be on so that the surveyor can detect any "hot spots." These hot spots are to be resurveyed later.
- 4) Record the location and total counts for alpha and beta.
- 5) The total count is converted to activity in dpm/100 cm² by:

$$\text{Activity} = [(C-B)/5][E(100/A)] ,$$

where C = total counts in 5 min
 B = total background counts in 5 min
 E = efficiency in dpm/cpm
 A = probe sensitive area.

5.3.2.2 Removable Alpha and Beta

- 1) Identify 1-m² area to be surveyed (after the total activity measurement is made).
- 2) Using a Whatman 540 filter paper (2.4-cm diameter), wipe a "Z" pattern with legs approximately 6 in. long so as to sample removable contamination from an area of approximately 100 cm².
- 3) Place smear paper in a properly labeled note card "book" for storage and transport, until ready for counting.
- 4) Count smear paper for radioactivity using a gas flow proportional counter (NMC Model ASC-77 or equivalent) for 5 min.
- 5) Record the location, total alpha count, and total beta count on an H&S Analysis Report Form.
- 6) The total counts are converted to dpm/100 cm² removable surface activity by:

$$\text{Activity} = [(C-B)/5]E ,$$

where C = total counts in 5 min
 B = total background counts in 5 min
 E = efficiency in dpm/cpm.

5.3.2.3 Maximum Beta and Alpha

- 1) Survey suspect areas with a count rate meter, such as a Ludlum Model 12 with an appropriate probe, to determine the location of maximum reading.
- 2) Count the area of maximum reading for 1 min using a portable scaler, as previously noted.
- 3) Record the location and total count on an H&S Analysis Report Form and note as a "HOT SPOT".
- 4) The total count is converted to activity in dpm/100 cm² by:

$$\text{Activity} = (C-B)[E(100/A)] ,$$

where C = total counts in 1 min
 B = background counts in 1 min
 E = efficiency in dpm/cpm
 A = probe sensitive area.

5.3.2.4 Gamma Radiation Measurements

- 1) Locate the area to be measured.
- 2) If the area is a floor grid, hold the instrument (Ludlum Model 12S or equivalent) approximately 1 m from the floor surface and scan the grid. Record the reading obtained in the center of the grid and the maximum reading obtained, if applicable.
- 3) For other measurements, such as traps, glove boxes, and "hot spots," record the average and maximum readings on the appropriate forms.

6.0 SURVEY RESULTS

6.1 INTERPRETATION OF GRAPHICAL DATA

The large number of measurements produced by a survey of this sort can be presented in several ways. As a matter of record, a listing of each location and the associated radioactivity measurements is included as Appendix C. Graphical presentations are shown in the figures in Section 6.3. These figures provide a convenient way of reviewing all the survey data from a particular type of measurement in context with the full set of data and relative to the applicable limit. The method of display chosen for the data is similar to the log-normal probability display frequently used for radiometric data, with two exceptions: (1) the abscissa scale is in standard deviation units rather than cumulative percent, and (2) a linear (rather than logarithmic) representation has been used. This method allows presenting data that are distributed according to the familiar "bell-shaped" Gaussian curve as a straight line. The closer to a straight line that the data points are, the better the fit of a Gaussian distribution to the sample. Even for cases in which the actual distribution is not Gaussian, this method provides a useful presentation.

Survey data from truly clean areas, where there is no contamination, will show very low, but varying, amounts of radioactivity. This is because of the natural radioactivity in building materials and in the environment and because of the random (or statistical) action of the survey instruments. Data from such areas show a straight line of points, near the base line of the graph. Where some radioactive material is present, it will appear as data points that depart, more or less markedly, from the low-lying distribution of data from clean areas. This is shown quite clearly in Figure 3, for example. If a small fraction of the area is contaminated, there will be proportionately few contaminated data points. If the contaminated area is large, there will be many. In these cases, the points will not fit the theoretical straight line. If most of the region in question is contaminated, the distribution will be

dominated by the contaminated data points, in a line of points generally sloping from the lower left to the upper right, approximating a theoretical straight line.

An area that shows detectable contamination may still be acceptable for release according to the regulations if the levels of contamination are low enough. Acceptable limits for unrestricted release of facilities have been established by NRC (as shown in Appendix B) and by several Agreement States. Clearly, all measured values must be less than the specified limits for an area to be acceptable. In the figures, these limits are shown as horizontal lines marked in the margins by a black arrowhead. Review of the figures shows that, in most cases, all data points lie below the limit. In some cases, for instance Figure 6, nearly all of the points are above the limit. (These measurements were made to show the highest readings that could be located.)

To promote the quantitative use of sampling inspection in radiological surveys, the State of California has established a policy for the interpretation of survey data. All survey results must be below the appropriate limits and, in addition, the set of data, when interpreted statistically, must indicate that there is less than a 10% risk of accepting a facility in which 10% of the area is contaminated in excess of the limits. The mathematical methods used for this interpretation are explained in Appendix A. This test results in a vertical line on each graph, marked by an "x" where it crosses the horizontal limit line. A theoretical straight line is calculated for each distribution of data points; this shows as a line sloping more or less from the lower left to the upper right. The "cleaner" an area is, the closer to the horizontal this line will be. If this line passes below the "x", the survey area is acceptable according to this set of well established statistical criteria. (Any locations within the area that were measured to be contaminated in excess of the limit would still need to be decontaminated to a level less than the limit.)

6.2 DISCUSSION OF SURVEY RESULTS

6.2.1 November Survey Results

The survey results obtained from the November 1983 survey point out the following radiological conditions:

- 1) The vast majority (>95%) of the accessible areas of all of the buildings on the BNFP site are free of radioactive contamination by the criteria set forth by the NRC in Regulatory Guide 1.86 (Appendix B) for unrestricted use.
- 2) There are some areas in the UF-6 Facility that are in excess of release levels. These areas are relatively inaccessible, and although there is transferable contamination present, survey results show that there has been almost no migration and/or tracking of this contamination.
- 3) Further decontamination efforts were identified for locations in the first floor area of the UF-6 Facility, the associated Waste Handling Area, and the UF-6 Tank Farm Area by application of the Reg. Guide 1.86 criteria to justify release for unrestricted use.
- 4) The Fuel Receipt and Storage Area (FRSS) shows no evidence of residual radioactive materials, which is consistent with AGNS staff reports that there were no materials in this area.
- 5) The Separations Facility shows only minor areas of contamination outside the hot cell areas. Once the massive doors are secured, this material will be inaccessible.
- 6) The Hot and Cold Laboratory Area is the area of greatest potential for possible later migration of radioactive material. The Rockwell survey team did not make measurements in any of the sealed glove boxes that had contained transuranic materials. The Alpha Lab's largest glove box, for example, has a filtration apparatus that contains sufficient residual material to cause a noticeable gamma radiation reading on the outside of the glove box.
- 7) At the time of our survey, there was some packaged radioactive material stored in the warehouse. This material was properly packaged for transport and did not represent a potential for transferable contamination.

TABLE 2
SUMMARY OF NOVEMBER SURVEY RESULTS

Location	Type of Survey	Number of Values	Average Value (dpm/100 cm ²)	Maximum Value (dpm/100 cm ²)	Reference ^a Reg. Guide 1.86 Value	Number of Values Greater Than Reg. Guide 1.86 Limit
Uranium Hexafluoride Facility	Total alpha	155	63	1,599	5,000	0
	Total beta	155	2,130	139,767	5,000	7
	Removable alpha	194	38	743	1,000	0
	Removable beta	194	166	3,870	1,000	10
	Gamma (μR/h) ^b	155	5	400		N/A
	Maximum beta ^b	38	337,419	1,382,000		N/A
Subtotal		891				17
Separations Facility	Total alpha	227	274	17,707	5,000	2
	Total beta	227	1,108	43,631	5,000	9
	Removable alpha	280	14	487	1,000	0
	Removable beta	280	55	2,442	1,000	4
	Gamma (μR/h) ^b	227	16	280		N/A
	Maximum beta ^b	30	25,889	165,438		N/A
Subtotal		1,271				15
WTEG and Utility Bldg	Total alpha	19	11	20	5,000	0
	Total beta	19	1,313	4,873	5,000	0
	Removable alpha	19	19	332	1,000	0
	Removable beta	19	72	1,217	1,000	1
Subtotal		76				1
Misc Buildings	Total alpha	33	7	24	5,000	0
	Total beta	33	462	1,165	5,000	0
	Removable alpha	13	0	3	1,000	0
	Removable beta	13	10	30	1,000	0
Subtotal		92				0
Total		2,330				33

^aRegulatory Guide 1.86 acceptable surface contamination levels are shown only to provide perspective. They do not strictly apply to the BNFP decommissioning project objectives, nor have they been adopted by the State of South Carolina.

^bMaximum beta values are presented only to summarize the total surface activity. These values came from a biased search for maximum residual material and resulted in subsequent cleanup or immobilization of material at these locations.

- 8) The remaining facilities had no detectable contamination by radioactive materials.

6.2.2 December Survey Results

The second part of the survey effort, conducted between 7 and 9 December, had two purposes: (1) to survey the portions of the facility not covered in the first effort (UF-6, first floor, UF-6 Tank Farm and Waste Handling Area, and the Liquid Waste Concentration Area) and (2) to confirm the efficacy of the cleanup of areas previously identified as containing residual radioactive materials.

The first task in this effort uncovered nothing unusual. Several areas had fixed radioactive materials present, but no transferable materials.

The second task revealed that the effort made to remove or fix the material in place had been quite successful. Only one hood (in the Cold Chemistry Laboratory in the Separations Building) showed transferable beta contamination in excess of the release limits. AGNS staff planned to clean this hood after the departure of the Rockwell survey team. No transferable alpha contamination was found.

The graphical representation of the data for the December survey appears to show much higher average values. This is entirely due to the concentration of effort on measuring areas previously found to harbor residual radioactive materials.

The measurements made during the December 1983 survey are summarized in Table 3.

6.3 GRAPHICAL REPRESENTATION OF SURVEY DATA

The results from the November 1983 survey are given in Figures 1 through 22. The results from the December 1983 survey are given in Figures 23 through 30.

TABLE 3
SUMMARY OF DECEMBER SURVEY RESULTS

Location	Type of Survey	Number of Values	Average Value (dpm/100 cm ²)	Maximum Value (dpm/100 cm ²)	Number of Values Greater Than Reg. Guide 1.86 Limits
Uranium Hexafluoride Facility	Total alpha	57	265	3,016	0
	Total beta	57	18,629	200,036	18
	Removable alpha	63	2	33	0
	Removable beta	63	28	132	0
	Maximum alpha	15	1,110	4,431	0
	Maximum beta	34	326,593	1,600,000	21
	Subtotal	289			39
Separations Facility	Total alpha	0	0	0	0
	Total beta	0	0	0	0
	Removable alpha	22	39	508	0
	Removable beta	22	252	3,894	4
	Maximum beta	30	25,889	165,488	13
Subtotal		74			17
Total		363			56

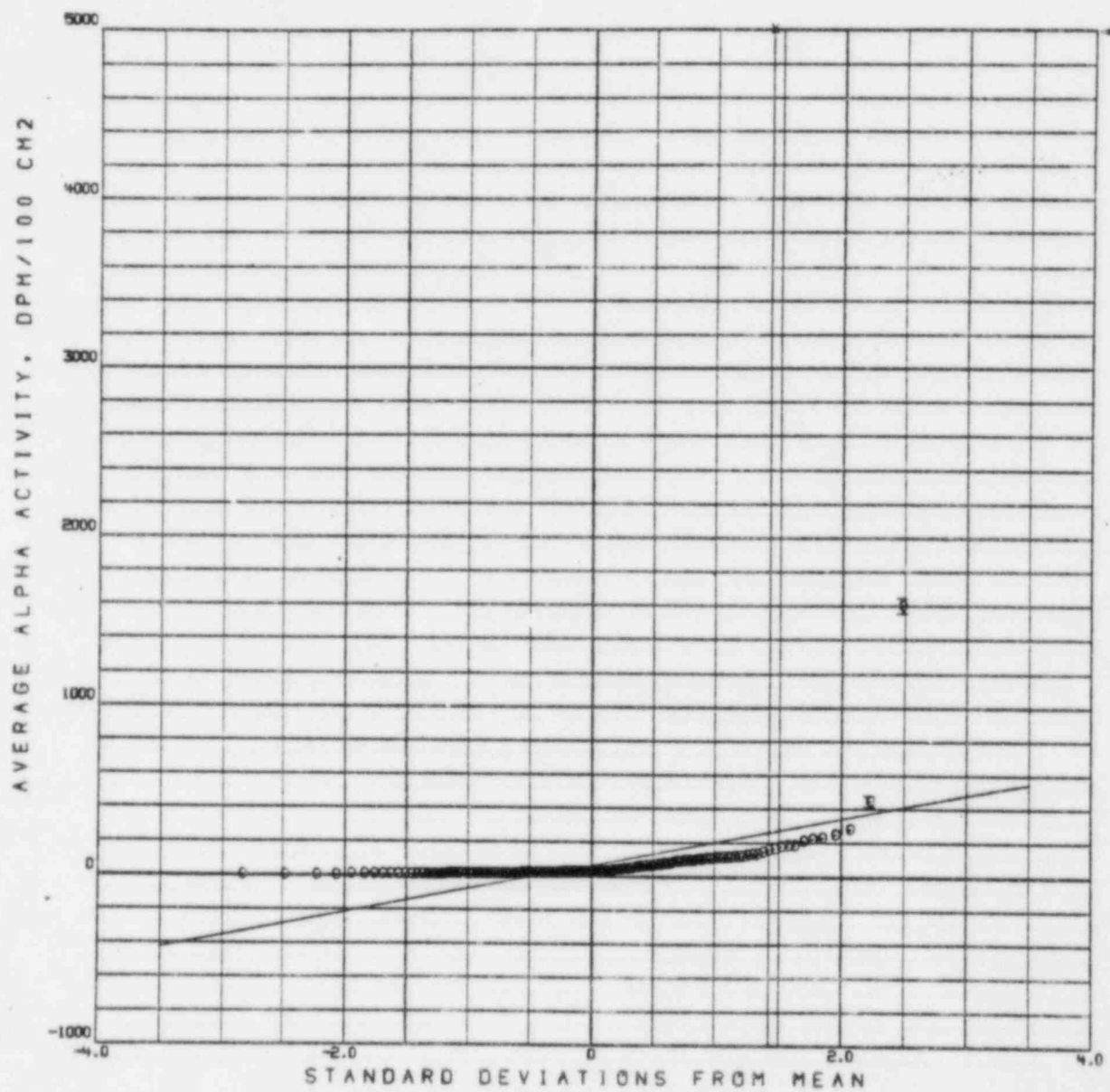


Figure 1. Results from November 1983 Survey:
Average Alpha for UF-6 Facility

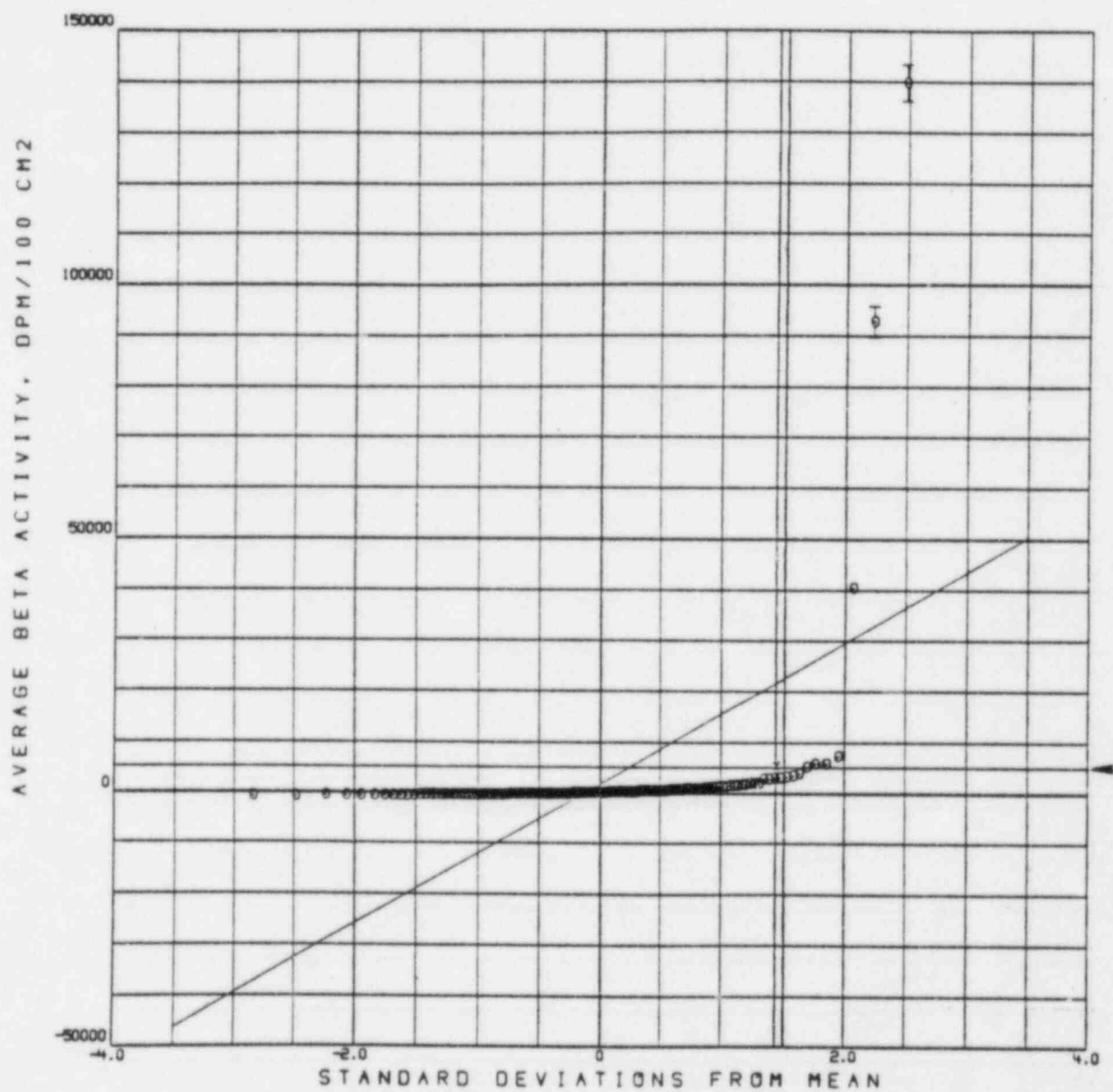


Figure 2. Results from November 1983 Survey:
Average Beta for UF-6 Facility

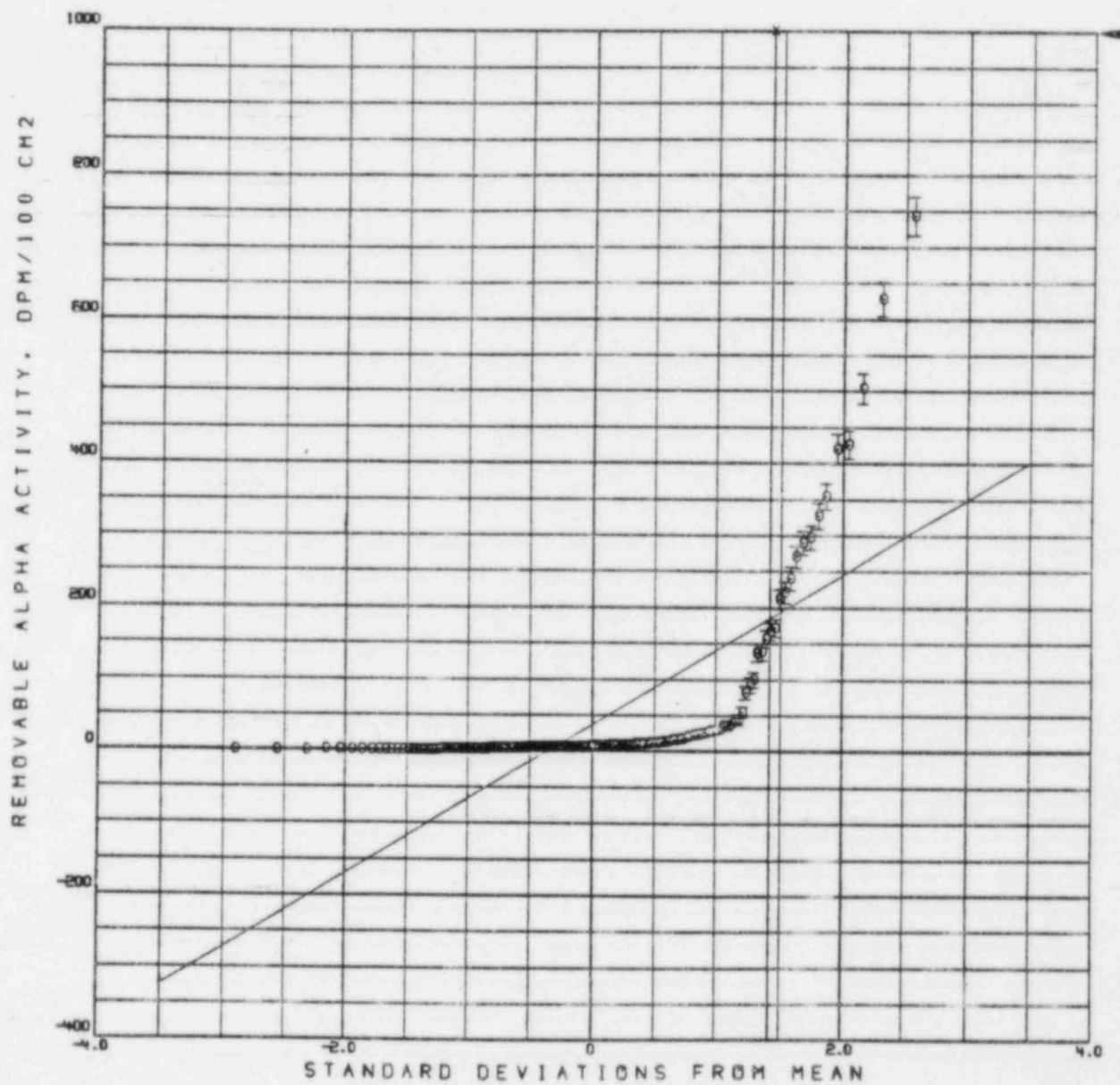


Figure 3. Results from November 1983 Survey:
Removable Alpha for UF-6 Facility

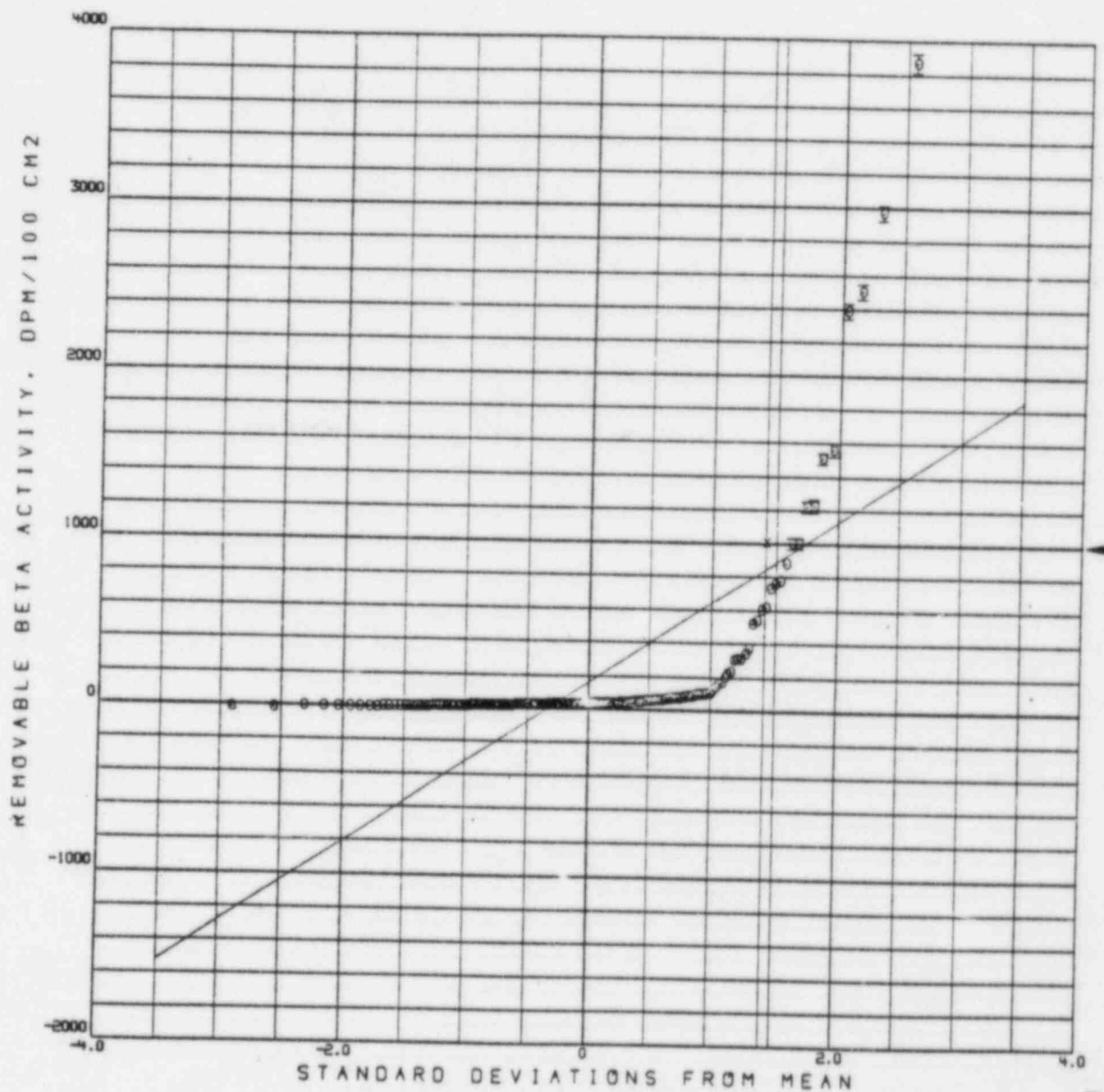


Figure 4. Results from November 1983 Survey:
Removable Beta for UF-6 Facility

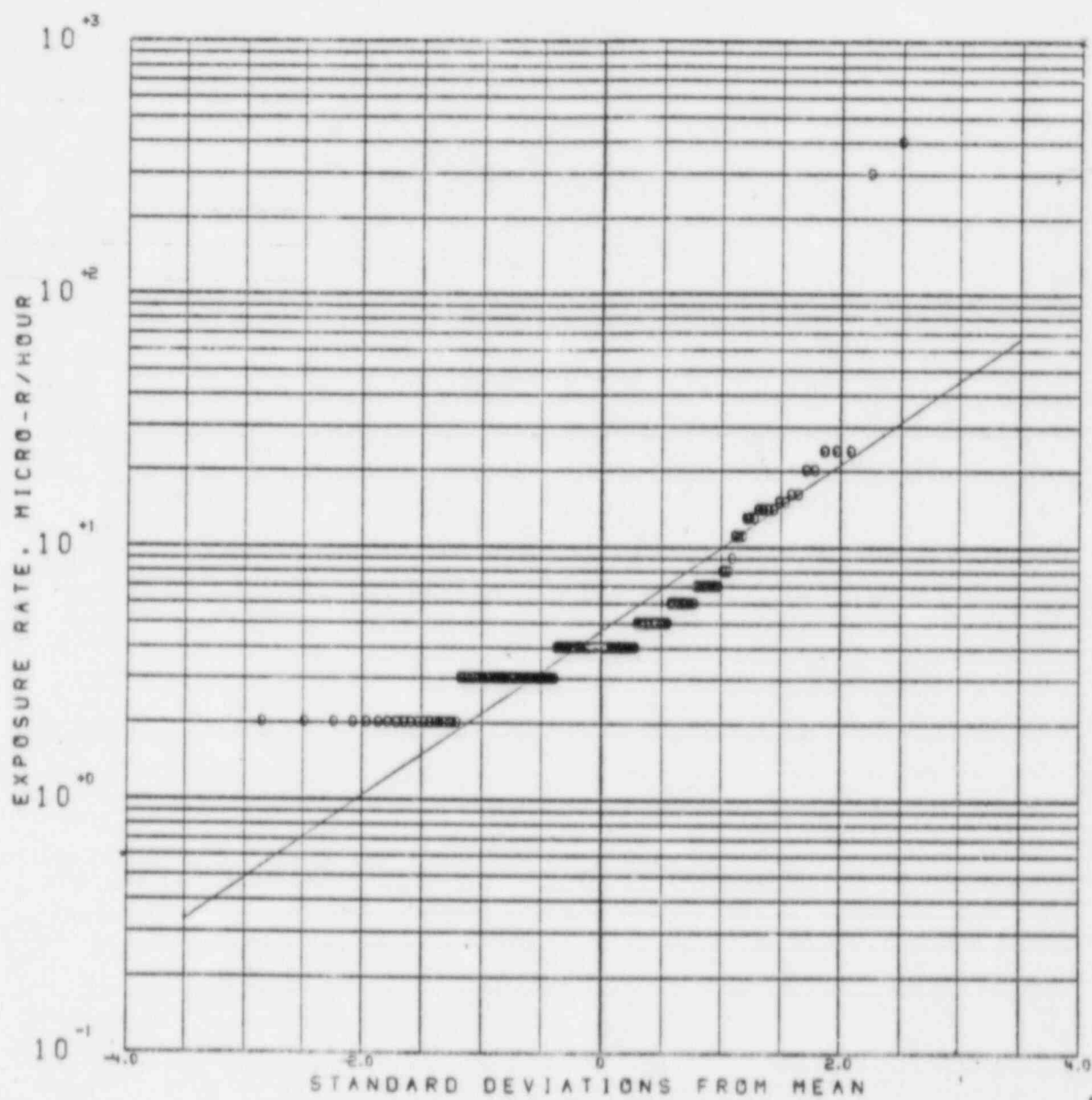


Figure 5. Results from November 1983 Survey:
Gamma Radiation for UF-6 Facility

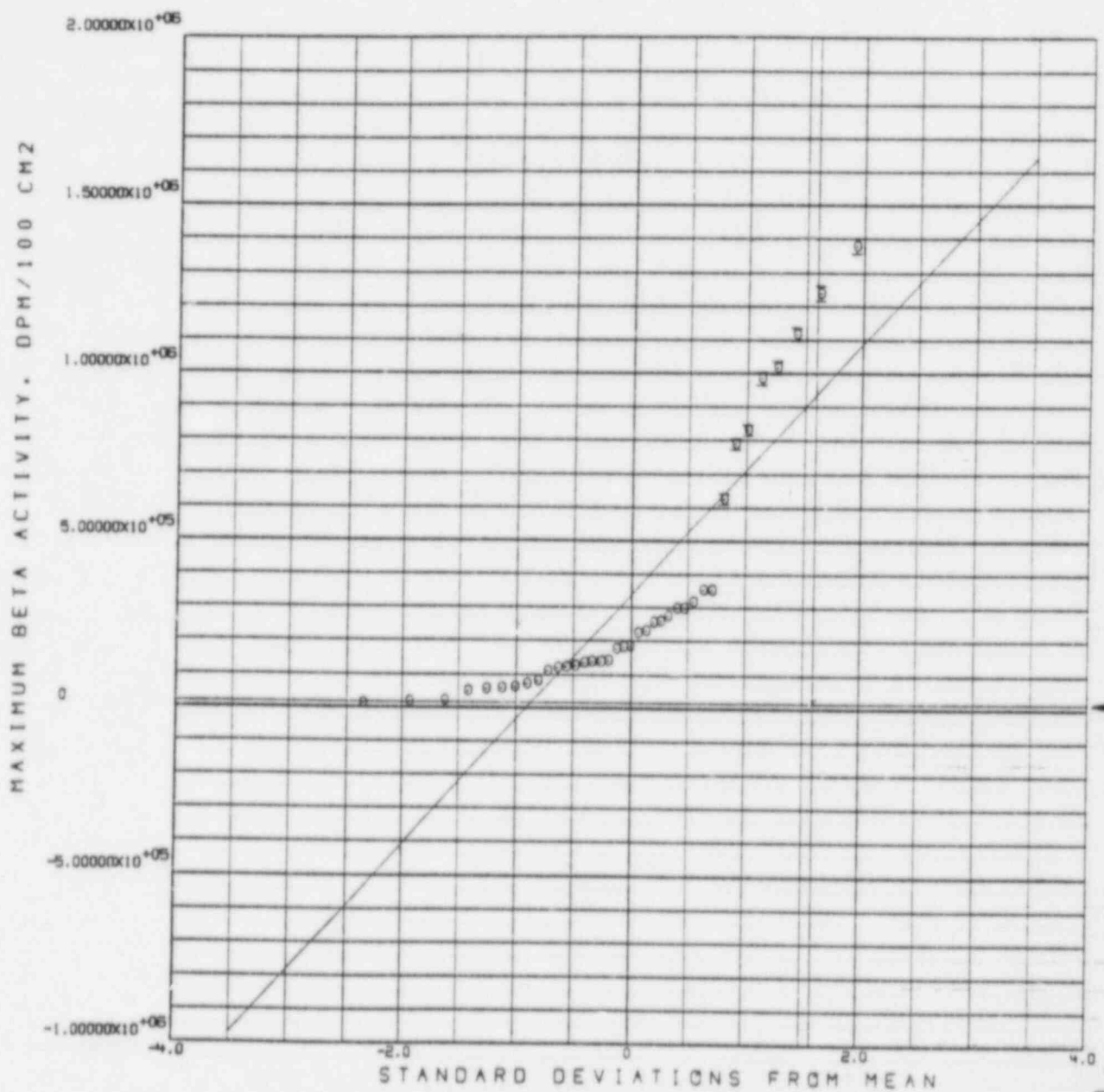


Figure 6. Results from November 1983 Survey:
Maximum Beta for UF-6 Facility

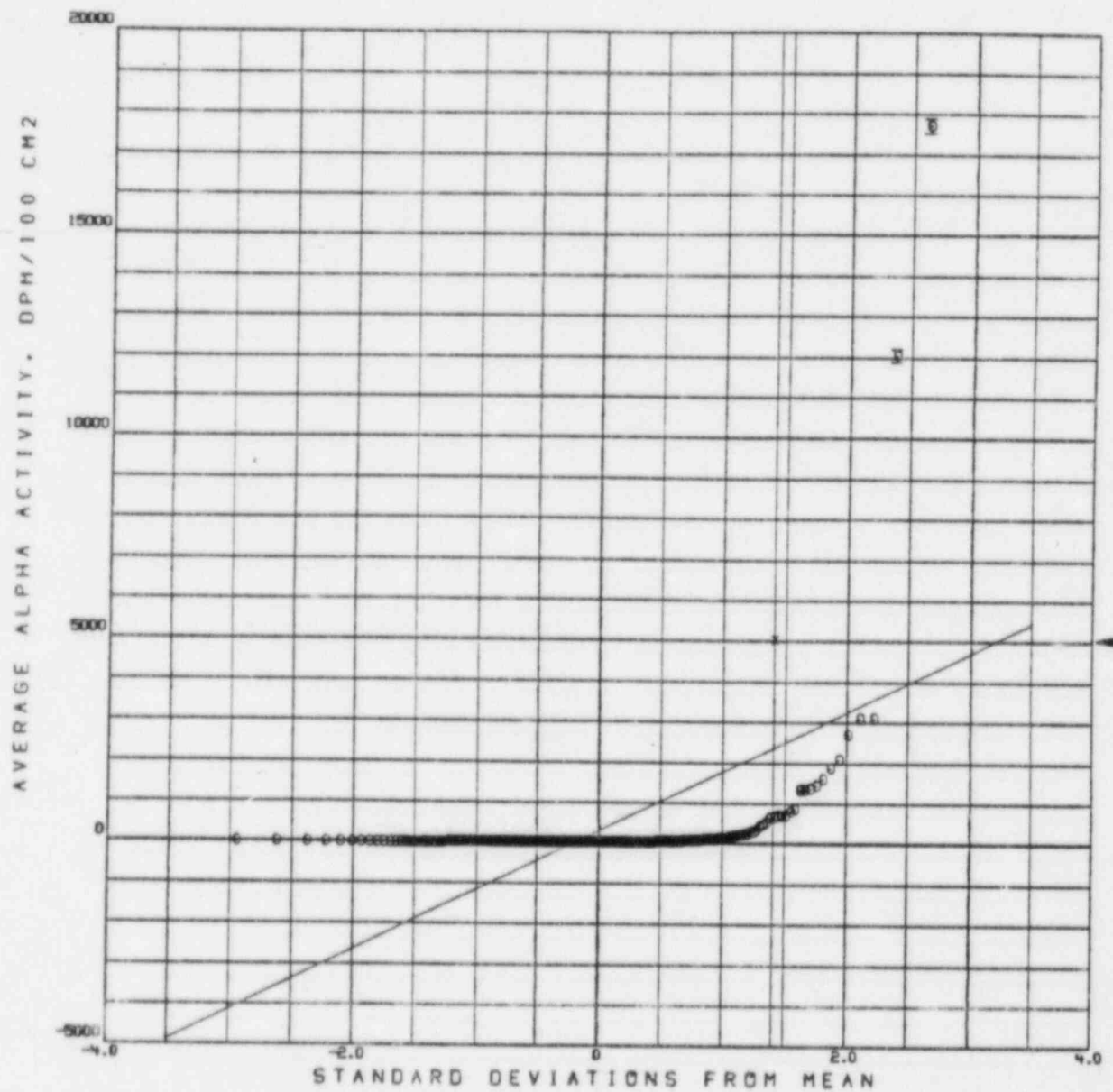


Figure 7. Results from November 1983 Survey:
Average Alpha for UF-6 Facility

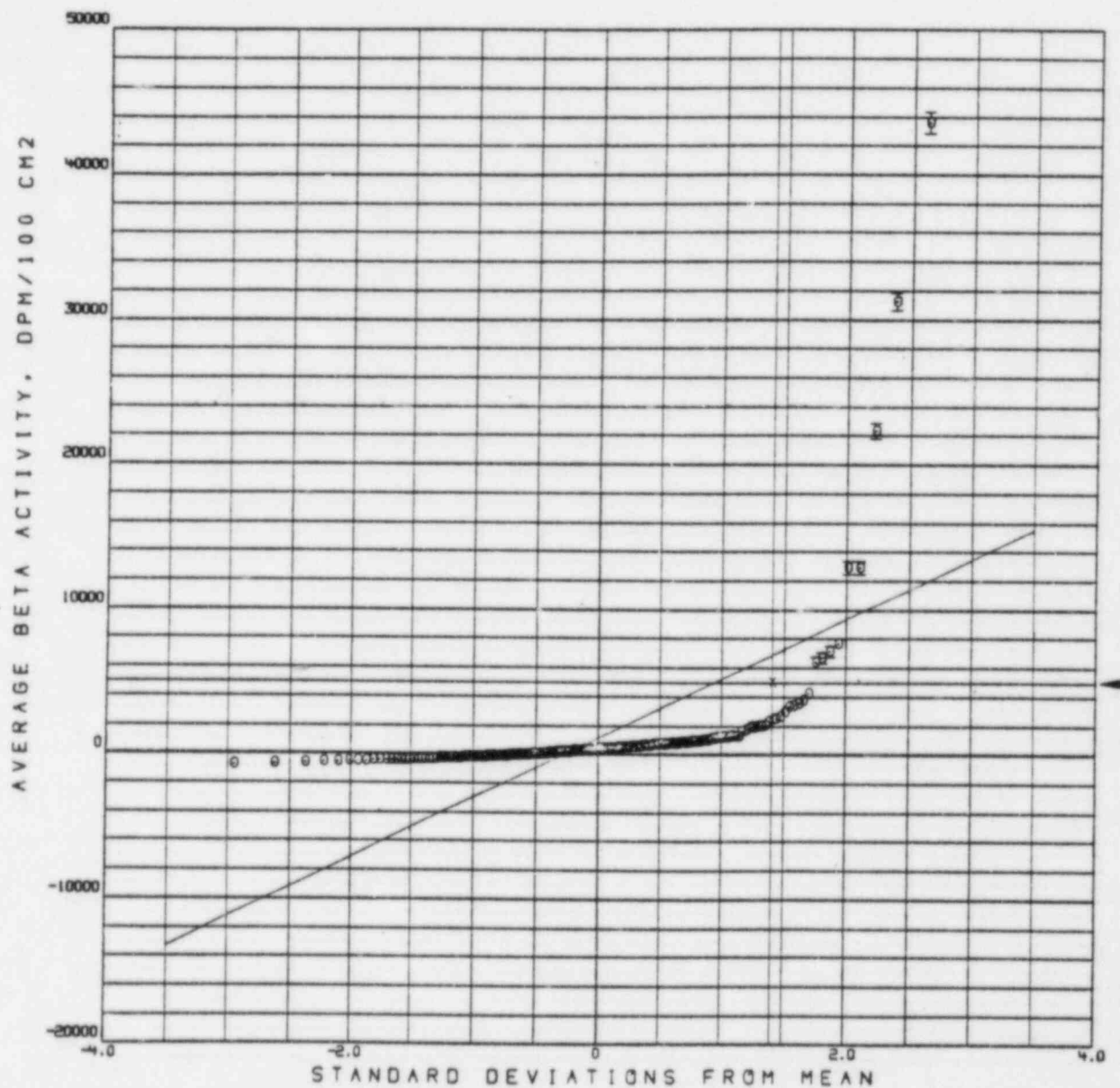


Figure 8. Results from November 1983 Survey:
Average Beta for the Separations Facility

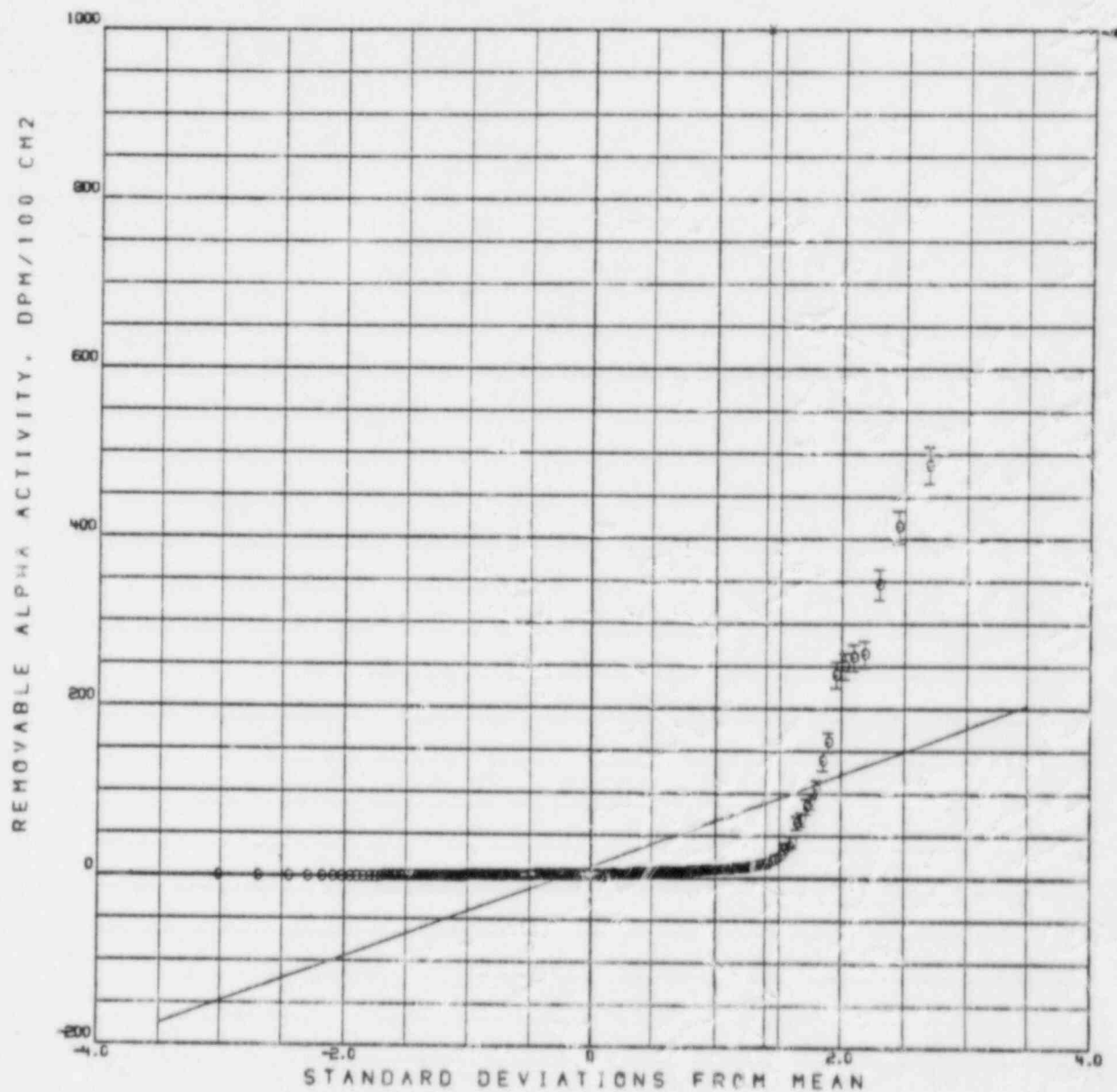


Figure 9. Results from November 1983 Survey:
Removable Alpha for the Separations Facility

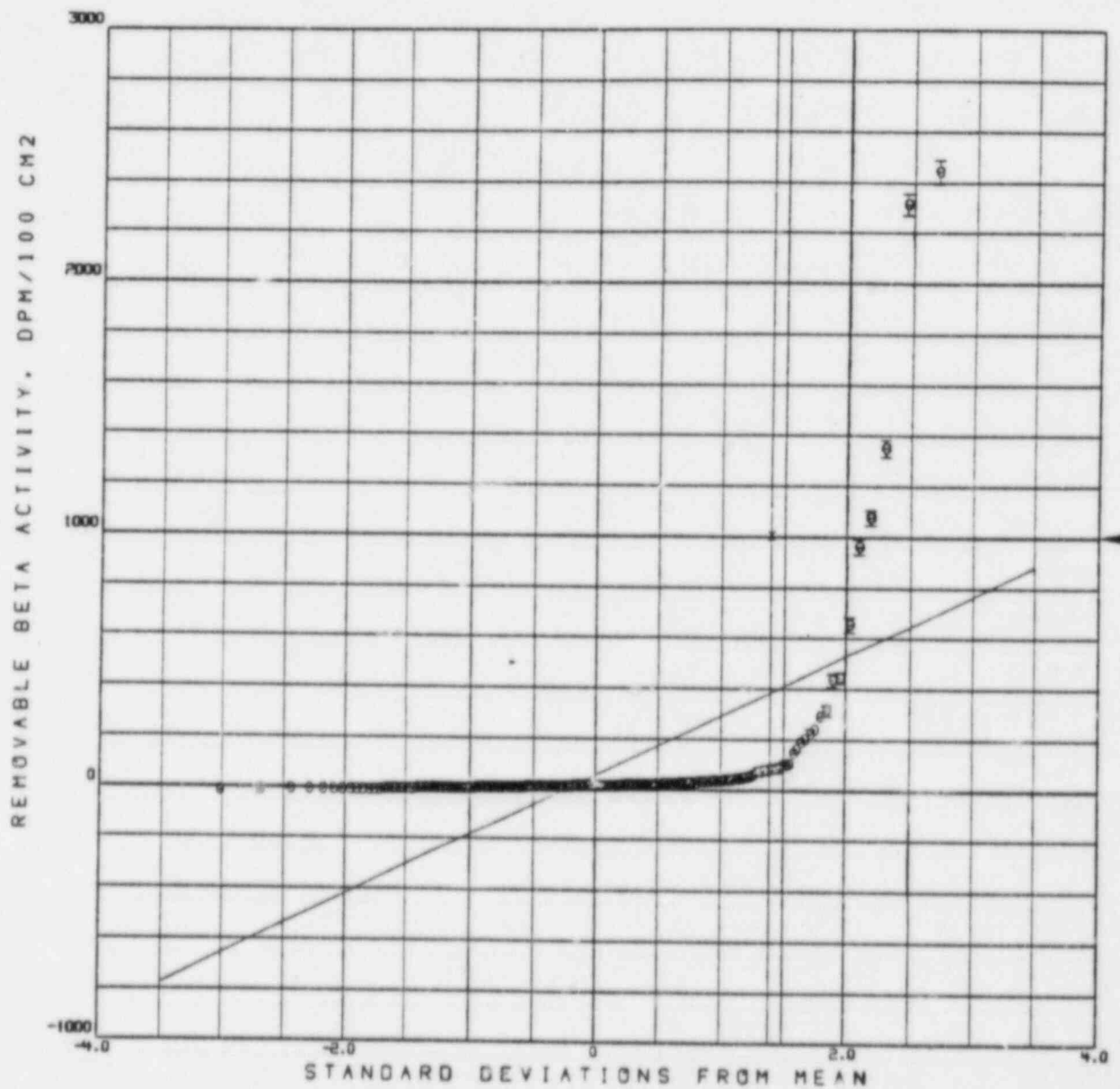


Figure 10. Results from November 1983 Survey:
Removable Beta for the Separations Facility

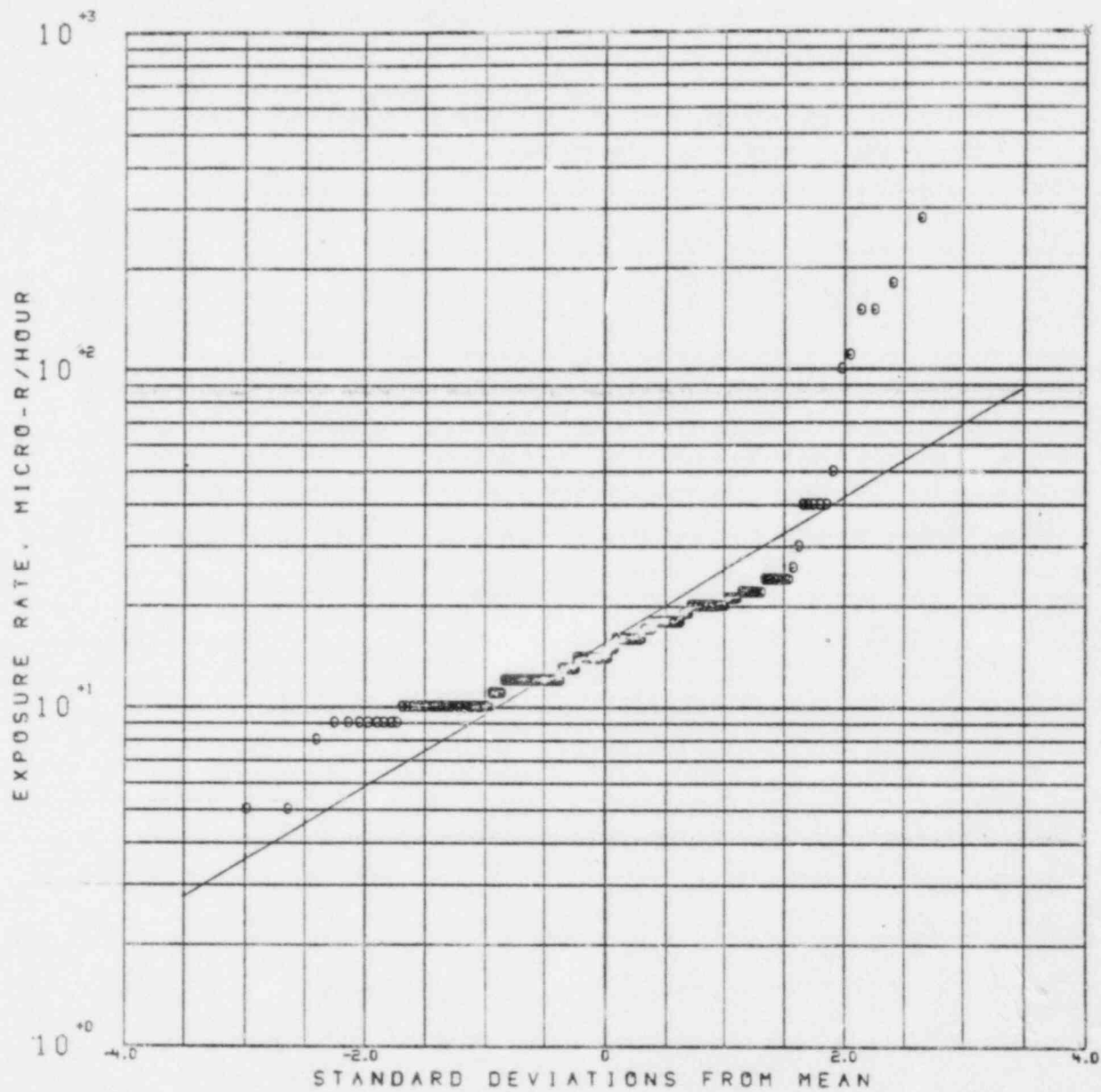


Figure 11. Results from November 1983 Survey:
Gamma Radiation for the Separations
Facility

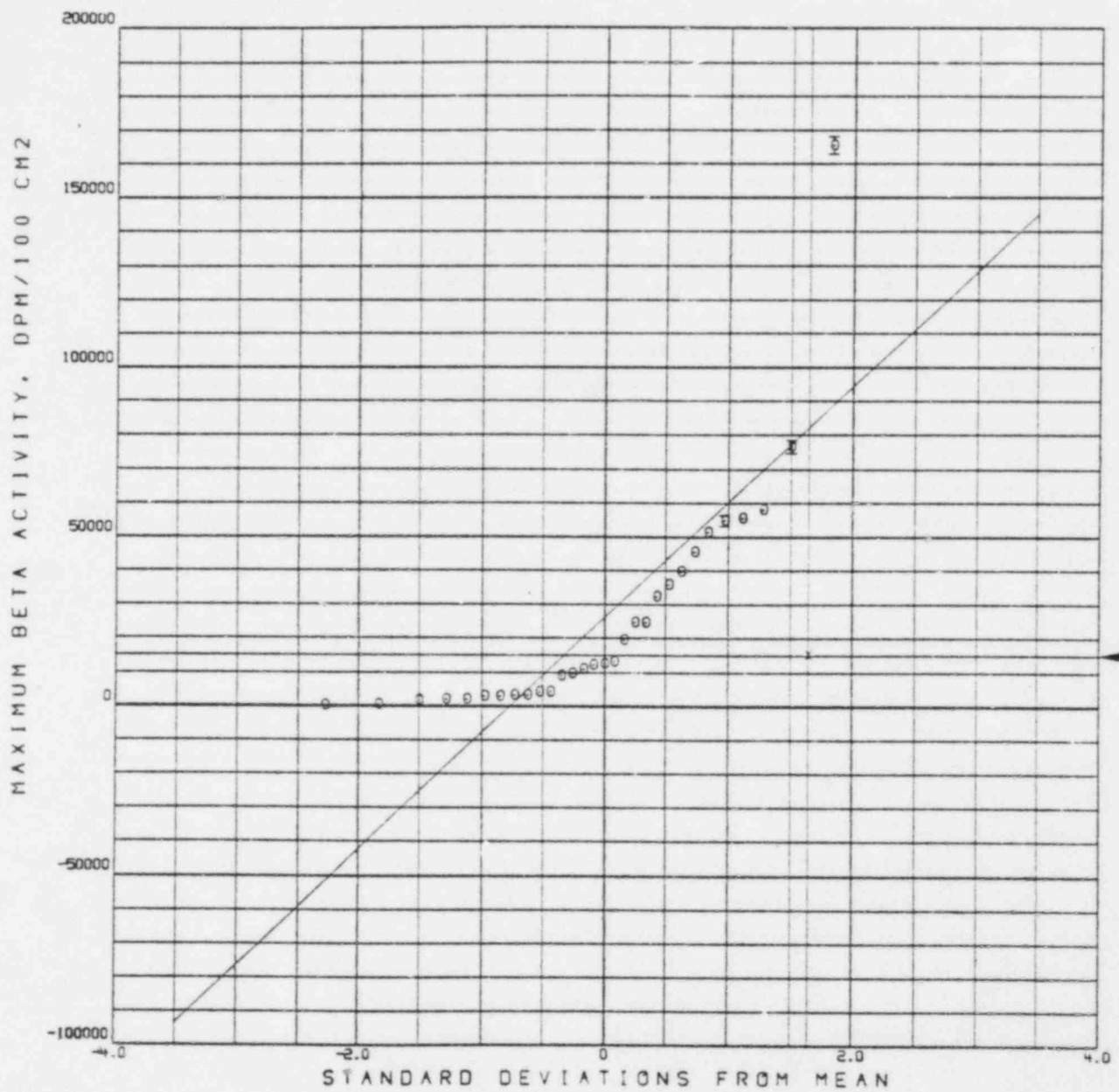


Figure 12. Results from November 1983 Survey:
Maximum Beta for the Separations Facility

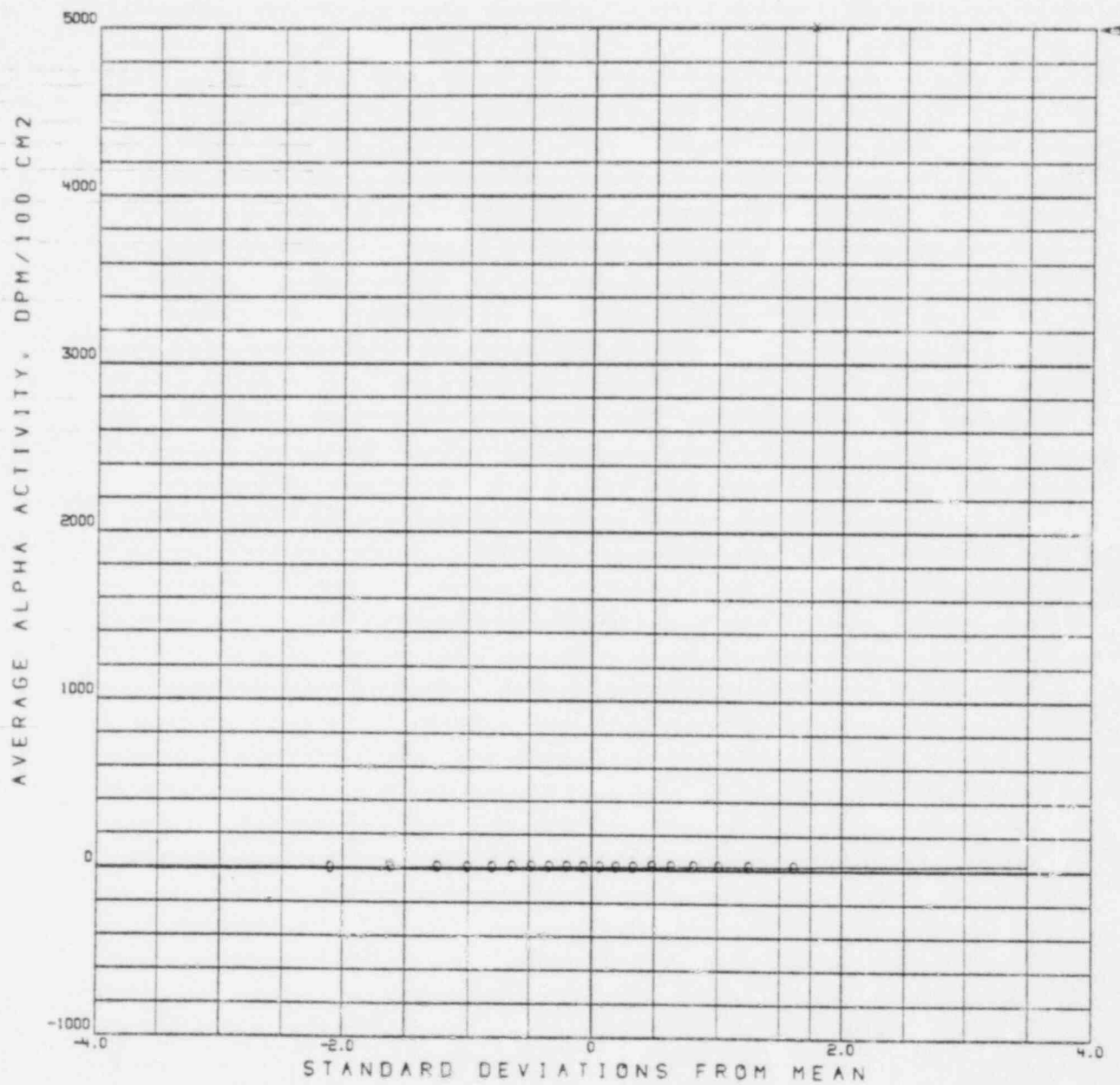


Figure 13. Results from November 1983 Survey:
Average Alpha for the WTEG and Utilities Buildings

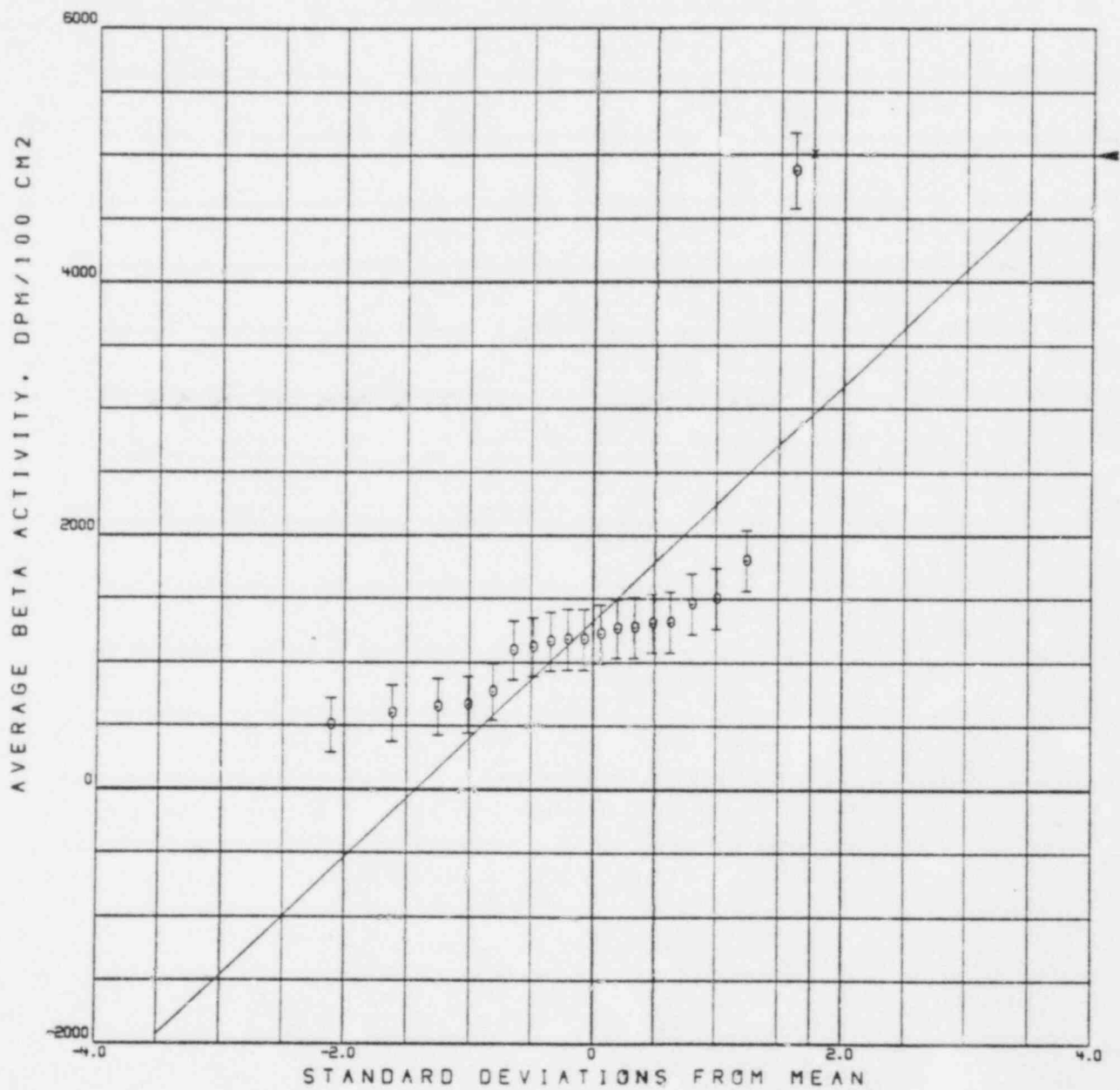


Figure 14. Results from November 1983 Survey:
Average Beta for the WTEG and Utilities Buildings

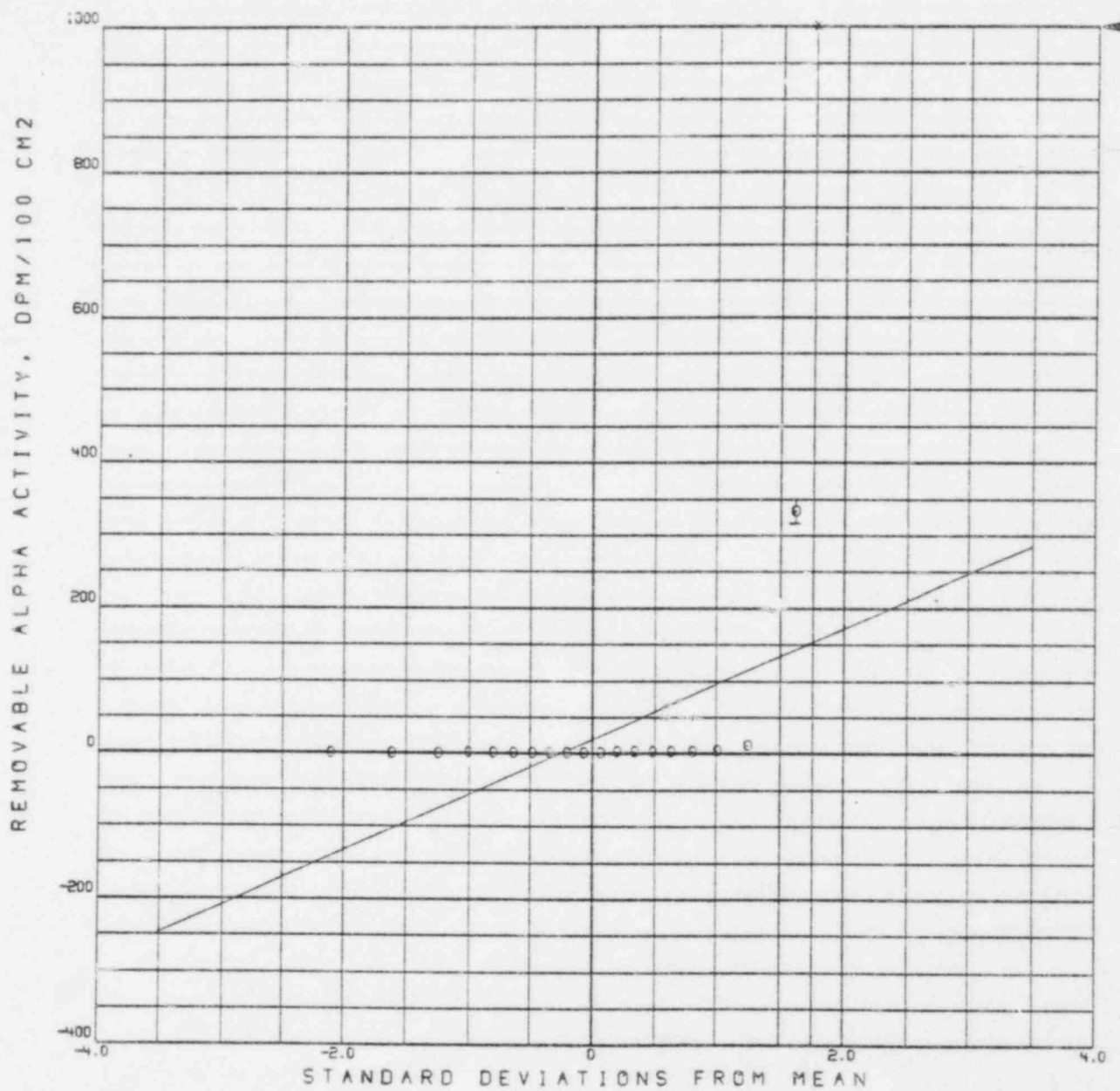


Figure 15. Results from November 1983 Survey:
Removable Alpha for the WTEG and Utilities Buildings

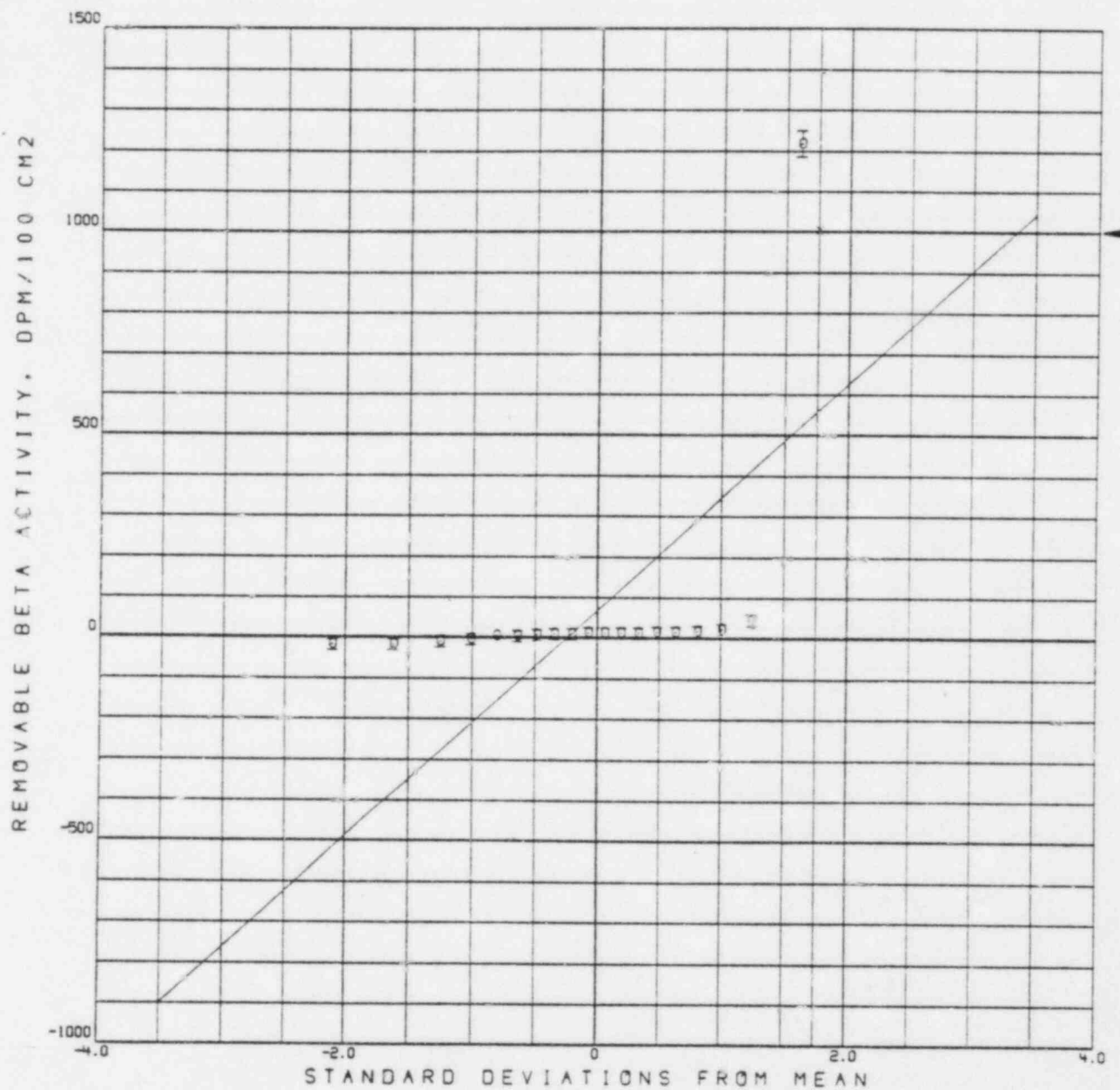


Figure 16. Results from November 1983 Survey:
Removable Beta for the WTEG and Utilities Facility

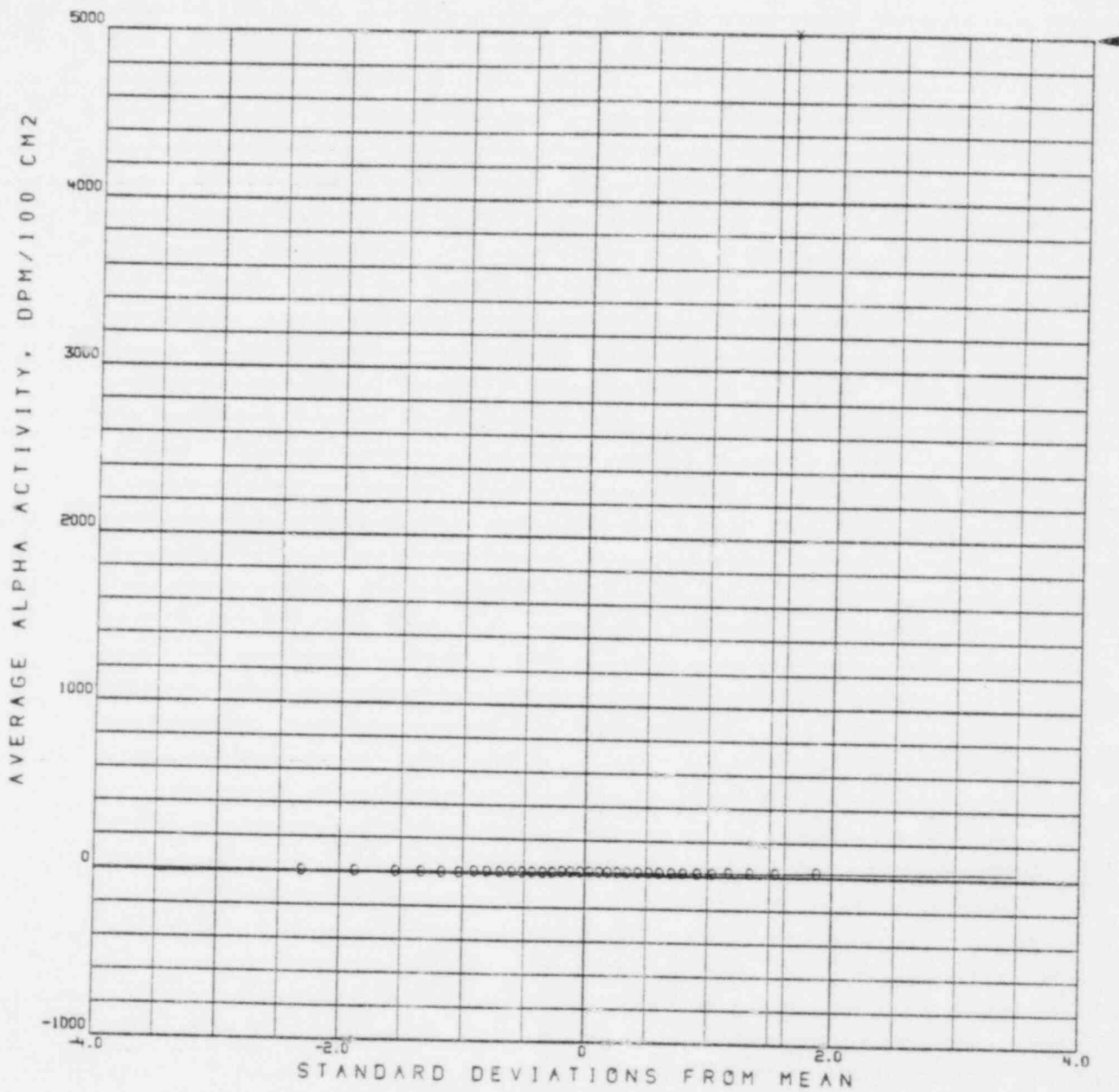


Figure 17. Results from November 1983 Survey:
Average Alpha for Miscellaneous Buildings

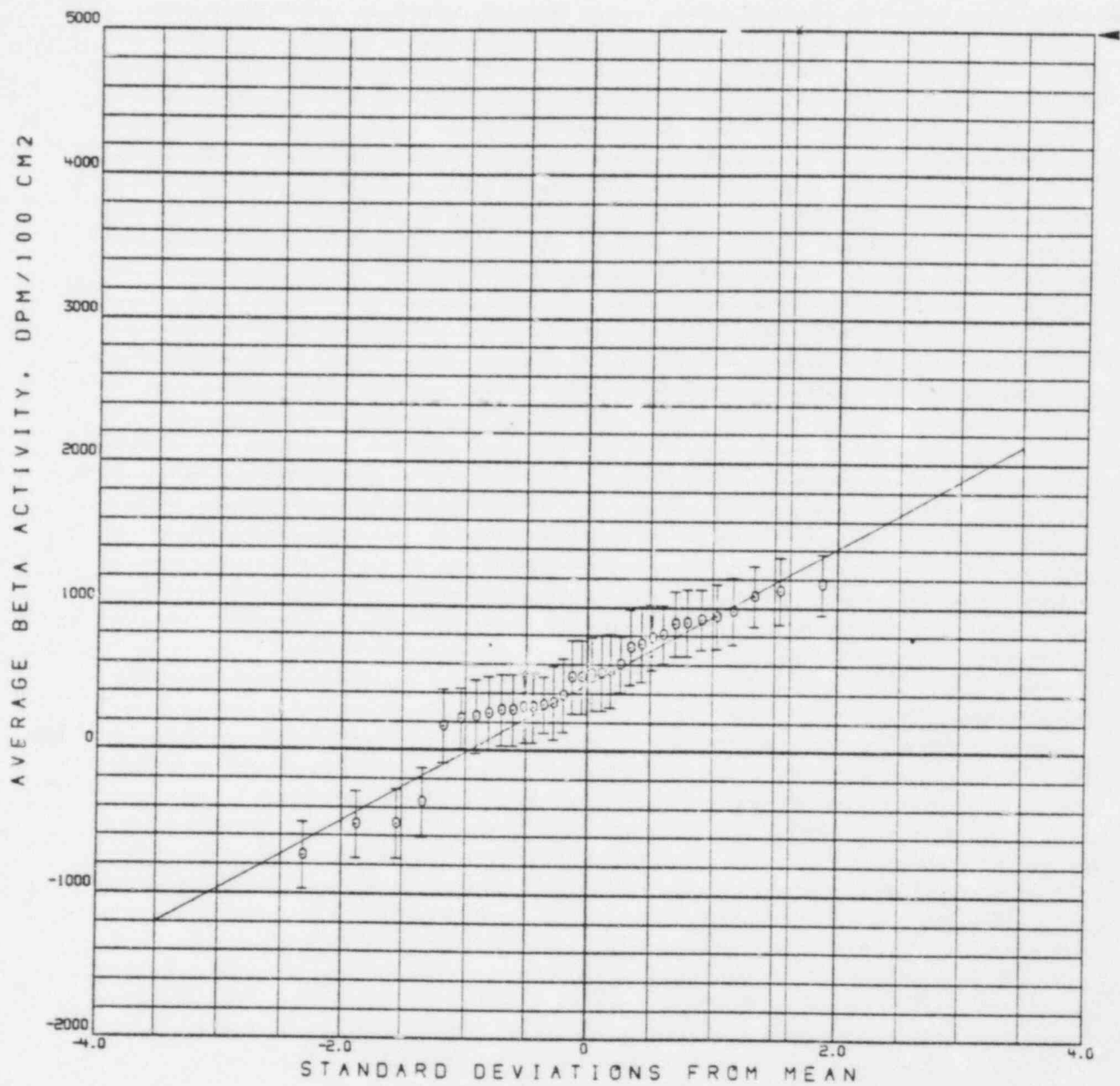


Figure 18. Results from November 1983 Survey:
Average Beta for Miscellaneous Buildings

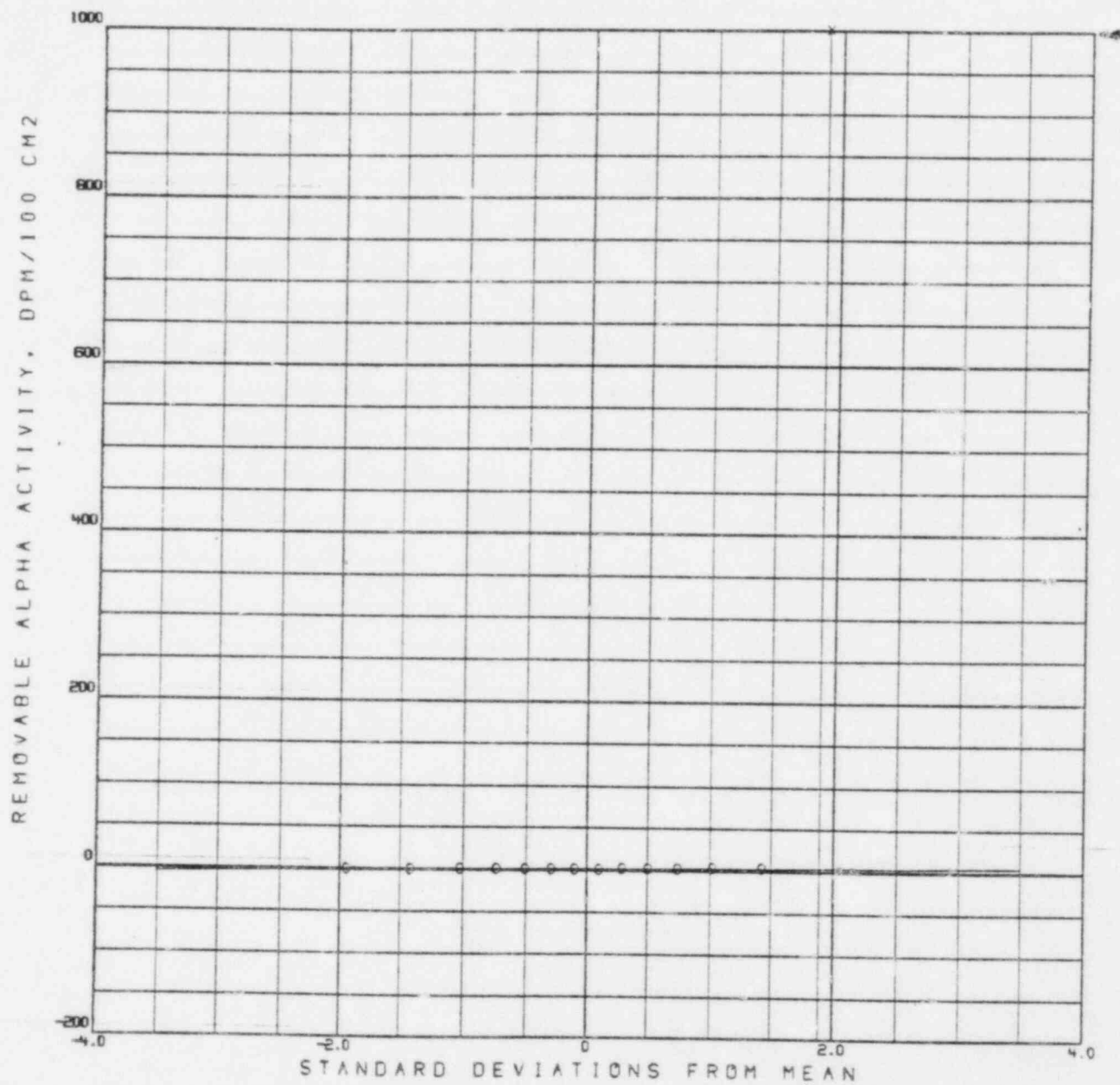


Figure 19. Results from November 1983 Survey:
Removable Alpha for Miscellaneous Buildings

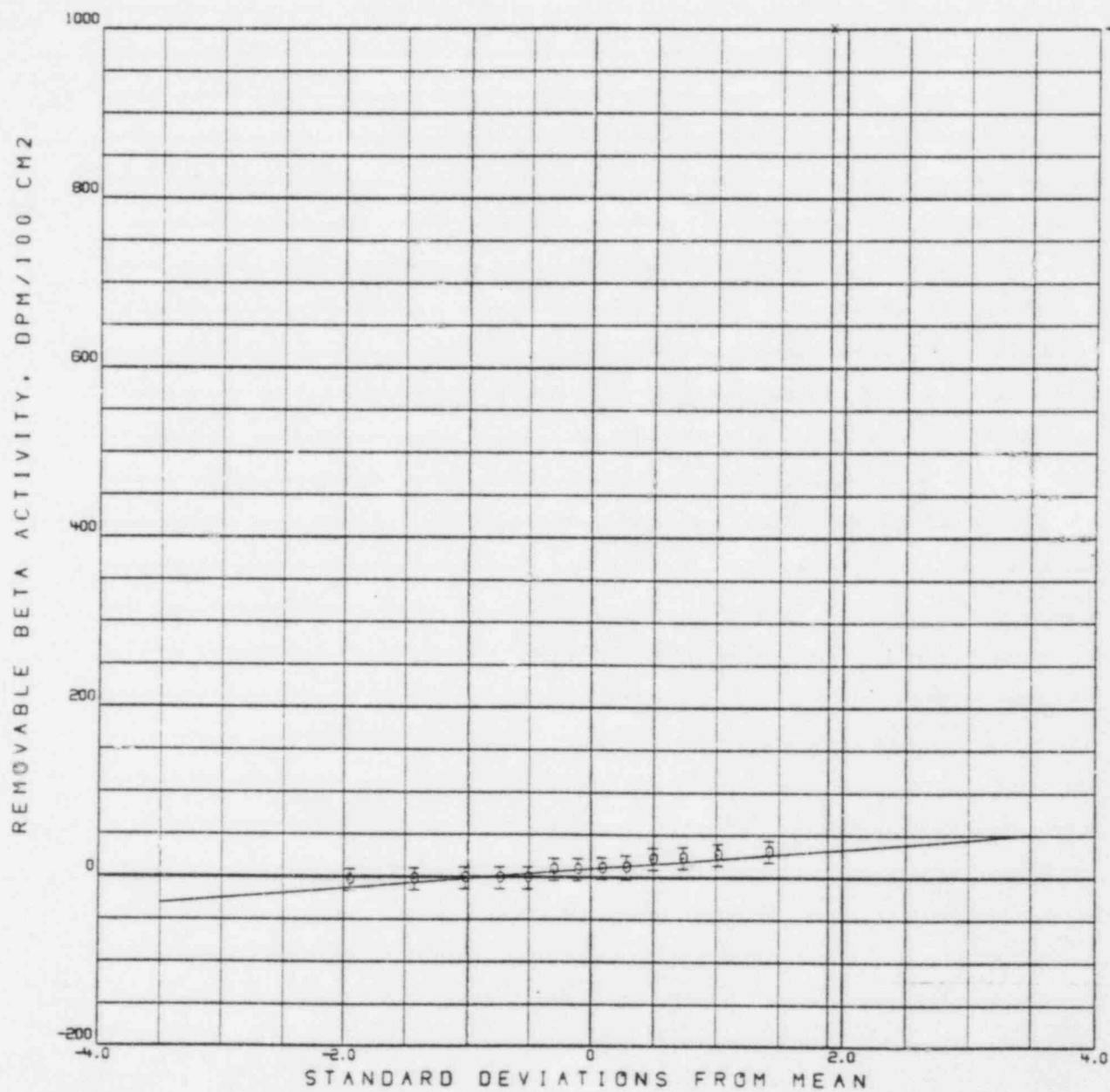


Figure 20. Results from November 1983 Survey:
Removable Beta for Miscellaneous Buildings

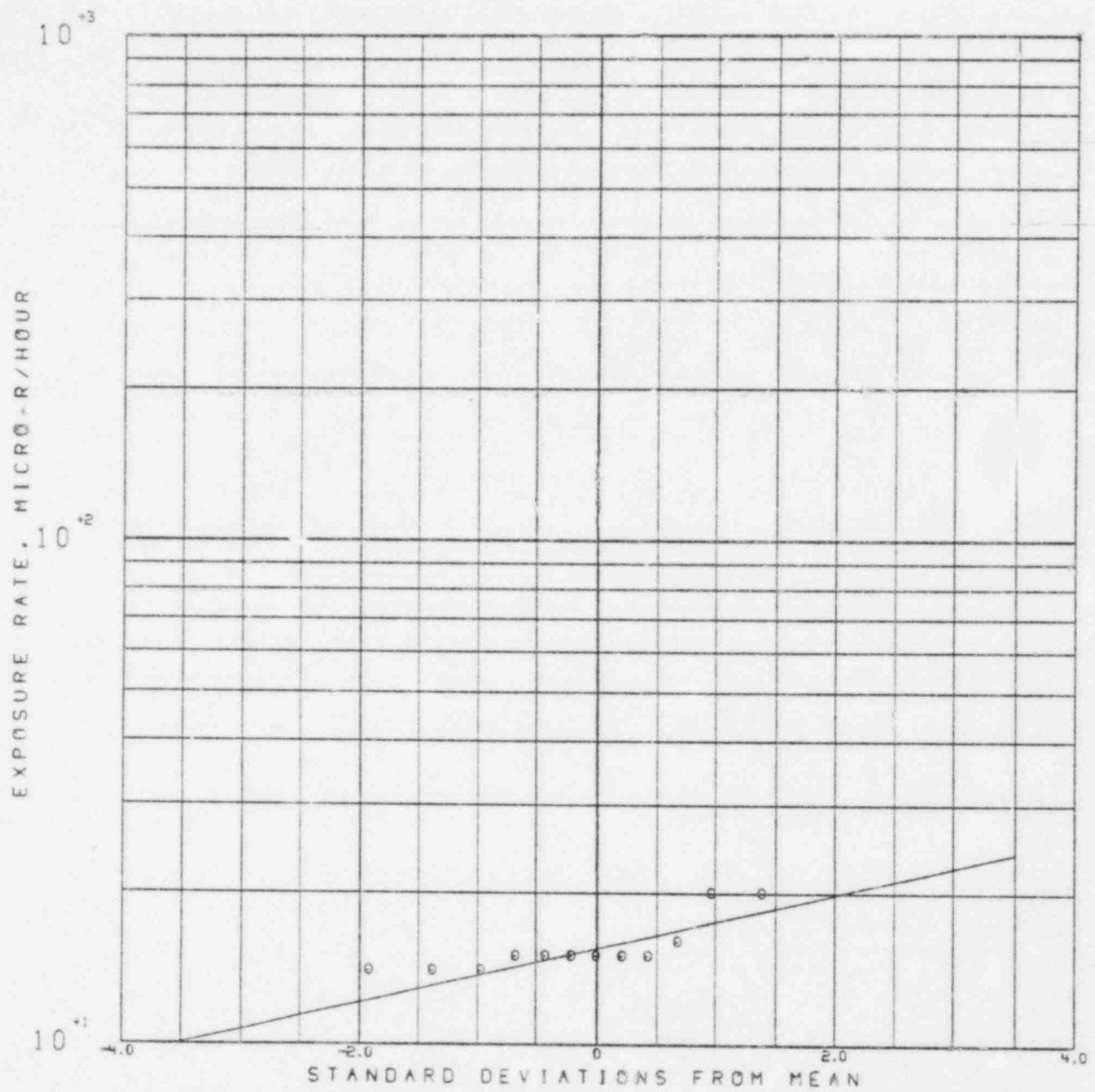


Figure 21. Results from November 1983 Survey:
Gamma Radiation for Miscellaneous Buildings

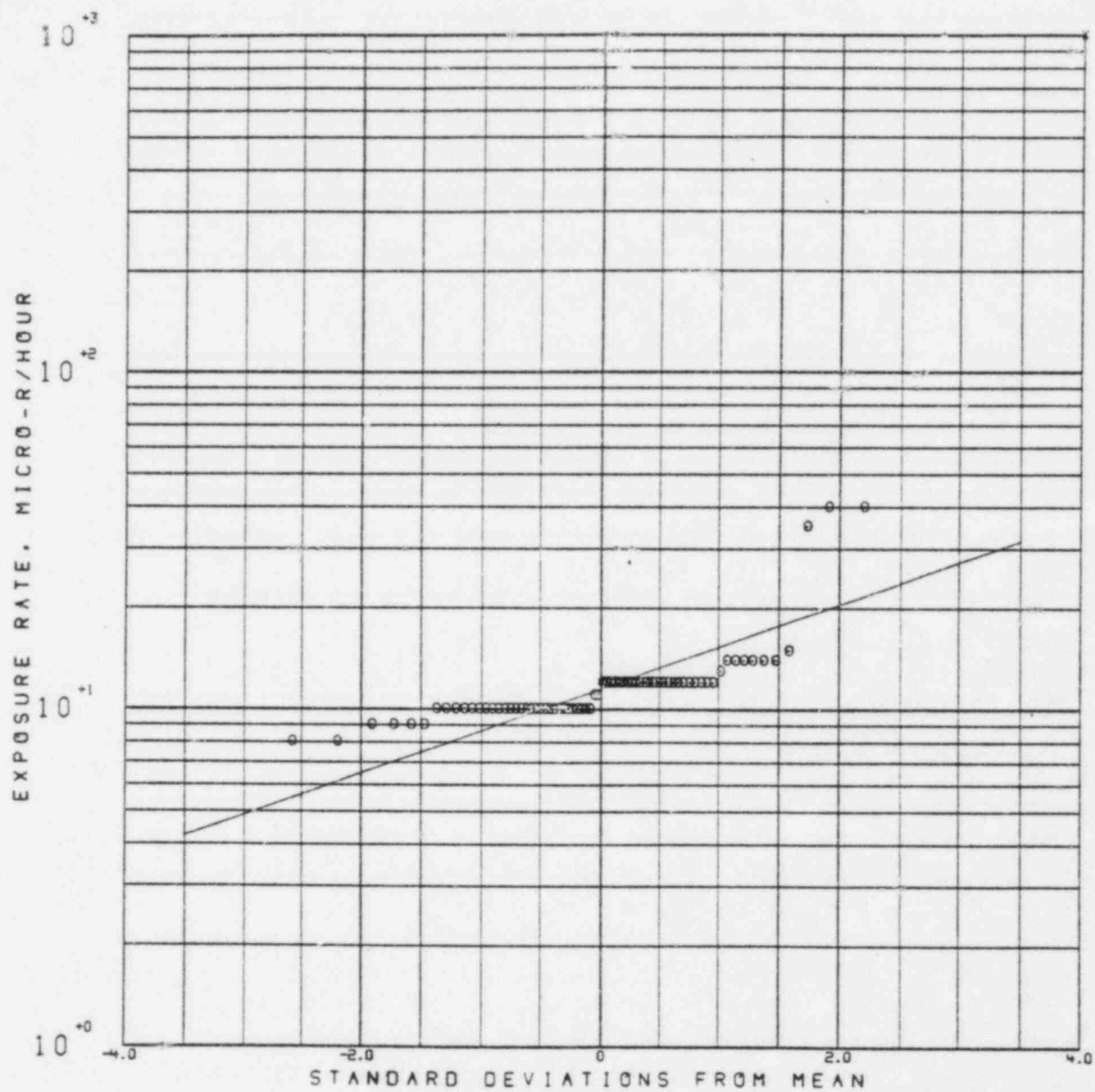


Figure 22. Results from November 1983 Survey:
Gamma Radiation for Traps

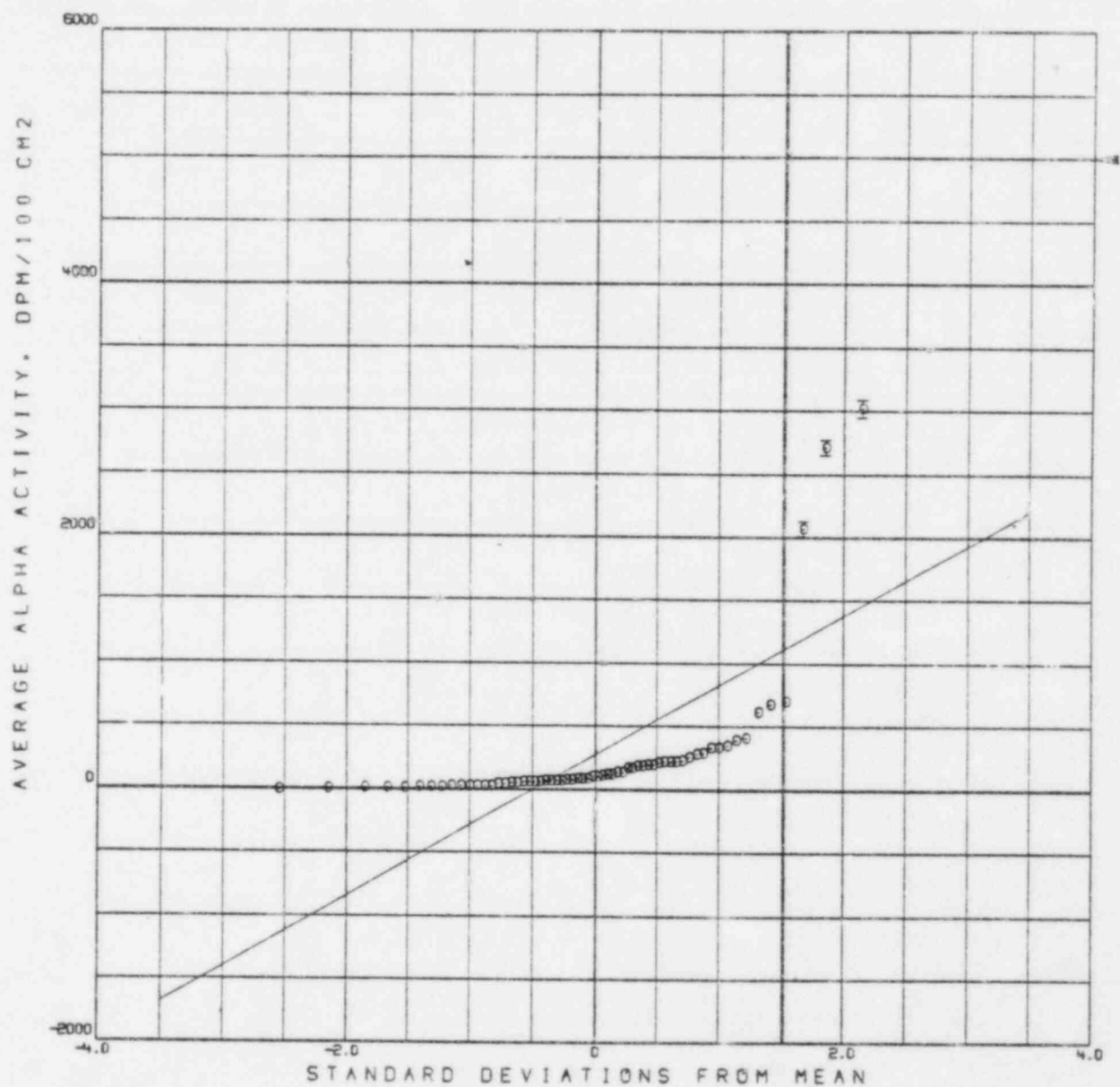


Figure 23. Results from December 1983 Survey:
Average Alpha for UF-6 Facility

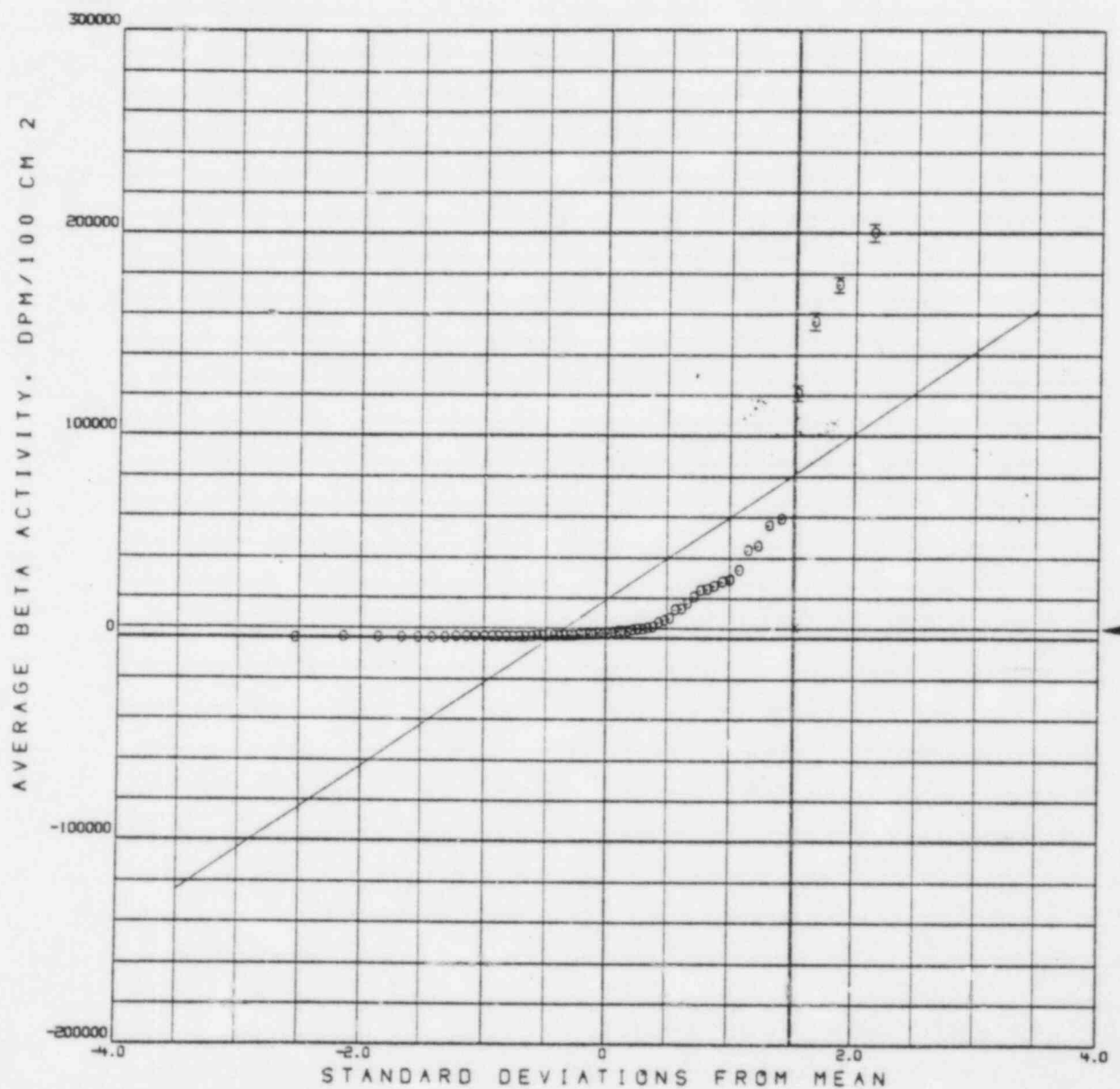


Figure 24. Results from December 1983 Survey:
Average Beta for UF-6 Facility

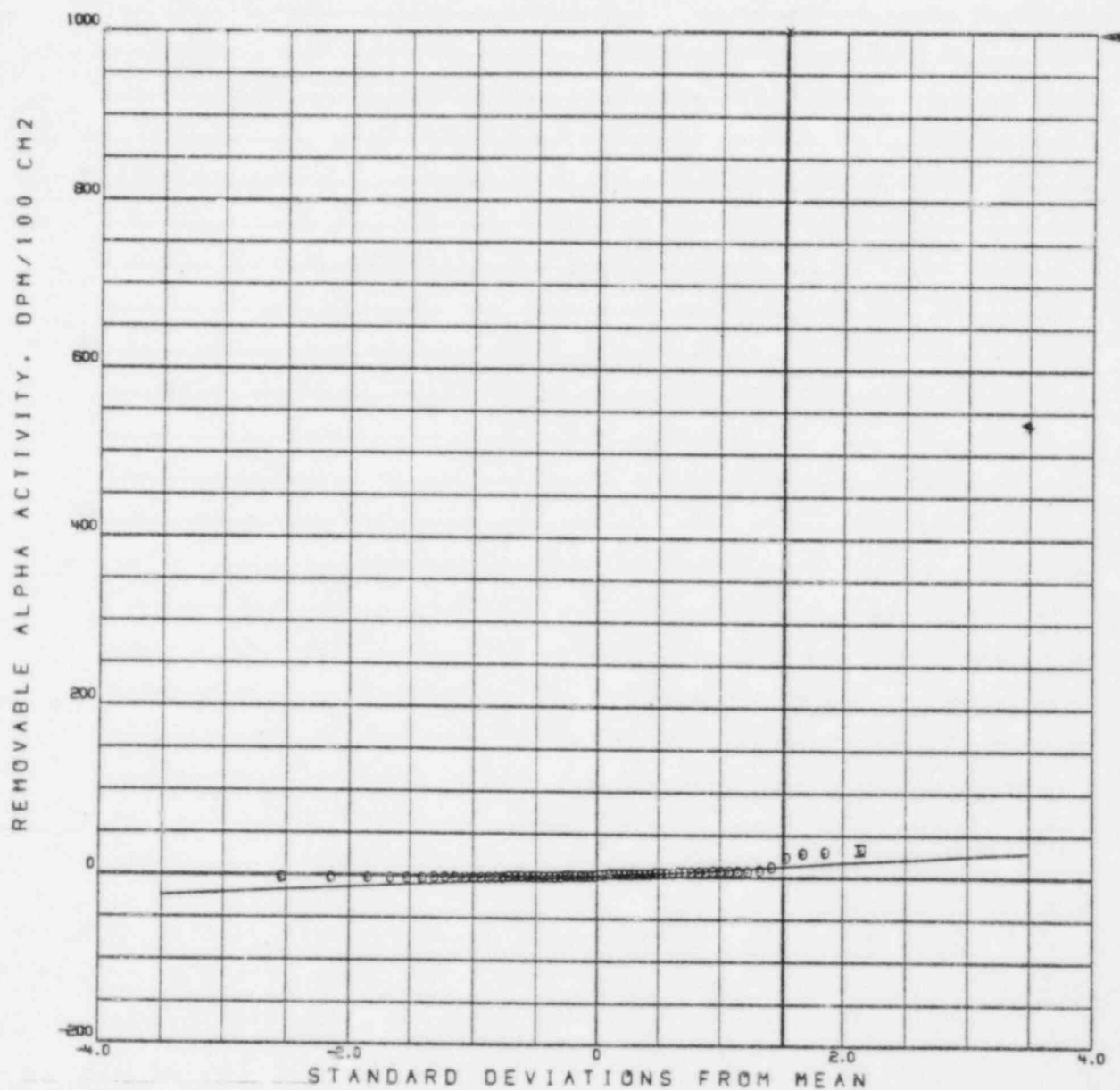


Figure 25. Results from December 1983 Survey:
Removable Alpha for UF-6 Facility

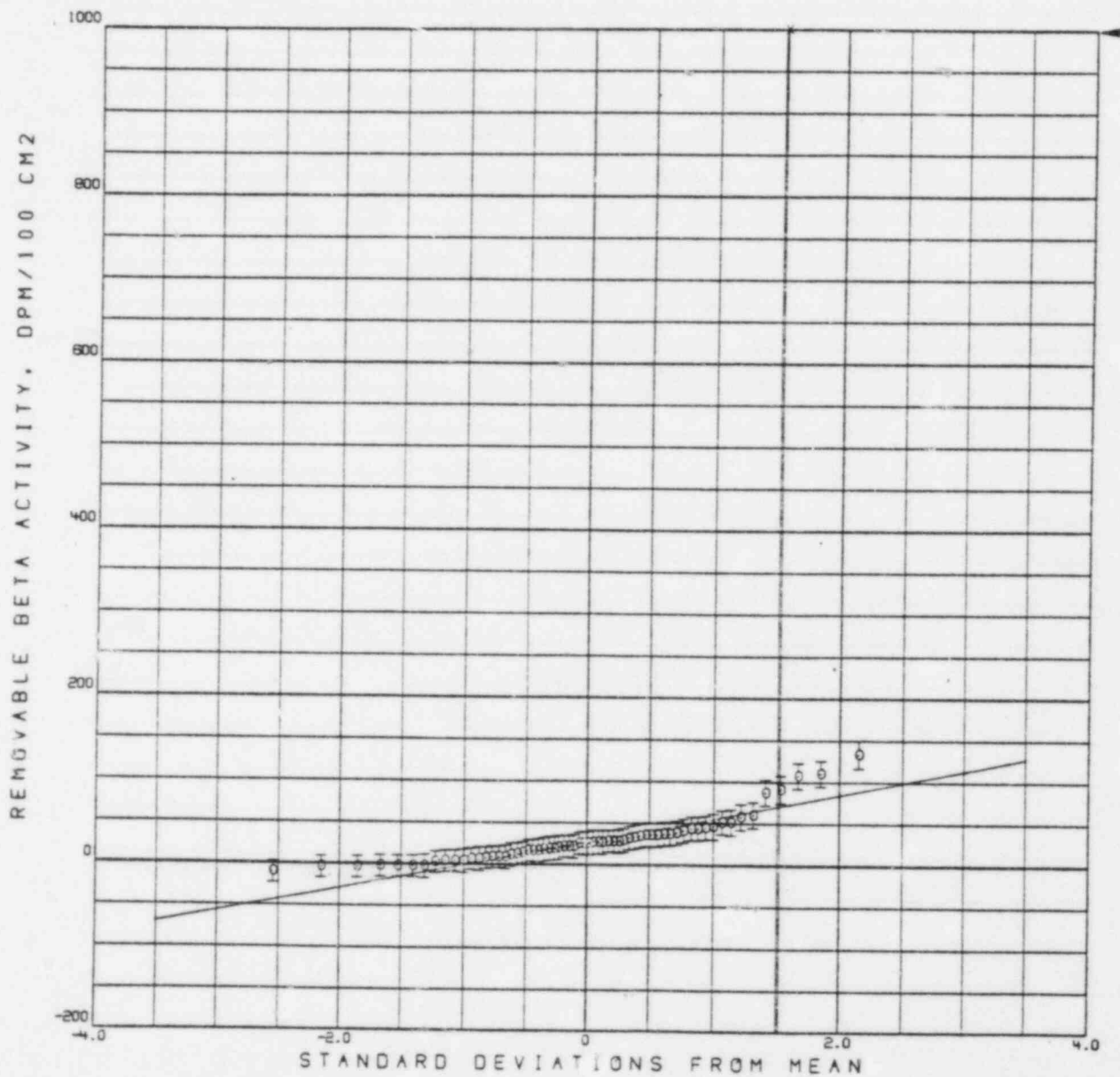


Figure 26. Results from December 1983 Survey:
Removable Beta for UF-6 Facility

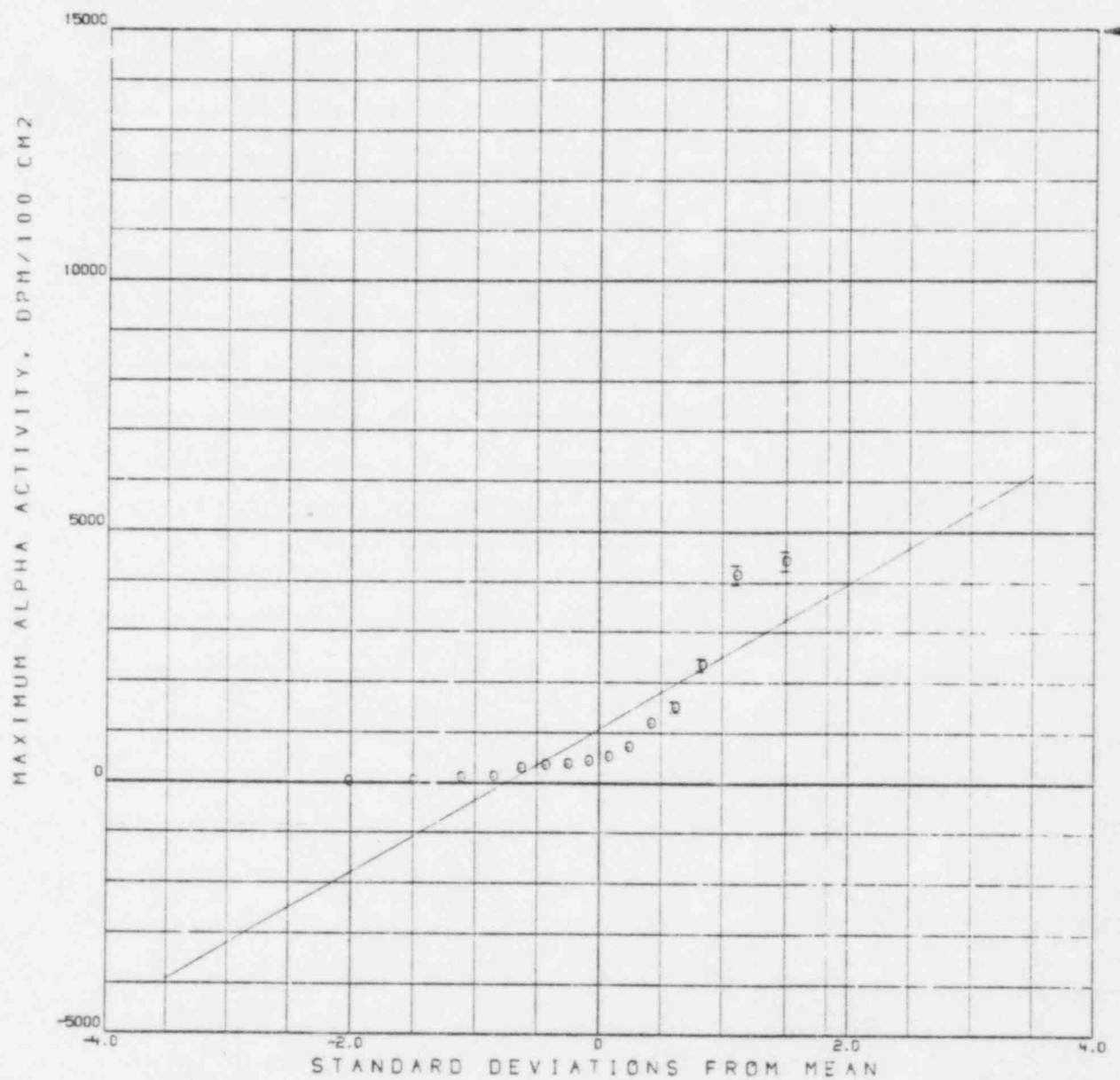


Figure 27. Results from December 1983 Survey:
Maximum Alpha for UF-6 Facility

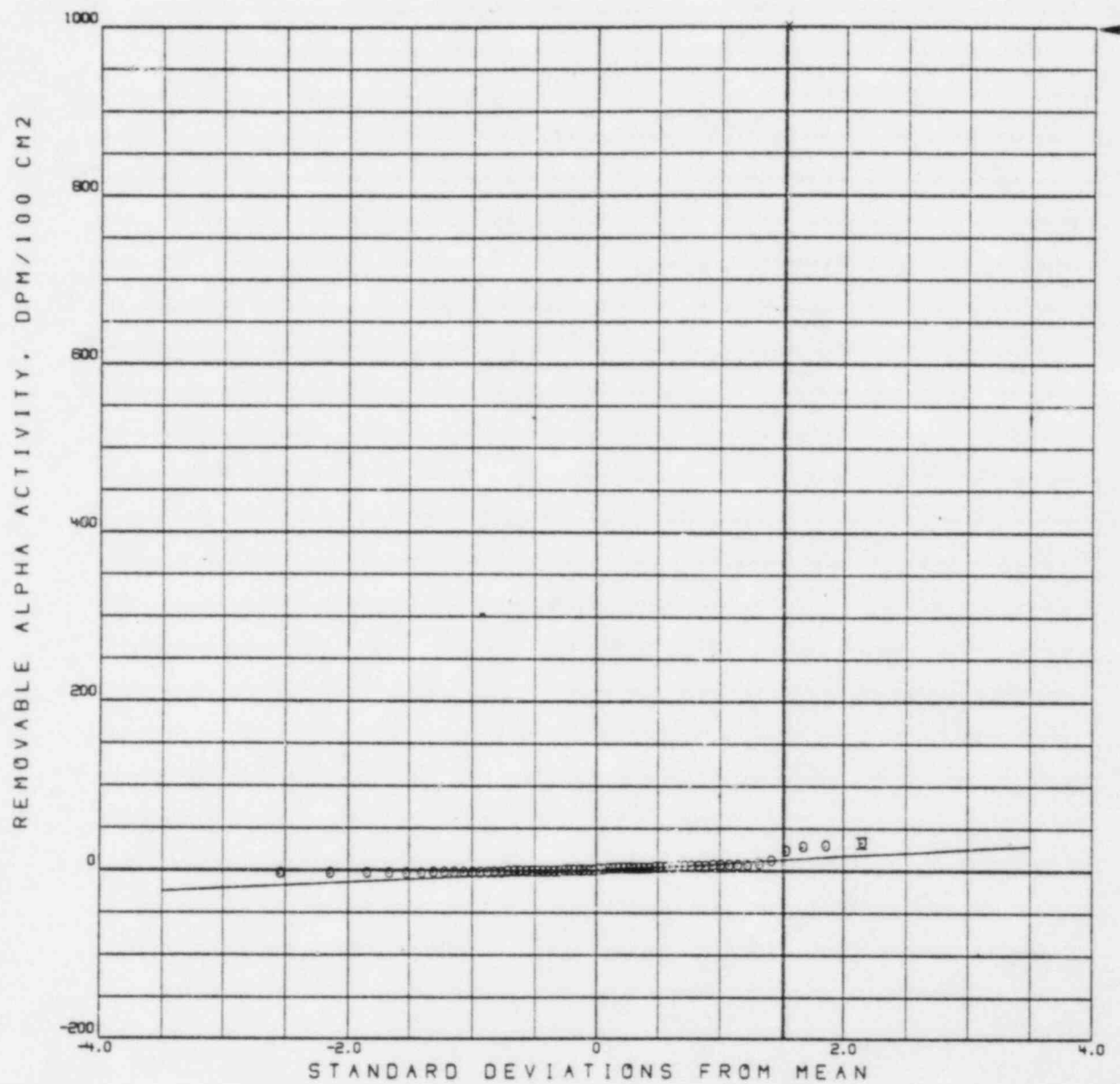


Figure 28. Results from December 1983 Survey:
Maximum Beta for UF-6 Facility

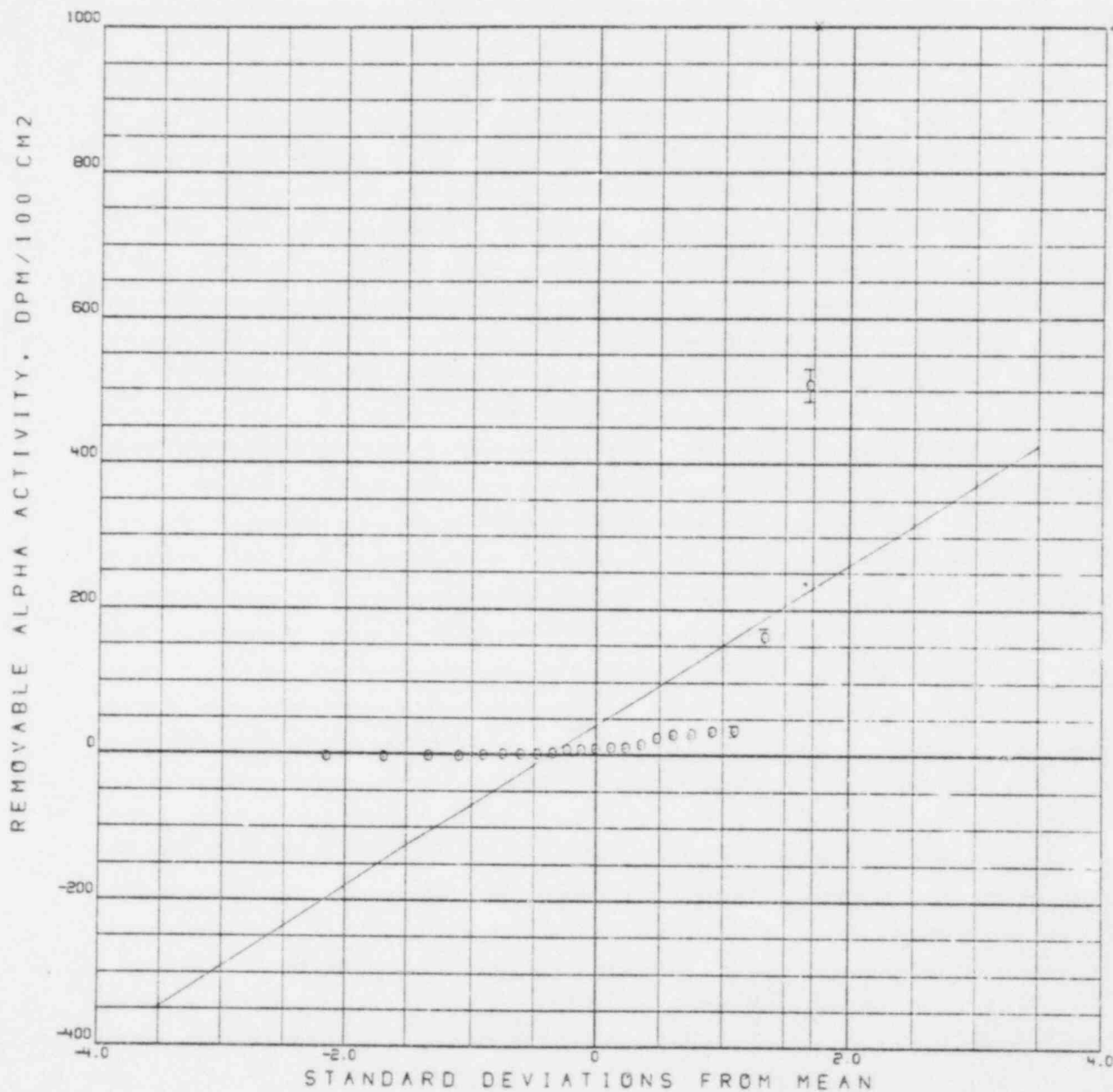


Figure 29. Results from December 1983 Survey:
Removable Alpha for the Separations Facility

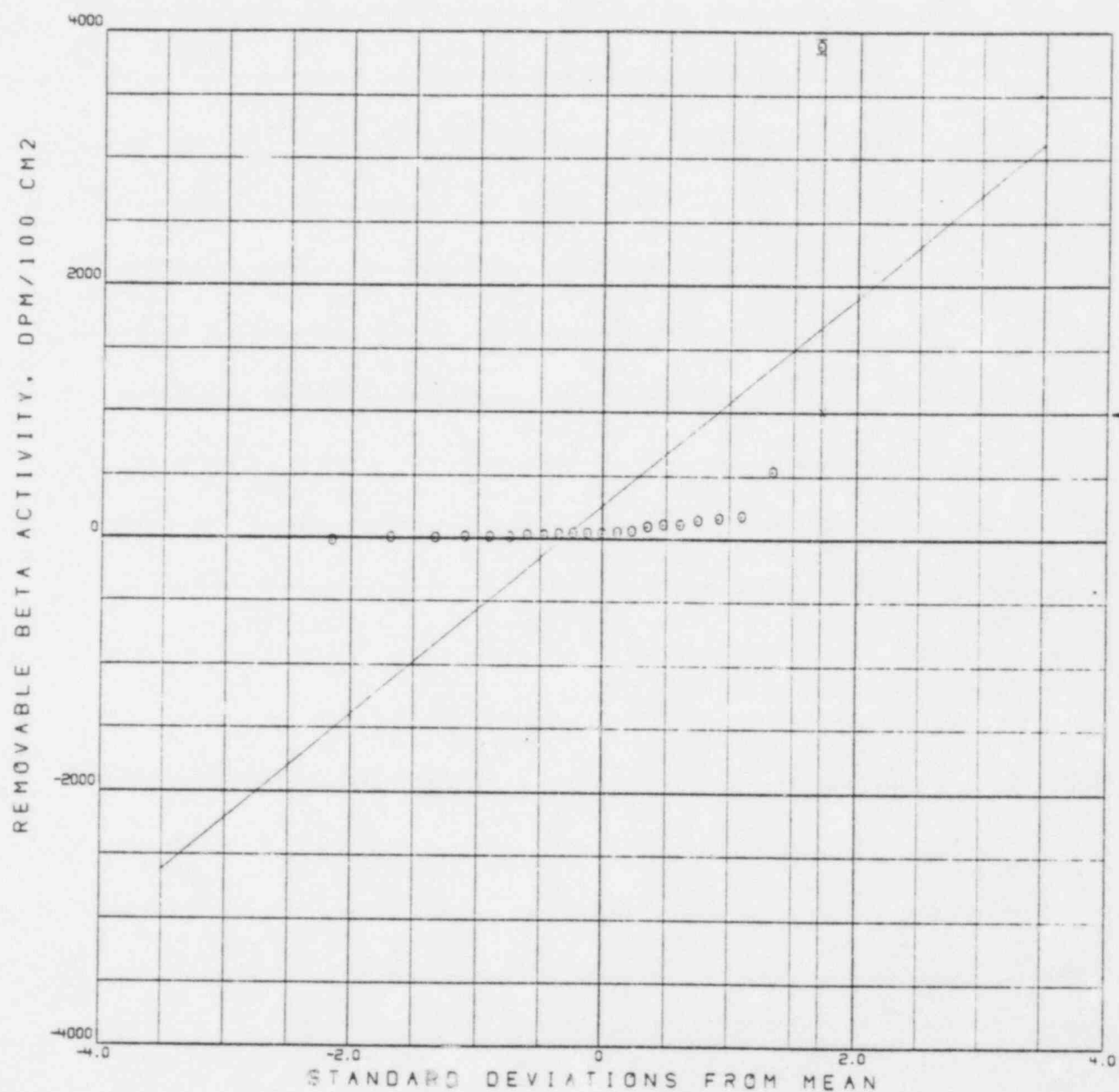


Figure 30. Results from December 1983 Survey:
Removable Beta for the Separations Facility

7.0 CONCLUSIONS

The BNFP facility was surveyed to determine the radiological conditions existing before shutdown. The vast majority of the facility was found to have significantly less radioactive material present than allowable under NRC guidelines for unrestricted release.

Fixed radioactive materials in excess of the release guidelines were found in the following localized areas: (1) Separations Building (primarily in the process cells and sampling cells, which are now sealed); (2) Uranium Hexafluoride Facility, including the Tank Farm and Waste Treatment Area (now fixed in place with paint); (3) Liquid Radioactive Waste Concentration Area (fixed in a cement matrix); and (4) the Hot and Cold Laboratory Area located in the Separations Building, where residual materials are sealed within the systems.

Removable beta contamination in excess of release guidelines was found in one hood in the laboratory area (Cold Lab), as previously stated. No removable alpha activity was associated with this location. This hood was scheduled for cleaning after the ESG survey team's departure.

There is a small amount of residual radioactive material present in the sealed glove boxes in the Hot and Cold Laboratory. Survey results on these glove boxes are available from the AGNS staff. Essentially none of the radioactive material present on this site could reasonably be expected to migrate into the environment in the near term (5 to 10 yr). This material has now been located and quantified so that a surveillance program can easily note changes in the levels present during the storage period.

8.0 REFERENCES

1. "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material," U.S. Nuclear Regulatory Commission, November 1976
2. Rockwell Energy Systems Group Technical Document N505SRR000004, Revision B, "Radiological Inspection for Release for Unrestricted Use - Frankford Arsenal," R. J. Tuttle
3. Rockwell Energy Systems Group Technical Document N065ACR63012, "Final Radiological Survey of ATR Fuel Fabrication and Support Areas," F. C. Schrag, December 1982
4. Rockwell Energy Systems Group Technical Document N065SRR206006 - Draft, "Radiation Survey for Phase III Release for Unrestricted Use of ESG Headquarters, Building 001," R. J. Tuttle, November 1983
5. Allied-General Nuclear Services, Barnwell Nuclear Fuel Plant Decommissioning Plan - Revision 1, BNFP Staff, October 1983

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APPENDIX A
METHOD OF STATISTICAL ANALYSIS

APPENDIX A

METHOD OF STATISTICAL ANALYSIS

The purpose of statistical analysis is to convert a large amount of data into a manageable amount of understandable information. This process can involve a variety of mathematical techniques, the simplest being the determination of an average (or mean) value for a given set of data. This simple determination is improved upon by also calculating the standard deviation of the data about the mean, which gives an estimate of the variability of the data. In many cases, this variability represents variations both in the characteristics being measured (say, average alpha activity in 1 m^2) and in the measurement (due to random fluctuations in the detector count rate and background).

The significance of these quantities (mean and standard deviation) depends upon the distribution assumed for the data. Sometimes there is a theoretically known distribution for a particular measurement process, such as the binomial or the Poisson distribution for counting radioactivity. These distributions are relatively well approximated by the Gaussian, or normal, distribution. In fact, the Gaussian distribution approximates the distribution of many different kinds of measurements and for simplicity is generally assumed to be the proper distribution. The Gaussian distribution is frequently seen in the form of a "bell"-shaped curve, with most values occurring near the mean value, and fewer and fewer values existing at increasing distance from the mean, both greater than and less than the mean.

However, it is difficult to derive this bell-shaped curve from experimental data, unless the data are specifically selected to demonstrate the curve, and deviations from the distribution are difficult to see. A better version is the so-called "cumulative probability function," which forms an "S"-shaped curve when plotted in the usual manner. This can be further improved by adjusting the abscissa (the "X"- values on an X-Y graph) so that the S curve becomes a straight line. This is a standard statistical technique

and is the basis for special graph paper used for probability analysis of data. The parameters of the Gaussian distribution (the mean and standard deviation) are determined by the usual calculational methods:

$$\text{mean} = \bar{X} = \frac{\sum \bar{X}_i}{N}$$

$$\text{standard deviation} = S = \sqrt{\frac{\sum (X_i - \bar{X})^2}{N - 1}},$$

where X_i represents the individual data values, and N is the number of points.

This method is the basis for the figures presented earlier in this report, where the measured values are plotted against the distance from the mean value, using the standard deviation of the assumed Gaussian distribution as the unit.

Where the data are not well represented by a Gaussian distribution (and this is true in most of the cases), the departure is readily apparent: the data points do not lie along the straight line representing the Gaussian. In most cases, this departure takes a single typical form. Much of the data forms a nearly horizontal straight line with the balance forming another nearly straight, steeply sloping line.

This can usually be interpreted as showing a large number of uncontaminated locations where the variability is due to random fluctuations in the measurements themselves, with the balance being locations that have more or less significant residual radioactivity.

In the present report, this analysis has been extended to provide a sampling inspection test, as well. This uses a standard quality control technique called inspection by variables, in which the distribution of measured values is used to predict the probability that other, unmeasured values would exceed a specified limit. The standard test method requires calculating the mean (\bar{X}) and the standard deviation (s). Then, depending upon values chosen for certain parameters that affect the performance of the test in accepting bad lots or rejecting good lots, the necessary number of samples is determined and a multiplier, k , is computed so that the inequality

$$\bar{X} + ks < L,$$

where L is the acceptance limit, represents an acceptable lot. In the present application, the term "lot" applies to a major facility, such as the UF-6 Building or the Separations Building.

The parameters used in this test are those recommended by the State of California, Radiologic Health Section, for release of a facility for unrestricted use. These are the so-called "consumer's risk" (or β) and the "lot-tolerance percent defective" (LTPD). The values recommended for these are $\beta = 0.1$ and $LTPD = 10\%$. This means that, if a lot just passes the acceptance test, there is one chance in ten (0.1) that 10% of the total number of locations in the facility sampled would have residual radioactivity exceeding the limit.

The usual manner of applying this inspection test is to use tables giving values of the sample size (N) and multiplier (k) for the selected values of β and LTPD. In the present application, the number of measured values (N) in each lot was used to compute k , and this value was used to calculate $\bar{X} + ks$. The computation of k is somewhat complicated, but once programmed for the computer as part of the data analysis program, the complication is no obstacle to its use:

$$k = \frac{K_2 + \sqrt{K_2^2 - ab}}{a}$$

$$\text{with } a = 1 - \frac{K_B^2}{2(N-1)}$$

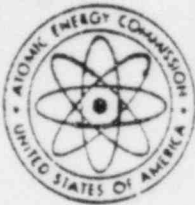
$$\text{and } b = K_2^2 - \frac{K_B^2}{N}$$

The value of K_2 is that for the variable of a Gaussian distribution corresponding to the LTPD value, and the value of K_B is that for the Gaussian variable corresponding to β . In this case, both these values are 1.282.

Inasmuch as the limit for gamma exposure rate is not well defined and is very sensitive to the great variation in environmental radiation, this complete analysis was not applied to the gamma measurements. Instead, the values were plotted against an assumed log-Gaussian (log-normal) distribution and the test was not calculated. In each case, the significantly high readings can be judged by looking at the plot.

APPENDIX B

NUCLEAR REGULATORY GUIDE 1.86
TERMINATION OF OPERATING LICENSES FOR NUCLEAR REACTORS



U.S. ATOMIC ENERGY COMMISSION

REGULATORY GUIDE

DIRECTORATE OF REGULATORY STANDARDS

REGULATORY GUIDE 1.86

TERMINATION OF OPERATING LICENSES FOR NUCLEAR REACTORS

A. INTRODUCTION

Section 50.51, "Duration of license, renewal," of 10 CFR Part 50, "Licensing of Production and Utilization Facilities," requires that each license to operate a production and utilization facility be issued for a specified duration. Upon expiration of the specified period, the license may be either renewed or terminated by the Commission. Section 50.82, "Applications for termination of licenses," specifies the requirements that must be satisfied to terminate an operating license, including the requirement that the dismantlement of the facility and disposal of the component parts not be inimical to the common defense and security or to the health and safety of the public. This guide describes methods and procedures considered acceptable by the Regulatory staff for the termination of operating licenses for nuclear reactors. The Advisory Committee on Reactor Safeguards has been consulted concerning this guide and has concurred in the regulatory position.

B. DISCUSSION

When a licensee decides to terminate his nuclear reactor operating license, he may, as a first step in the process, request that his operating license be amended to restrict him to possess but not operate the facility. The advantage to the licensee of converting to such a possession-only license is reduced surveillance requirements in that periodic surveillance of equipment important to the safety of reactor operation is no longer required. Once this possession-only license is issued, reactor operation is not permitted. Other activities related to cessation of operations such as unloading fuel from the reactor core, placing it in storage (either onsite or offsite) may be permitted.

A licensee having a possession-only license must retain, with the Part 50 license, authorization for special nuclear material (10 CFR Part 70, "Special Nuclear Material"), byproduct material (10 CFR Part 30, "Rules of General Applicability to Licensing of Byproduct Material"), and source material (10 CFR Part 40, "Licensing of Source Material"), until the fuel, radioactive components, and sources are removed from the facility. Appropriate administrative controls and facility requirements are imposed by the Part 50 license and the technical specifications to assure that proper surveillance is performed and that the reactor facility is maintained in a safe condition and not operated.

A possession-only license permits various options and procedures for decommissioning, such as mothballing, entombment, or dismantling. The requirements imposed depend on the option selected.

Section 50.82 provides that the licensee may dismantle and dispose of the component parts of a nuclear reactor in accordance with existing regulations. For research reactors and critical facilities, this has usually meant the disassembly of a reactor and its shipment offsite, sometimes to another appropriately licensed organization for further use. The site from which a reactor has been removed must be decontaminated, as necessary, and inspected by the Commission to determine whether unrestricted access can be approved. In the case of nuclear power reactors, dismantling has usually been accomplished by shipping fuel offsite, making the reactor inoperable, and disposing of some of the radioactive components.

Radioactive components may be either shipped offsite for burial at an authorized burial ground or secured

USAEC REGULATORY GUIDES

Regulatory Guides are issued to describe and make available to the public methods acceptable to the AEC Regulatory staff of implementing specific parts of the Commission's regulations, to delineate techniques used by the staff in evaluating specific problems or postulated accidents, or to provide guidance to applicants. Regulatory Guides are not substitutes for regulations and compliance with them is not required. Methods and solutions different from those set out in the guides will be acceptable if they provide a basis for the findings required to the issuance or continuance of a permit or license by the Commission.

Published guides will be revised periodically, as appropriate, to accommodate comments and to reflect new information or experience.

Copies of published guides may be obtained by request indicating the divisions desired to the U.S. Atomic Energy Commission, Washington, D.C. 20545. Attention: Director of Regulatory Standards. Comments and suggestions for improvements in these guides are encouraged and should be sent to the Secretary of the Commission, U.S. Atomic Energy Commission, Washington, D.C. 20545. Attention: Chief, Public Proceedings Staff.

The guides are issued in the following ten broad divisions:

- | | |
|-----------------------------------|------------------------|
| 1. Power Reactors | 6. Products |
| 2. Research and Test Reactors | 7. Transportation |
| 3. Fuels and Materials Facilities | 8. Occupational Health |
| 4. Environmental and Safety | 9. Antiterrorism |
| 5. Materials and Plant Protection | 10. General |

on the site. Those radioactive materials remaining on the site must be isolated from the public by physical barriers or other means to prevent public access to hazardous levels of radiation. Surveillance is necessary to assure the long term integrity of the barriers. The amount of surveillance required depends upon (1) the potential hazard to the health and safety of the public from radioactive material remaining on the site and (2) the integrity of the physical barriers. Before areas may be released for unrestricted use, they must have been decontaminated or the radioactivity must have decayed to less than prescribed limits (Table I).

The hazard associated with the retired facility is evaluated by considering the amount and type of remaining contamination, the degree of confinement of the remaining radioactive materials, the physical security provided by the confinement, the susceptibility to release of radiation as a result of natural phenomena, and the duration of required surveillance.

C. REGULATORY POSITION

1. APPLICATION FOR A LICENSE TO POSSESS BUT NOT OPERATE (POSSESSION-ONLY LICENSE)

A request to amend an operating license to a possession-only license should be made to the Director of Licensing, U.S. Atomic Energy Commission, Washington, D.C. 20545. The request should include the following information:

- a. A description of the current status of the facility.
- b. A description of measures that will be taken to prevent criticality or reactivity changes and to minimize releases of radioactivity from the facility.
- c. Any proposed changes to the technical specifications that reflect the possession-only facility status and the necessary disassembly/retirement activities to be performed.
- d. A safety analysis of both the activities to be accomplished and the proposed changes to the technical specifications.
- e. An inventory of activated materials and their location in the facility.

2. ALTERNATIVES FOR REACTOR RETIREMENT

Four alternatives for retirement of nuclear reactor facilities are considered acceptable by the Regulatory staff. These are:

a. **Mothballing.** Mothballing of a nuclear reactor facility consists of putting the facility in a state of protective storage. In general, the facility may be left intact except that all fuel assemblies and the radioactive

fluids and waste should be removed from the site. Adequate radiation monitoring, environmental surveillance, and appropriate security procedures should be established under a possession-only license to ensure that the health and safety of the public is not endangered.

b. **In-Place Entombment.** In-place entombment consists of sealing all the remaining highly radioactive or contaminated components (e.g., the pressure vessel and reactor internals) within a structure integral with the biological shield after having all fuel assemblies, radioactive fluids and wastes, and certain selected components shipped offsite. The structure should provide integrity over the period of time in which significant quantities (greater than Table I levels) of radioactivity remain with the material in the entombment. An appropriate and continuing surveillance program should be established under a possession-only license.

c. **Removal of Radioactive Components and Dismantling.** All fuel assemblies, radioactive fluids and waste, and other materials having activities above accepted unrestricted activity levels (Table I) should be removed from the site. The facility owner may then have unrestricted use of the site with no requirement for a license. If the facility owner so desires, the remainder of the reactor facility may be dismantled and all vestiges removed and disposed of.

d. **Conversion to a New Nuclear System or a Fossil Fuel System.** This alternative, which applies only to nuclear power plants, utilizes the existing turbine system with a new steam supply system. The original nuclear steam supply system should be separated from the electric generating system and disposed of in accordance with one of the previous three retirement alternatives.

3. SURVEILLANCE AND SECURITY FOR THE RETIREMENT ALTERNATIVES WHOSE FINAL STATUS REQUIRES A POSSESSION-ONLY LICENSE

A facility which has been licensed under a possession-only license may contain a significant amount of radioactivity in the form of activated and contaminated hardware and structural materials. Surveillance and commensurate security should be provided to assure that the public health and safety are not endangered.

a. Physical security to prevent inadvertent exposure of personnel should be provided by multiple locked barriers. The presence of these barriers should make it extremely difficult for an unauthorized person to gain access to areas where radiation or contamination levels exceed those specified in Regulatory Position C.4. To prevent inadvertent exposure, radiation areas above 5 mR/hr, such as near the activated primary system of a power plant, should be appropriately marked and should not be accessible except by cutting of welded closures or the disassembly and removal of substantial structures

and/or shielding material. Means such as a remote-readout intrusion alarm system should be provided to indicate to designated personnel when a physical barrier is penetrated. Security personnel that provide access control to the facility may be used instead of the physical barriers and the intrusion alarm systems.

b. The physical barriers to unauthorized entrance into the facility, e.g., fences, buildings, welded doors, and access openings, should be inspected at least quarterly to assure that these barriers have not deteriorated and that locks and locking apparatus are intact.

c. A facility radiation survey should be performed at least quarterly to verify that no radioactive material is escaping or being transported through the containment barriers in the facility. Sampling should be done along the most probable path by which radioactive material such as that stored in the inner containment regions could be transported to the outer regions of the facility and ultimately to the environs.

d. An environmental radiation survey should be performed at least semiannually to verify that no significant amounts of radiation have been released to the environment from the facility. Samples such as soil, vegetation, and water should be taken at locations for which statistical data has been established during reactor operations.

e. A site representative should be designated to be responsible for controlling authorized access into and movement within the facility.

f. Administrative procedures should be established for the notification and reporting of abnormal occurrences such as (1) the entrance of an unauthorized person or persons into the facility and (2) a significant change in the radiation or contamination levels in the facility or the offsite environment.

g. The following reports should be made:

(1) An annual report to the Director of Licensing, U.S. Atomic Energy Commission, Washington, D.C. 20545, describing the results of the environmental and facility radiation surveys, the status of the facility, and an evaluation of the performance of security and surveillance measures.

(2) An abnormal occurrence report to the Regulatory Operations Regional Office by telephone within 24 hours of discovery of an abnormal occurrence. The abnormal occurrence will also be reported in the annual report described in the preceding item.

h. Records or logs relative to the following items should be kept and retained until the license is terminated, after which they may be stored with other plant records:

- (1) Environmental surveys.
- (2) Facility radiation surveys.
- (3) Inspections of the physical barriers, and
- (4) Abnormal occurrences.

4. DECONTAMINATION FOR RELEASE FOR UNRESTRICTED USE

If it is desired to terminate a license and to eliminate any further surveillance requirements, the facility should be sufficiently decontaminated to prevent risk to the public health and safety. After the decontamination is satisfactorily accomplished and the site inspected by the Commission, the Commission may authorize the license to be terminated and the facility abandoned or released for unrestricted use. The licensee should perform the decontamination using the following guidelines:

a. The licensee should make a reasonable effort to eliminate residual contamination.

b. No covering should be applied to radioactive surfaces of equipment or structures by paint, plating, or other covering material until it is known that contamination levels (determined by a survey and documented) are below the limits specified in Table i. In addition, a reasonable effort should be made (and documented) to further minimize contamination prior to any such covering.

c. The radioactivity of the interior surfaces of pipes, drain lines, or ductwork should be determined by making measurements at all traps and other appropriate access points, provided contamination at these locations is likely to be representative of contamination on the interior of the pipes, drain lines, or ductwork. Surfaces of premises, equipment, or scrap which are likely to be contaminated but are of such size, construction, or location as to make the surface inaccessible for purposes of measurement should be assumed to be contaminated in excess of the permissible radiation limits.

d. Upon request, the Commission may authorize a licensee to relinquish possession or control of premises, equipment, or scrap having surfaces contaminated in excess of the limits specified. This may include, but is not limited to, special circumstances such as the transfer of premises to another licensed organization that will continue to work with radioactive materials. Requests for such authorization should provide:

(1) Detailed, specific information describing the premises, equipment, scrap, and radioactive contaminants and the nature, extent, and degree of residual surface contamination.

(2) A detailed health and safety analysis indicating that the residual amounts of materials on surface areas, together with other considerations such as the prospective use of the premises, equipment, or scrap, are unlikely to result in an unreasonable risk to the health and safety of the public.

e. Prior to release of the premises for unrestricted use, the licensee should make a comprehensive radiation survey establishing that contamination is within the limits specified in Table I. A survey report should be filed with the Director of Licensing, U.S. Atomic Energy Commission, Washington, D.C. 20545, with a copy to the Director of the Regulatory Operations Regional Office having jurisdiction. The report should be filed at least 30 days prior to the planned date of abandonment. The survey report should:

- (1) Identify the premises;
- (2) Show that reasonable effort has been made to reduce residual contamination to as low as practicable levels;
- (3) Describe the scope of the survey and the general procedures followed; and
- (4) State the finding of the survey in units specified in Table I.

After review of the report, the Commission may inspect the facilities to confirm the survey prior to granting approval for abandonment.

5. REACTOR RETIREMENT PROCEDURES

As indicated in Regulatory Position C.2, several alternatives are acceptable for reactor facility retirement. If minor disassembly or "mothballing" is planned, this could be done by the existing operating and maintenance procedures under the license in effect. Any planned actions involving an unreviewed safety question

or a change in the technical specifications should be reviewed and approved in accordance with the requirements of 10 CFR §50.59.

If major structural changes to radioactive components of the facility are planned, such as removal of the pressure vessel or major components of the primary system, a dismantlement plan including the information required by §50.82 should be submitted to the Commission. A dismantlement plan should be submitted for all the alternatives of Regulatory Position C.2 except mothballing. However, minor disassembly activities may still be performed in the absence of such a plan, provided they are permitted by existing operating and maintenance procedures. A dismantlement plan should include the following:

- a. A description of the ultimate status of the facility
- b. A description of the dismantling activities and the precautions to be taken.
- c. A safety analysis of the dismantling activities including any effluents which may be released.
- d. A safety analysis of the facility in its ultimate status.

Upon satisfactory review and approval of the dismantling plan, a dismantling order is issued by the Commission in accordance with §50.82. When dismantling is completed and the Commission has been notified by letter, the appropriate Regulatory Operations Regional Office inspects the facility and verifies completion in accordance with the dismantlement plan. If residual radiation levels do not exceed the values in Table I, the Commission may terminate the license. If these levels are exceeded, the licensee retains the possession-only license under which the dismantling activities have been conducted or, as an alternative, may make application to the State (if an Agreement State) for a byproduct materials license.

TABLE I

ACCEPTABLE SURFACE CONTAMINATION LEVELS

NUCLIDE ^a	AVERAGE ^{b c}	MAXIMUM ^{b d}	REMOVABLE ^{b e}
U-nat, U-235, U-238, and associated decay products	5,000 dpm α /100 cm ²	15,000 dpm α /100 cm ²	1,000 dpm α /100 cm ²
Transuramics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129	100 dpm/100 cm ²	300 dpm/100 cm ²	20 dpm/100 cm ²
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133	1000 dpm/100 cm ²	3000 dpm/100 cm ²	200 dpm/100 cm ²
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above.	5000 dpm β - γ /100 cm ²	15,000 dpm β - γ /100 cm ²	1000 dpm β - γ /100 cm ²

^aWhere surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma-emitting nuclides should apply independently.

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

^cMeasurements of average contaminant should not be averaged over more than 1 square meter. For objects of less surface area, the average should be derived for each such object.

^dThe maximum contamination level applies to an area of not more than 100 cm².

^eThe amount of removable radioactive material per 100 cm² of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionally and the entire surface should be wiped.

APPENDIX C
DETAILED SURVEY RESULT SHEETS

APPENDIX C
DETAILED SURVEY RESULT SHEETS*
ROCKWELL HEALTH AND SAFETY ANALYSIS REPORTS

*When applicable, floor plan diagrams are included with survey locations noted.

UF₆ FACILITY

μR Survey, November 1983

General Area and Hot Spots Direct Readings, November 1983

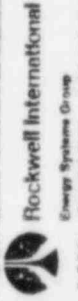
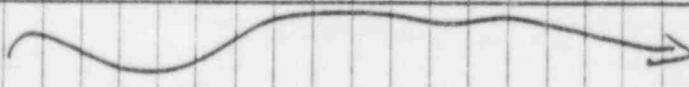

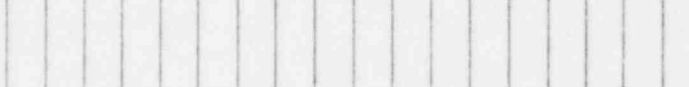
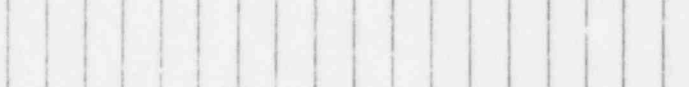
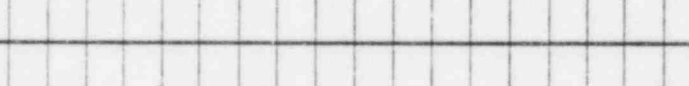
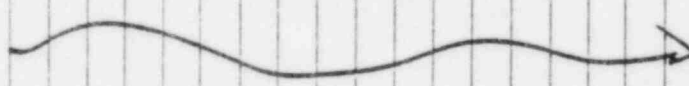
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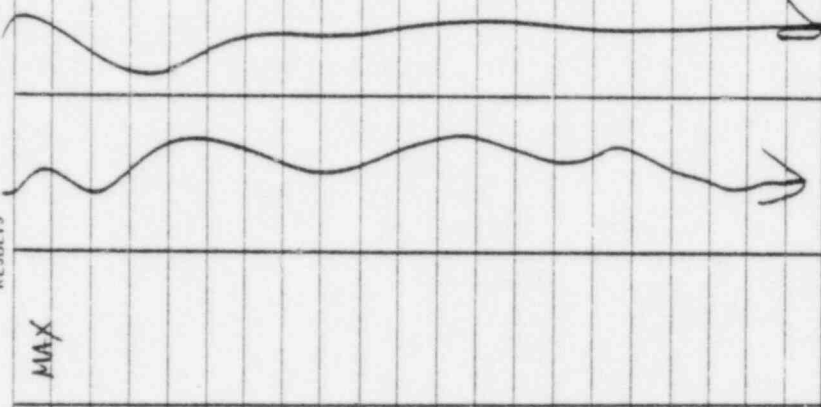
General Area and Hot Spots Direct Readings, December 1983

General Area and Hot Spots Smear Survey, December 1983

μR SURVEY
NOVEMBER 1983




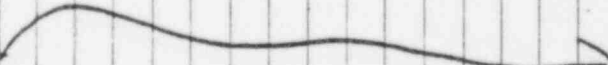
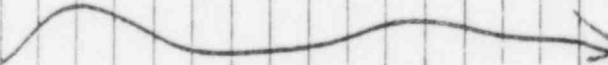

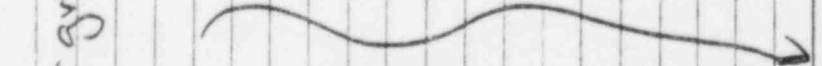

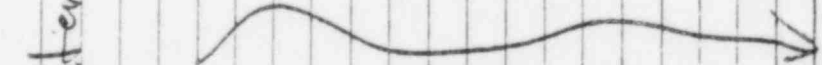
ESG-83-48

ANALYZED BY _____ DATE ANALYZED _____ FILM NO. _____ <small>(DO NOT WRITE IN THIS BOX)</small>		 Rockwell International HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY <u>DL Spaul</u> DATE SAMPLED <u>11-14-83</u> BLDG. AND ROOM NO. <u>UEG-1ST FLOOR</u>	
DESCRIPTION AND LOCATION <u>1 FLOOR GRIDS 1m above center</u>		GENERAL <u>16</u> <u>18</u>		MAX	
					
					
COMMENTS: <u>LUDLUM 12 S H 381501</u>		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SMEAR _____ OTHER <u>DIRECT GAMMA</u> TYPE OF ANALYSIS: <u>μR/Hour</u> RADIO-METRIC _____ BERYLLIUM _____ OTHER _____			
LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ SUB-ACCOUNT _____ WORK RELEASE _____		LOG BOOK NO. _____ PAGE _____		FORM 732-A REV. 6-78	


 Rockwell International Energy Systems Group		HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY <u>D.L. Good</u> DATE SAMPLED <u>11-16-83</u> BLDG. AND ROOM NO. <u>UFC-2-2nd Floor</u>	
ANALYZED BY _____ DATE ANALYZED _____ FILM NO. _____ (Use only write in this box)					
SAMPLE NUMBER	DESCRIPTION AND LOCATION	GENERAL	MAX	RESULTS	
1	FLOOR GRIDS 1W ABOVE CENTER	3			
2		4			
3		4			
4		4			
5		7			
6		5			
7		5			
8		7			
9		7			
10		6			
11		11			
12		8			
13		5			
14		5			
15		34			
16		15			
17		40			
18		13			
19		300			
20	(NOTE: Signal down close by 1000-1500) LUDLUM 12.5 # 381501	400			
COMMENTS: _____					
TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SMEAR _____ OTHER DIRECT GAMMA _____ TYPE OF ANALYSIS: PR/ Hour _____ RADIOLOGIC _____ BERYLLIUM _____ OTHER _____ (IDENTIFY) _____					
LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ SUB-ACCOUNT _____ WORK RELEASE _____					
LOG BOOK NO. _____ PAGE _____					

FORM 732-A REV. 6-78


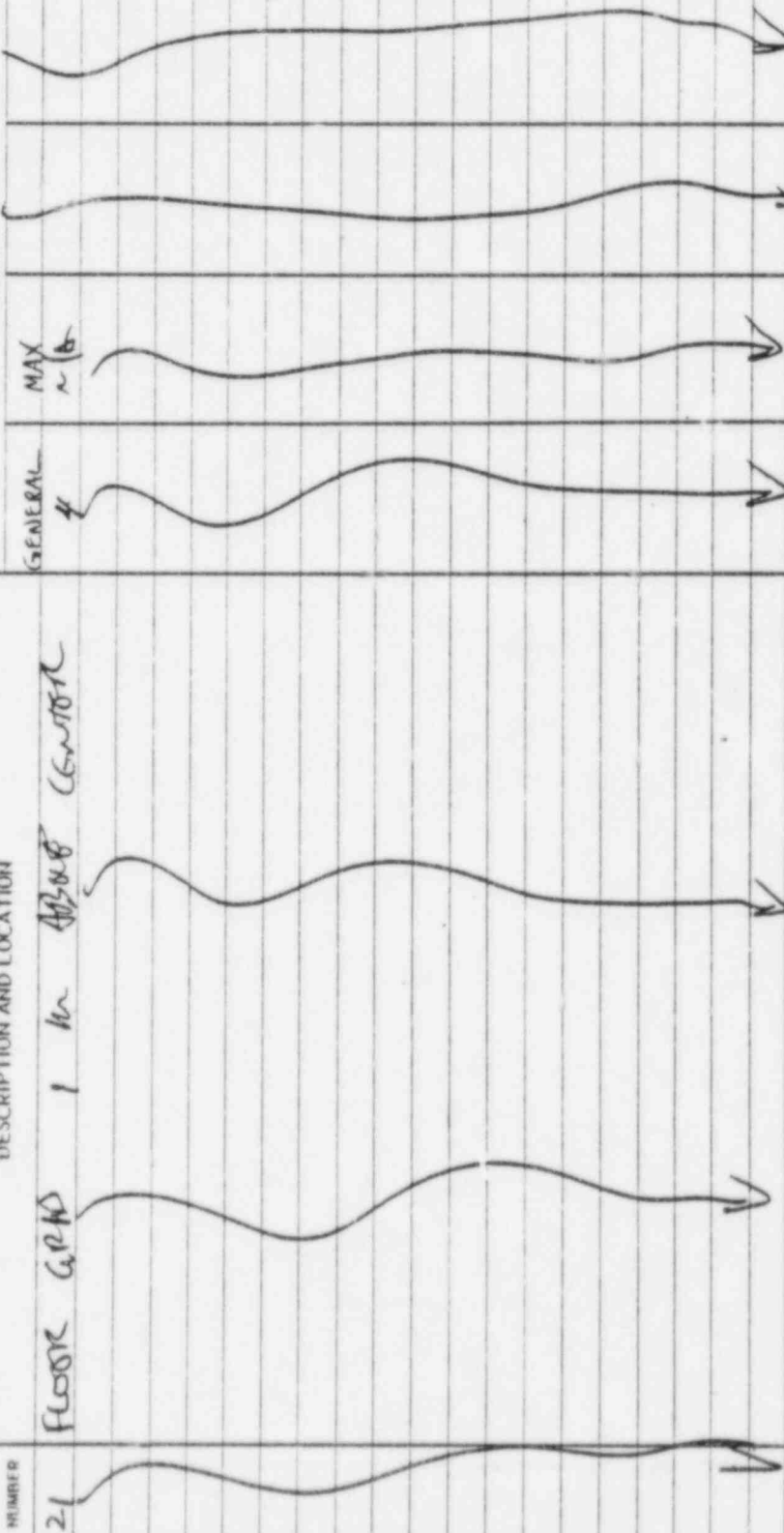
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ANALYZED BY _____ DATE ANALYZED _____ FILM NO. _____ (DO NOT WRITE IN THIS SPACE)					
SAMPLE NUMBER	DESCRIPTION AND LOCATION	GENERAL	MAX	RESULTS	
21 22 23 24	floor grids 1m above center	14 8 16 13	   	   	
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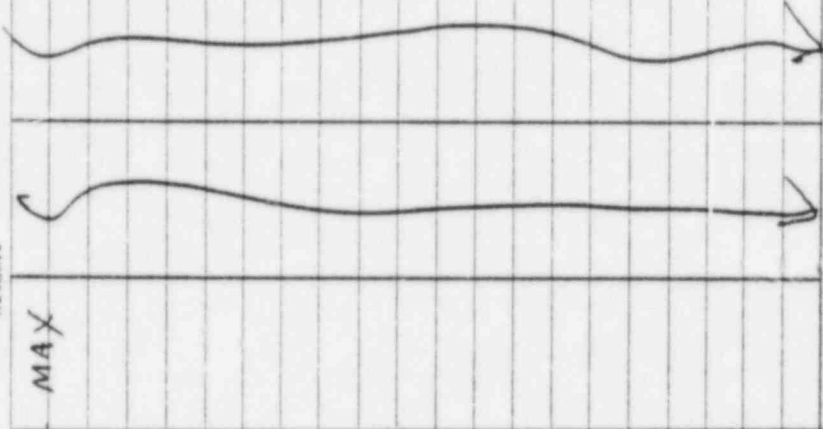
FORM 732-A REV. 5-78





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SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SMEAR _____ OTHER <u>DIRECT SAMPLING</u> TYPE OF ANALYSIS: <u>MR/HOLLER</u> RADIOMETRIC _____ BERYLLIUM _____ OTHER _____ (IDENTIFY)	
		GENERAL	MAX		
1	FLOOR GRIDS 1 m ABOVE CENTER	4			
2		4			
3		3			
4		3			
5		3			
6		3			
7		6			
8		14			
9		5			
10		6			
11		5			
12		5			
13		4			
14		5			
15		6			
16		4			
17		4			
18		4			
19		5			
20		4			
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LOG BOOK NO. _____ PAGE _____					


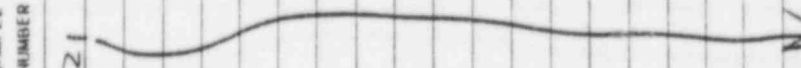
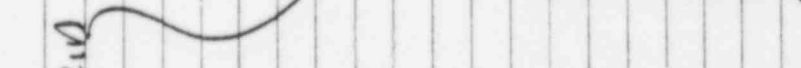
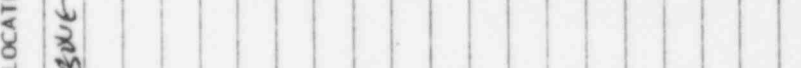
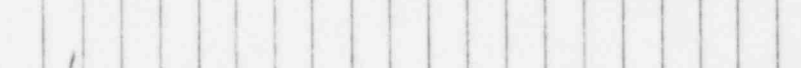
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ANALYZED BY _____		DATE SAMPLED <u>11-16-83</u>	
DATE ANALYZED _____		BLDG. AND ROOM NO. <u>UF 6-319 FLOOR</u>	
FILM NO. _____ <small>DO NOT WRITE IN THIS SPACE</small>		HEALTH AND SAFETY ANALYSIS REPORT	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS	TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____
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COMMENTS: <u>LUDLUM 12 S #1381501</u>			
LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ SUB-ACCOUNT _____ WORK RELEASE _____			
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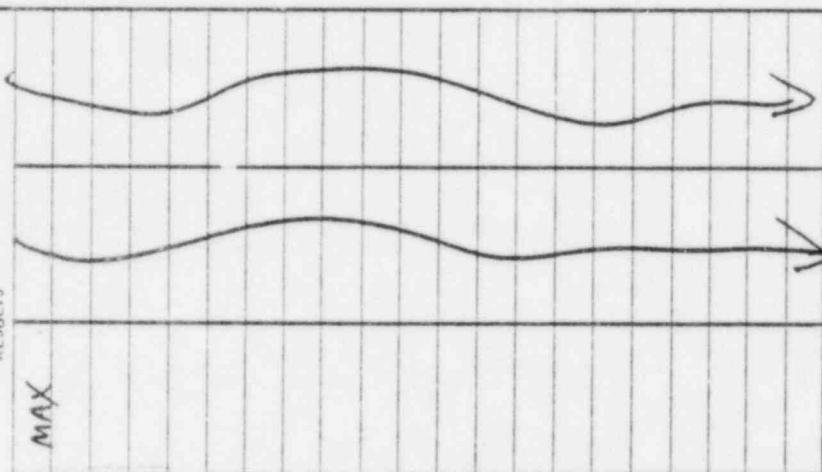
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ANALYZED BY _____ DATE ANALYZED _____ FILM NO. _____ <small>(DO NOT WRITE IN THIS SPACE)</small>					
SAMPLE NUMBER	DESCRIPTION AND LOCATION	GENERAL	MAX	RESULTS 	
1	FLOOR GFD'S	3			
2		4			
3		3			
4		4			
5		3			
6		7			
7		11			
8		4			
9		3			
10		4			
11		3			
12		4			
13		3			
14		3			
15		4			
16		4			
17		4			
18		3			
19		6			
20		8			
COMMENTS <u>LUDLUM MODEL 125 #381501</u>				TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SHEAR _____ OTHER <u>DIRECT GAMMA</u> TYPE OF ANALYSIS: <u>MR/HOUR</u> RADIOLOGICAL _____ BERYLLIUM _____ OTHER _____	
LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ SUB-ACCOUNT _____ WORK RELEASE _____ LOG BOOK NO. _____ PAGE _____					

ANALYZED BY _____ DATE ANALYZED _____ FILM NO. _____		 HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY <u>D. L. Spick</u> DATE SAMPLED <u>11-16-83</u> BLDG. AND ROOM NO. <u>11F6-5 B Floor</u>	
DESCRIPTION AND LOCATION <u>FLOOR GRIDS 1M ABOVE CENTER</u>		GENERAL <u>5</u> <u>5</u> <u>6</u> <u>7</u> <u>5</u> <u>3</u> <u>3</u> <u>4</u> <u>3</u> <u>3</u> <u>2</u> <u>2</u> <u>3</u> <u>2</u> <u>3</u> <u>3</u> <u>4</u> <u>4</u> <u>4</u> <u>4</u>		RESULTS <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <u>MAX</u> <u>PIA</u> </div> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div>	
COMMENTS: <u>LYDLUM 125 #381501</u>		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SMEAR _____ OTHER <u>DIRECT GAMMA</u> TYPE OF ANALYSIS: <u>PK/Hour</u> RADIOLOGIC _____ BERYLLIUM _____ OTHER _____			
LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ SUB-ACCOUNT _____ WORK RELEASE _____ LOG BOOK NO. _____ PAGE _____					


 Rockwell International Energy Systems Group		HEALTH AND SAFETY ANALYSIS REPORT	
ANALYZED BY: <u>D.L. S. 1</u> DATE ANALYZED: <u>11-16-88</u> FILM NO. <u>TOP NOT WRITE IN THIS BOX</u>		SUBMITTED BY: <u>D.L. S. 1</u> DATE SAMPLED: <u>11-16-88</u> BUILDING AND ROOM NO.: <u>UFC-5th Floor</u>	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS	TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____
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COMMENTS: FUDLUM 125 #381501			
LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ SUB-ACCOUNT _____ WORK RELEASE _____			
LOG BOOK NO. _____ PAGE _____			

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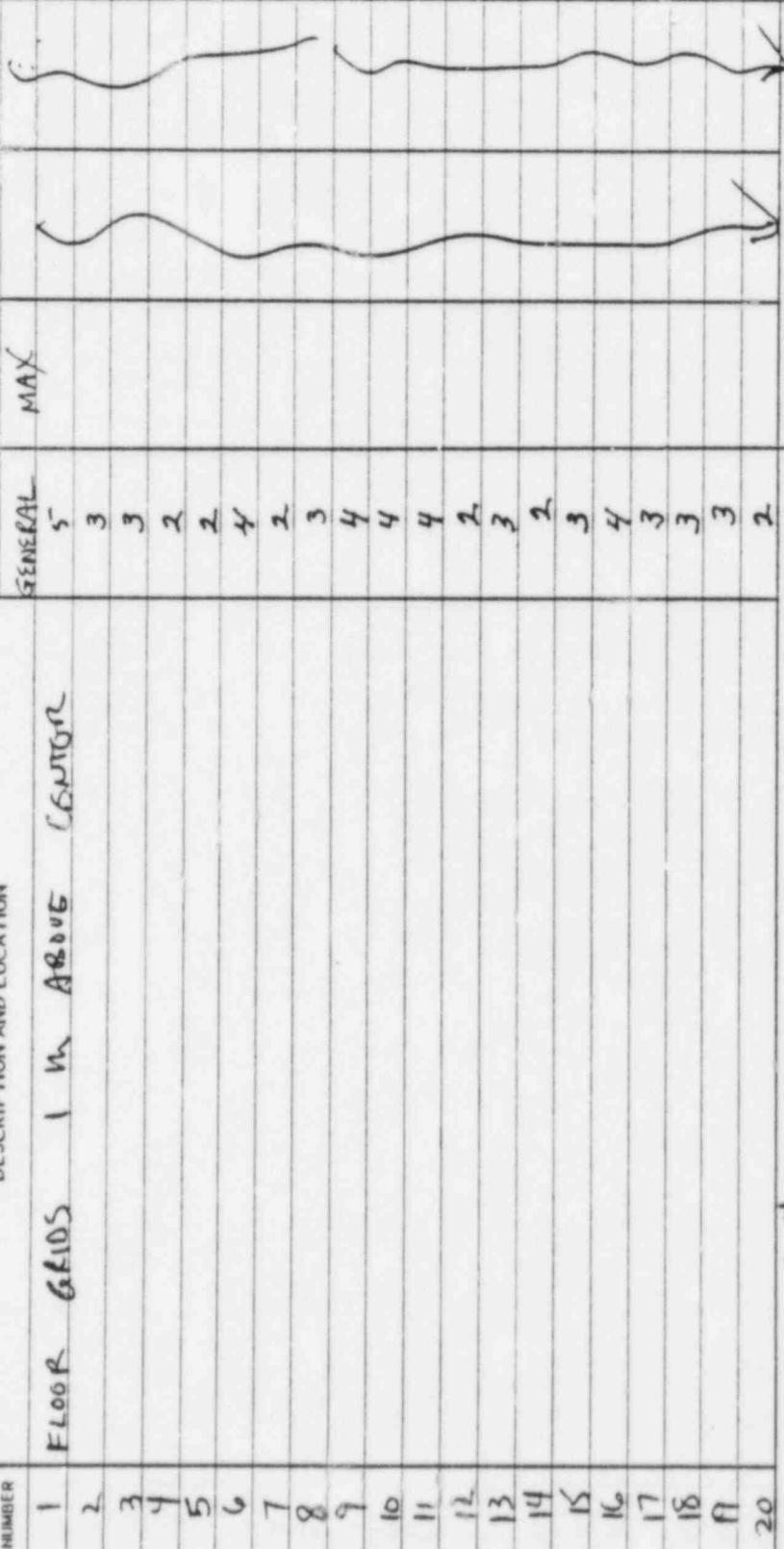
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SAMPLE NUMBER	DESCRIPTION AND LOCATION	GENERAL	RESULTS
1	FLOOR GRIDS 1 m ABOVE CENTER	6	
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
COMMENTS: <u>FURUM MODEL 125 #381501</u> <u>A</u>		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SHEAR _____ OTHER <u>DIRECT</u> <u>SACMA</u> <small>(100011111)</small> TYPE OF ANALYSIS: <u>PK/Hour</u> RADIO-METRIC _____ BERYLLIUM _____ OTHER _____ <small>(100011111)</small>	
LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ SUB-ACCOUNT _____ WORK RELEASE _____			
LOG BOOK NO. _____ PAGE _____			

Rockwell International Energy Systems Group		HEALTH AND SAFETY ANALYSIS REPORT	
ANALYZED BY _____ DATE ANALYZED _____ FILM NO. _____		SUBMITTED BY <u>D. L. S. J.</u> DATE SAMPLED <u>11-16-83</u> BLDG. AND ROOM NO. <u>4F6-6th Floor</u>	
DESCRIPTION AND LOCATION		RESULTS	
SAMPLE NUMBER <u>31.</u> <u>32</u> <u>33</u> <u>34</u> <u>35</u>	<u>HOT SPOTS</u> <u>FLOOR GRIDS 1m ABOVE CENTER</u>	GENERAL <u>4</u> <u>9</u> <u>24</u> <u>14</u> <u>14</u>	MAX
COMMENTS: <u>LYDNUM 12S #381501</u>		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SMEAR _____ OTHER <u>DIRECT GAMMA</u> TYPE OF ANALYSIS: <u>MR/HVU</u> RADIO-METRIC _____ BERYLLIUM _____ OTHER _____	
LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ SUB-ACCOUNT _____ WORK RELEASE _____		LOG BOOK NO. _____ PAGE _____	

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ANALYZED BY _____ DATE ANALYZED _____ FILM NO. _____		 Rockwell International Energy Systems Group HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY <u>D.L. Sp...</u> DATE SAMPLED <u>11-16-83</u> BLDG. AND ROOM NO. <u>UF 6-7th Floor</u>	
DESCRIPTION AND LOCATION <u>FLOOR GRIDS 1m ABOVE CENTER</u>		RESULTS GENERAL 3 3 2 2 3 4 4 6 4 4 5 3 2 7 3 7 5 4 6 2		MAX	
SAMPLE NUMBER 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20					
COMMENTS:					
TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SHEAR _____ OTHER <u>DIRECT SHEAR</u> TYPE OF ANALYSIS: <u>PR/HOUR</u> RADIO-METRIC _____ BERYLLIUM _____ OTHER _____					
LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ LOG BOOK NO. _____		SUB-ACCOUNT _____ WORK RELEASE _____		PAGE _____	

FORM 732-A REV. 8-78

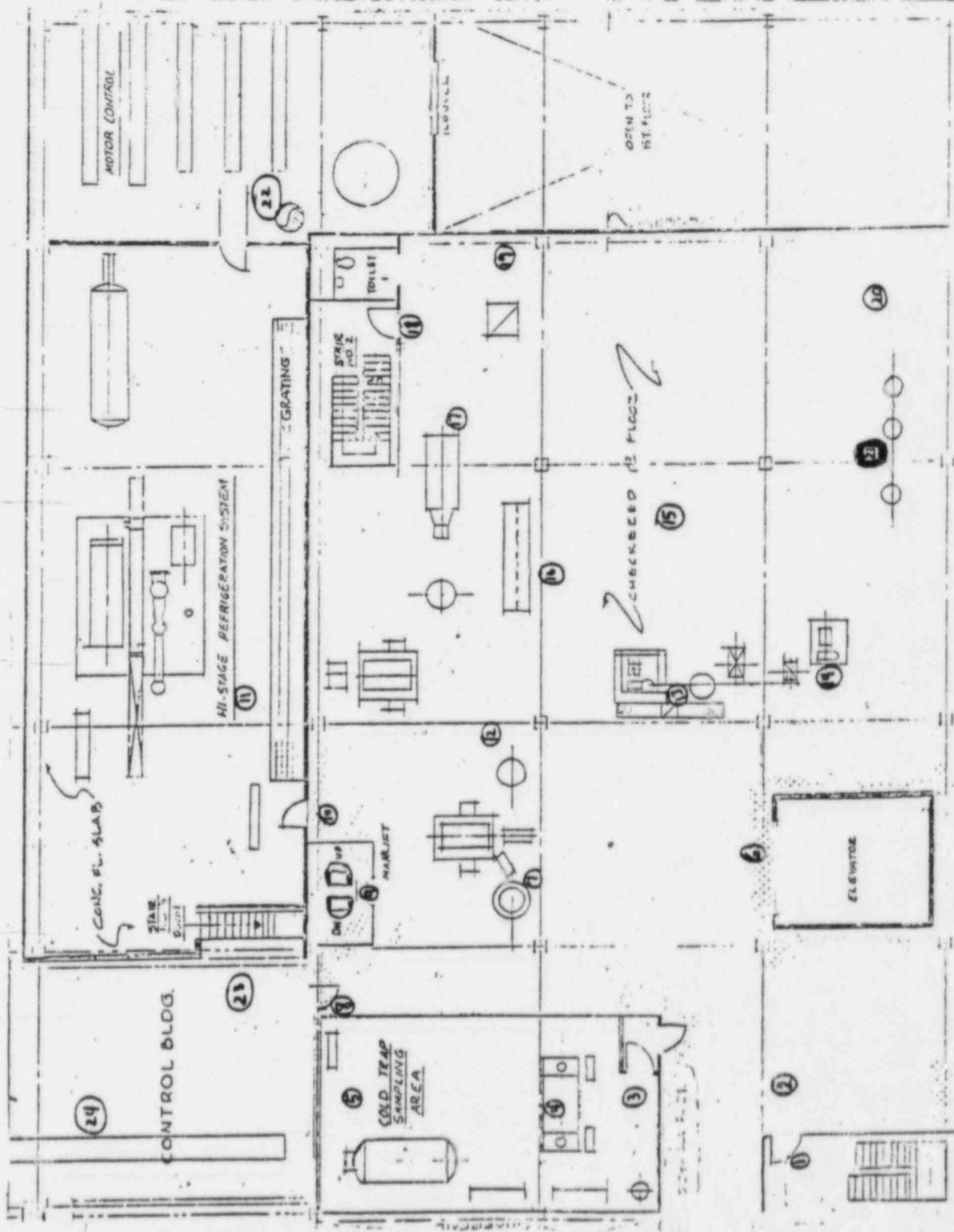
 Rockwell International Energy Systems Group		HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY <u>DL. Spaul</u> DATE SAMPLED <u>11-16-83</u> BLDG. AND ROOM NO. <u>6FL-8th FLOOR</u>	
ANALYZED BY _____ DATE ANALYZED _____ FILM NO. _____ (DO NOT WRITE IN THIS SPACE)					
SAMPLE NUMBER	DESCRIPTION AND LOCATION	GENERAL	MAX	RESULTS	
1	FLOOR GLASS 1 m ABOVE CENTER	5			
2		3			
3		3			
4		2			
5		2			
6		4			
7		2			
8		3			
9		4			
10		4			
11		4			
12		2			
13		3			
14		2			
15		3			
16		4			
17		3			
18		3			
19		3			
20		2			
COMMENTS: <u>LUDLUM DS #381501</u>					
TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SMEAR _____ OTHER <u>DIRECT GAMMA</u> (IDENTIFY)					
TYPE OF ANALYSIS: <u>MR/HOUR</u> (IDENTIFY)					
RADIO-METRIC _____ BERYLLIUM _____ OTHER _____ (IDENTIFY)					
LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ SUB-ACCOUNT _____ WORK RELEASE _____					
LOG BOOK NO. _____ PAGE _____					

FORM 732-A REV. 6-78

GENERAL AREA AND HOT SPOTS DIRECT READINGS
NOVEMBER 1983

FORM 732-A REV. 6-78

ANALYZED BY: <u>ALUMINUM</u>		SUBMITTED BY: <u>DL. Spaul</u>			
DATE ANALYZED: <u>11-10-83</u>		DATE SAMPLED: <u>11-10-83</u>			
FILM NO. <u>1</u>		BLDG. AND ROOM NO. <u>66 2nd floor</u>			
<div style="display: flex; justify-content: space-between; align-items: center;"> <div> <p>Rockwell International Energy Systems Group</p> </div> <div> <p>HEALTH AND SAFETY ANALYSIS REPORT</p> </div> </div>					
SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA		BETA	
		counts	cpm/azir	counts	cpm/azir
1	1 hr floor grids (see attached map)	44	62.21	193	-279.62
2		9	7.78	165	-532.18
3		53	76.20	204	-180.40
4		63	91.76	196	-252.56
5		41	57.54	258	306.68
6		8	6.22	170	-487.08
7		10	13.11	140	-769.60
8		15	21.30	158	-556.48
9		12	16.38	137	-805.12
10		3	1.64	155	-592.00
11		18	26.21	234	343.36
12		3	1.64	240	414.40
13		5	1.56	159	-586.30
14		4	6.0	204	-180.40
15		7	8.10	197	-71.47
16		11	16.20	195	-91.89
17		7	8.10	572	3757.28
18		8	10.13	200	-40.84
19		11	16.20	195	-91.89
20		4	2.03	168	-367.56
COMMENTS:		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SMEAR _____ OTHER <u>5 hr counts</u> TYPE OF ANALYSIS: <u>Journal floor area</u> RADIO-METRIC _____ BERYLLIUM _____ OTHER _____			
1-6 13+14 7-12 15-20 LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ LOG BOOK NO. _____		EFF 660 4.86 5.12 6.33 SUB-ACCOUNT _____ PAGE _____		EFF 660 9.02 11.84 10.21 WORK RELEASE _____	



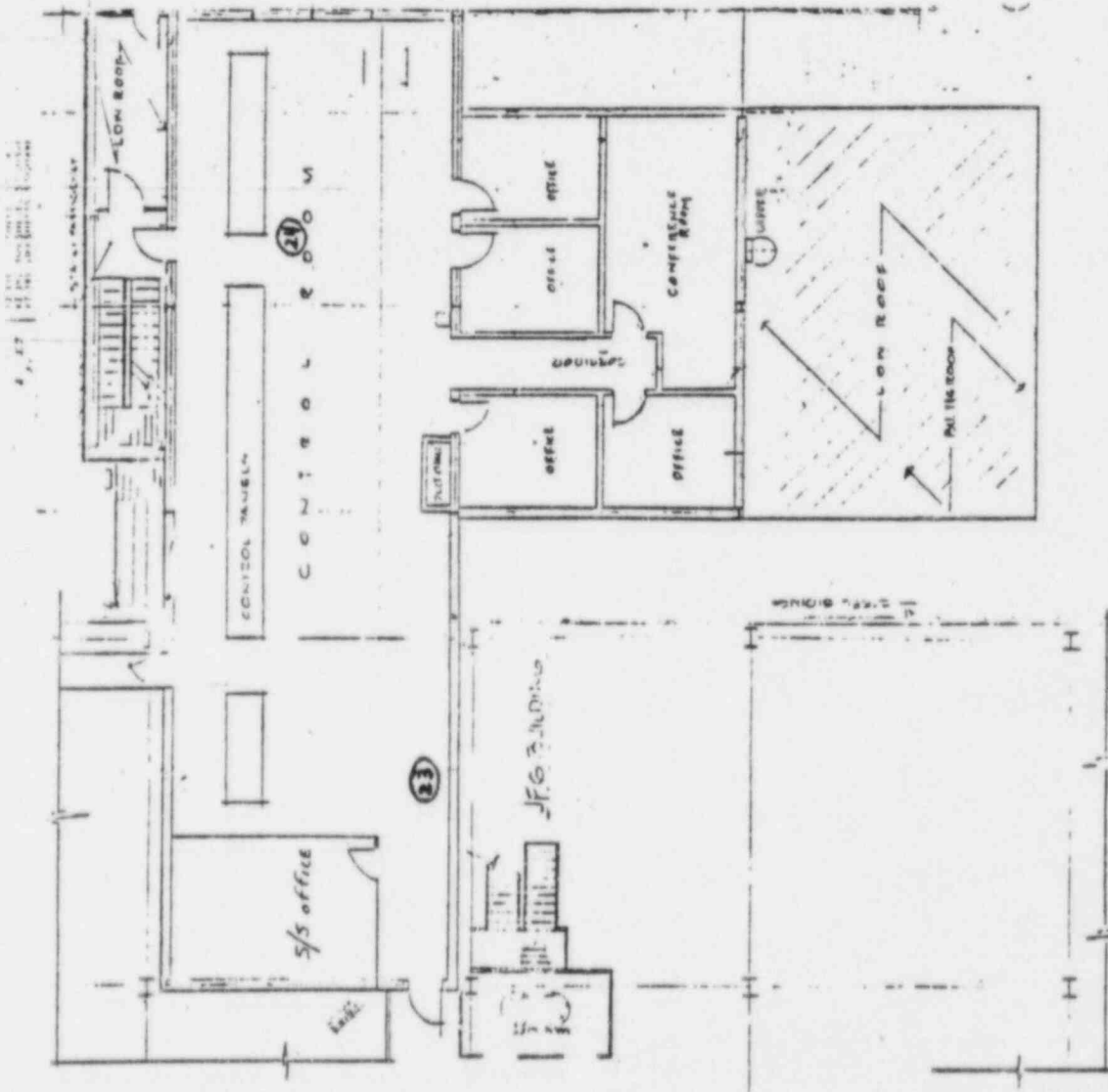
Tech

2nd Floor

Date & Time

ESG-83-48

25



DATE & TIME
Tech

UFG Control Room

ANALYZED BY _____

DATE ANALYZED _____

FILM NO. _____

PRELIMINARY

Rockwell International

Energy Systems Group

HEALTH AND SAFETY ANALYSIS REPORT

SUBMITTED BY P.L. S. G.

DATE SAMPLED 11-10-83

BI DG. AND ROOM NO. CF 6 - 3rd Floor

SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA		RESULTS		BETA
		counts	dpm/100cm ²	counts	dpm/100cm ²	
1	1 m ² floor grids (see attached map)	72	165.75	167	-514.14	
2		4	0.0	176	-432.96	
3		8	6.22	137	-784.74	
4		106	158.63	182	-378.84	
5		65	94.87	180	-396.88	
6		14	15.55	156	-613.36	
7		12	12.44	168	-505.12	
8		8	6.22	238	126.28	
9		15	17.11	183	-369.82	
10		184	279.94	368	1298.88	
11		14	22.28	231	275.67	
12		12	18.23	148	-571.76	
13		12	18.23	158	-468.66	
14		6	6.08	134	-714.70	
15		11	16.20	167	-377.77	
16		16	26.33	164	-408.40	
17		23	40.51	176	-285.88	
18		12	18.23	175	-296.09	
19		12	18.23	167	-377.77	
20		20	34.44	175	-296.09	

TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____

SHEAR _____ OTHER 5 min counts

TYPE OF ANALYSIS: General floor area

RADIOMETRIC _____ BERYLLIUM _____

OTHER _____

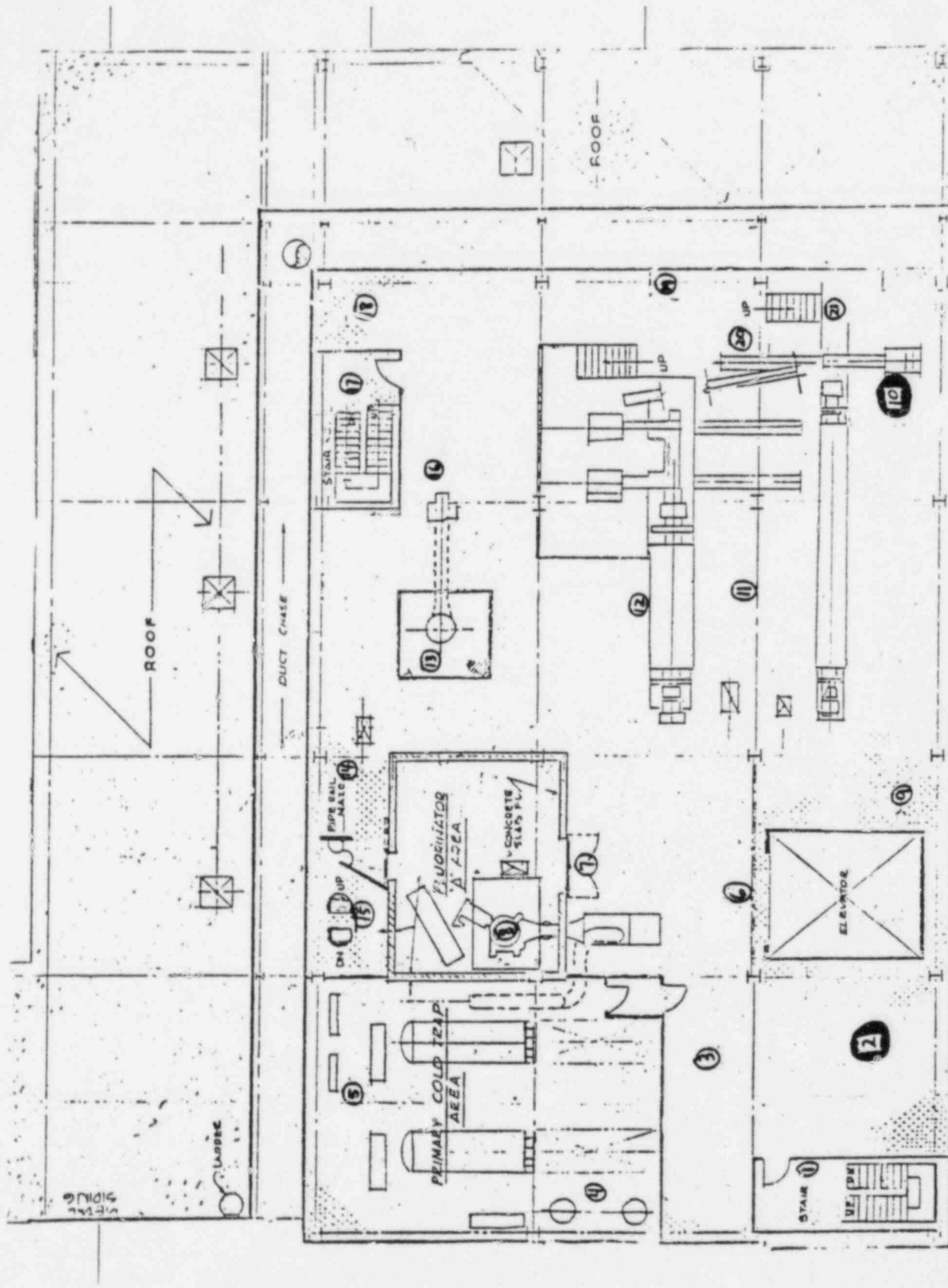
COMMENTS: 1 m² floor grids

1-10 1 0.8 4.86 1.6 7 44.8 9.02 5.0

11-20 3 0.6 6.33 1 5 40.8 10.21 1

LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ SUB-ACCOUNT _____ WORK RELEASE _____

LOG BOOK NO. _____ PAGE _____

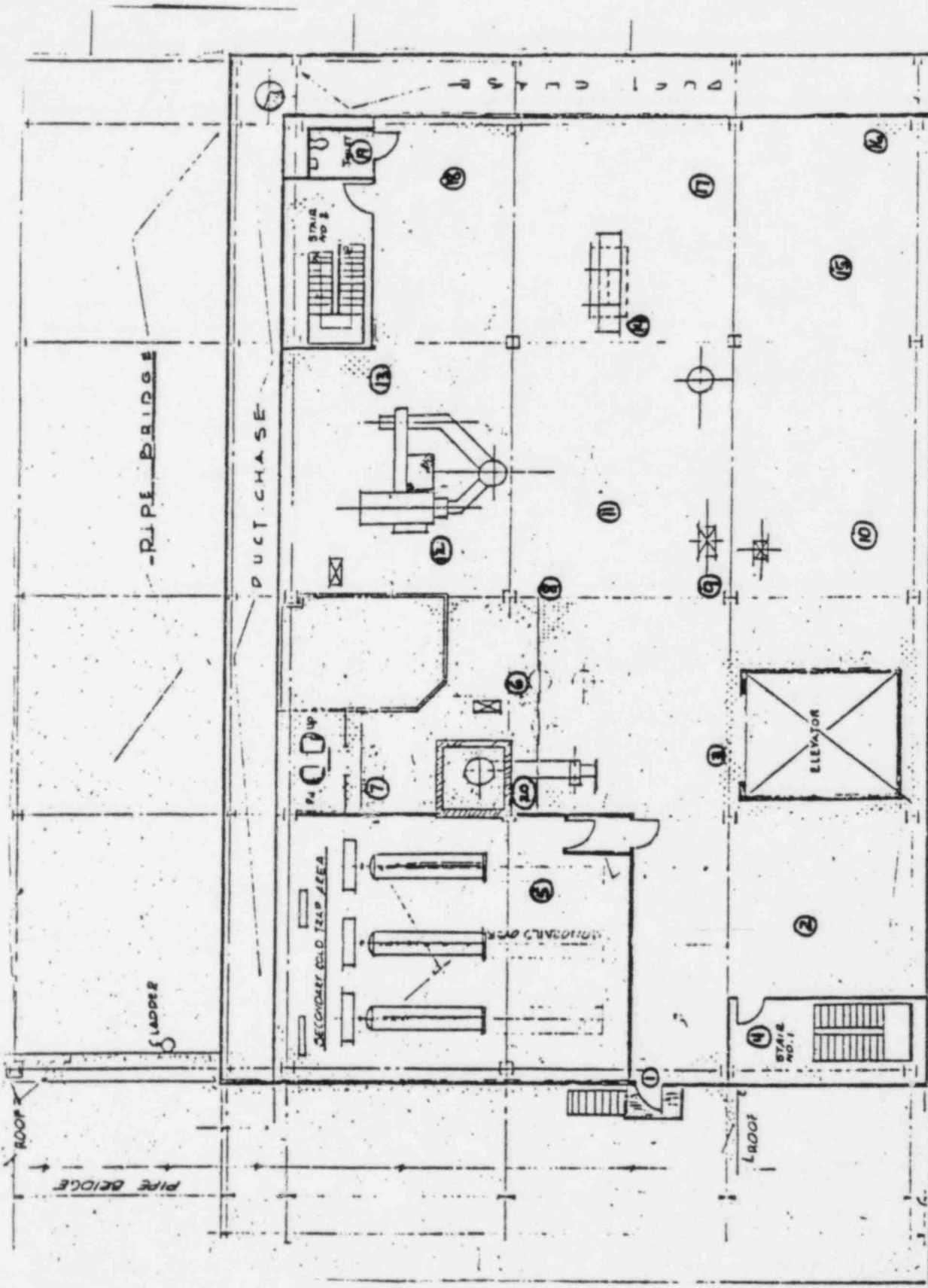


3rd Floor - Duct Chase - 3rd Floor Roof

Notes & Time

Tech

ANALYZED BY: <u>PRELIMINARY</u>		Rockwell International Energy Systems Group	
DATE ANALYZED: <u>11-10-83</u>		HEALTH AND SAFETY ANALYSIS REPORT	
FILM NO. <u>100</u>		SUBMITTER: <u>DL-3</u>	
DESCRIPTION AND LOCATION		DATE SAMPLED: <u>11-10-83</u>	
1 m ² floor grids (see attached map)		BLOG. AND ROOM NO. <u>076 4th floor</u>	
SAMPLE NUMBER	RESULTS	RESULTS	
1	ALPHA	cpm/100cm ²	counts
2	counts	16.38	147
3	6	6.55	143
4	13	18.02	162
5	41	63.90	169
6	70	111.41	167
7	19	27.85	318
8	18	26.21	290
9	22	32.77	206
10	19	27.85	188
11	10	13.11	162
12	66	104.86	685
13	9	11.47	163
14	21	31.13	265
15	102	163.84	369
16	17	24.58	245
17	13	18.02	283
18	10	13.11	198
19	9	11.47	209
20	30	45.88	327
	29	44.24	355
TYPE OF SAMPLE: SOIL		WATER	
TYPE OF ANALYSIS: general floor area		AIR	
RADIOMETRIC		OTHER	
OTHER		OTHER	
LOG BOOK NO.		PAGE	
FORM 732-A REV. 8-78			



4th Floor

ANALYZED BY _____		Rockwell International Energy Systems Group		SUBMITTED BY <u>D.L. Smith</u>	
DATE ANALYZED _____		HEALTH AND SAFETY ANALYSIS REPORT		DATE SAMPLED <u>11-10-83</u>	
FILM NO. _____ <small>(DO NOT WRITE IN THIS BOX)</small>				BLDG. AND ROOM NO. <u>UPB-52nd Floor</u>	

SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA RESULTS BETA			
		counts	dpm/100cm ²	counts	dpm/100cm ²
1	1 meter ² floor grids (see attached map)	45	63.70	194	-270.60
2		16	18.66	200	-216.48
3		19	23.33	207	-153.34
4		42	59.10	519	2660.90
5		9	7.78	310	775.72
6		9	7.78	172	-469.04
7		7	4.67	129	-856.60
8		7	4.67	407	1650.66
9		150	227.06	303	712.58
10		10	9.33	212	-108.24
11		8	10.13	176	-285.88
12		14	22.28	261	581.97
13		12	18.23	150	-551.34
14		4	2.03	269	663.65
15		7	8.10	211	71.47
16		11	16.20	242	387.98
17		8	10.13	178	-265.46
18		7	8.10	490	2920.00
19		1029		10520	
20		20	34.44	4172	40,513.28

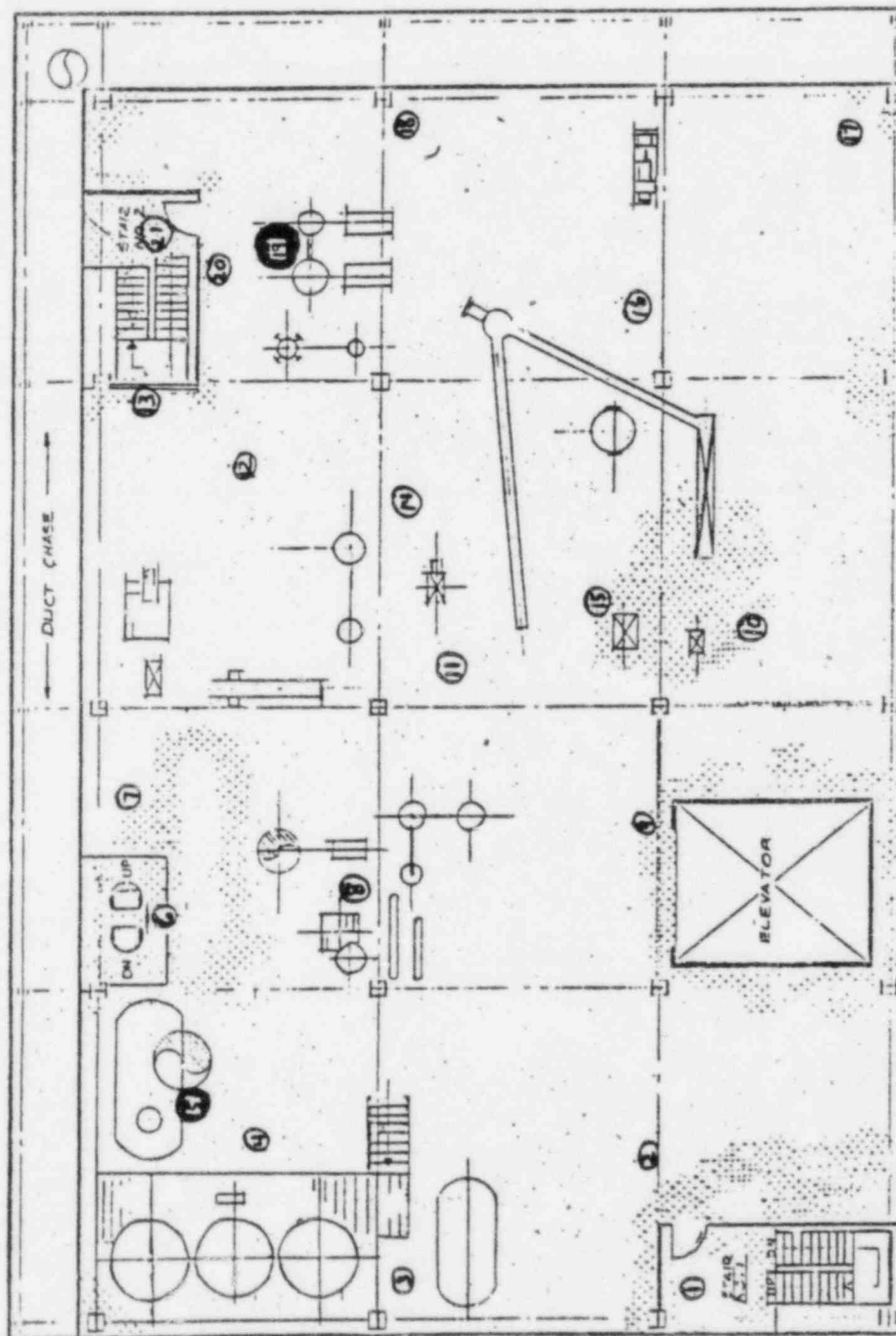
COMMENTS:	X INSTR BKG		EFF		GEO		B INSTR BKG		EFF		GEO	
	1-10, 17 th	1	0.8	4.84	1.0	7	44.8	9.02	5.0			
	11-18 + 20	3	0.6	6.33	↓	5	40.8	10.21	5.0			
		2	0.4	5.12	↓	4	41.0	16.84	5.0			

LEDGER ACCOUNT _____	CONTRACT OR ORDER _____	SUB ACCOUNT _____	WORK RELEASE _____	TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____
LOG BOOK NO. _____	PAGE _____			SMEAR _____ OTHER <u>5 min counts</u>
				TYPE OF ANALYSIS: <u>general floor area</u>
				RADIOMETRIC _____ BERYLLIUM _____
				OTHER _____

ANALYZED BY _____		SUBMITTED BY <u>DL. S. 2-1</u>	
DATE ANALYZED _____		DATE SAMPLED <u>11-10-83</u>	
FILM NO. _____		BLDG. AND ROOM NO. <u>UF-6 - 5th Floor</u>	
PRELIMINARY <u>DS</u> HEALTH AND SAFETY ANALYSIS REPORT		Rockwell International Energy Systems Group	
(DO NOT WRITE IN THIS BOX) SAMPLE NUMBER <u>21</u>		DESCRIPTION AND LOCATION <u>1 m² floor grids (see attached map)</u>	
RESULTS <u>counts</u> <u>12.44</u> <u>158</u> <u>1000000</u> <u>559.24</u>		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SMEAR _____ OTHER <u>5 with counts</u> TYPE OF ANALYSIS: <u>general floor area</u> RADIOLOGIC _____ BERYLLIUM _____ OTHER _____	
COMMENTS: <u>1</u> <u>INSIR</u> <u>844</u> <u>EFF</u> <u>9.0</u> <u>844</u> <u>EFF</u> <u>9.02</u> <u>6.0</u> <u>0.8</u> <u>4.96</u> <u>1.6</u> <u>7</u> <u>44.8</u> <u>5.0</u>		WORK RELEASE SUB-ACCOUNT CONTRACT OR ORDER LOG BOOK NO. _____ PAGE _____	

FORM 782-A REV. 6-78


4-2
 40 100 200 300 400 500 600 700 800 900 1000
 1/4" = 1'-0"



Tech

5th Floor

Date & Time

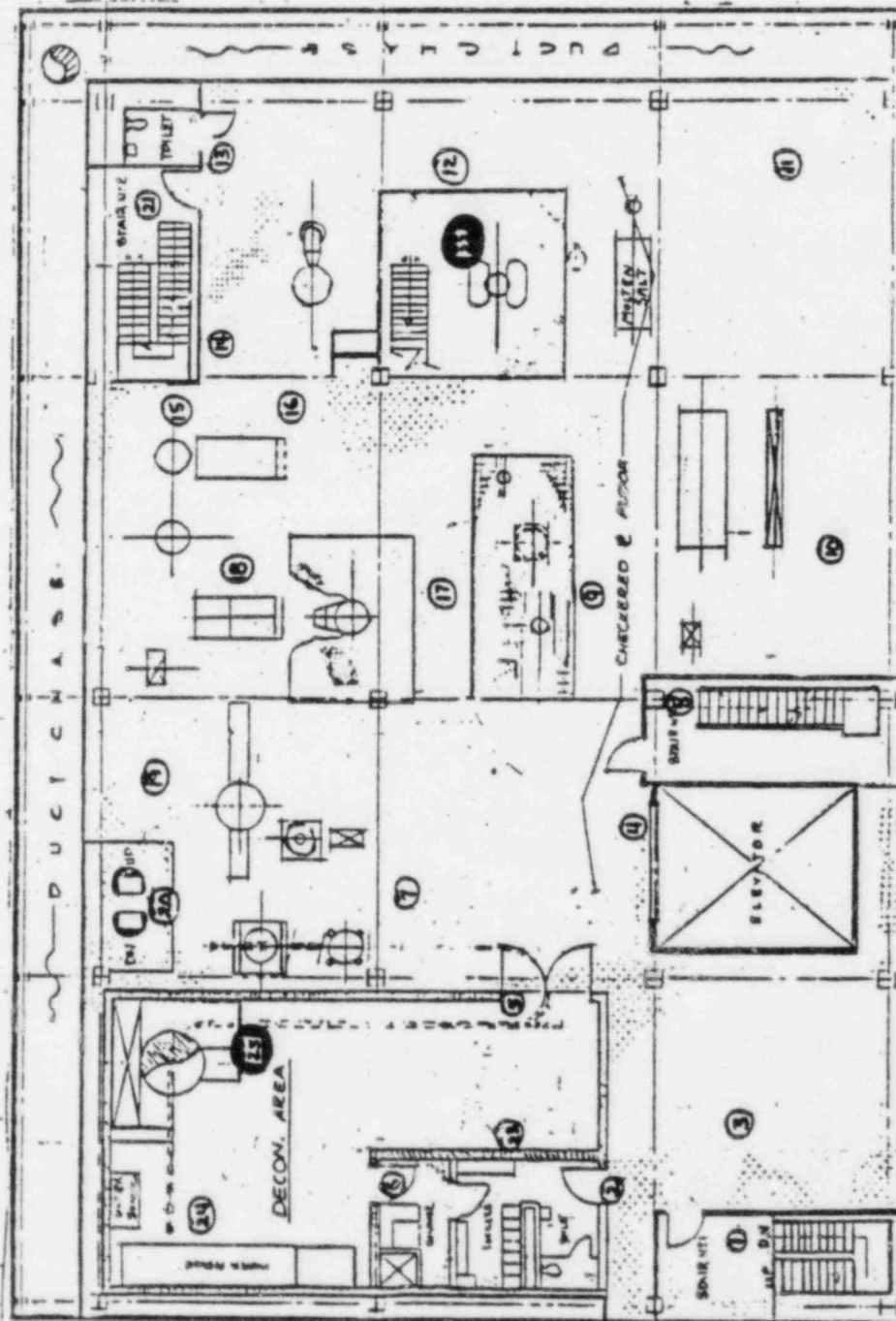
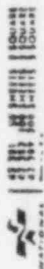
ANALYZED BY _____		PRELIMINARY  Rockwell International		SUBMITTED BY <u>AL. S. [signature]</u>	
DATE ANALYZED _____		Energy Systems Group		DATE SAMPLED <u>11-9-83</u>	
FILM NO. _____ <small>(DO NOT WRITE IN THIS BOX)</small>		HEALTH AND SAFETY ANALYSIS REPORT		BLDG. AND ROOM NO. <u>UR6 - 6th Floor</u>	

SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA RESULTS BETA			
		Counts	dpm/mg ²	Counts	dpm
1	1 m ² floor grids (see attached map)	56	84.54	214	353.16
2		41	59.67	371	1893.33
3		37	53.04	192	137.34
4		25	33.15	512	3276.54
5		275	447.55	14437	139880.79
6		130	207.20	924	7,318.26
7		19	23.21	190	117.72
8		24	31.49	155	-225.63
9		38	54.70	497	3129.39
10		89	146.72	386	1611.60
11		41	65.77	261	336.60
12		49	79.26	521	2988.60
13		71	116.36	342	1162.80
14		151	251.27	318	918.00
15		26	46.22	243	122.28
16		19	32.15	221	-101.90
17		19	32.15	204	-275.13
18		9	12.06	206	-254.75
19		17	28.13	211	-203.80
20		14	197 ^{22.11}	197	-346.46

COMMENTS:	γ INSTR #	BKG	EFF	GEO	β INSTR #	BKG	EFF	GEO
1-9	1	1.0	5.18	1.6	7	35.6	9.81	5.0
10-14	2	0.4	5.27		4	45.6	10.20	
15-20	3	0.6	6.28	↓	5	46.2	10.19	↓

LEDGER ACCOUNT _____	CONTRACT OR ORDER _____	SUB-ACCOUNT _____	WORK RELEASE _____
LOG BOOK NO. _____		PAGE _____	

TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____
SMEAR _____ OTHER <u>5 min counts</u>
TYPE OF ANALYSIS: <u>general floor area</u>
RADIOMETRIC _____ BERYLLIUM _____
OTHER _____ (IDENTIFY)

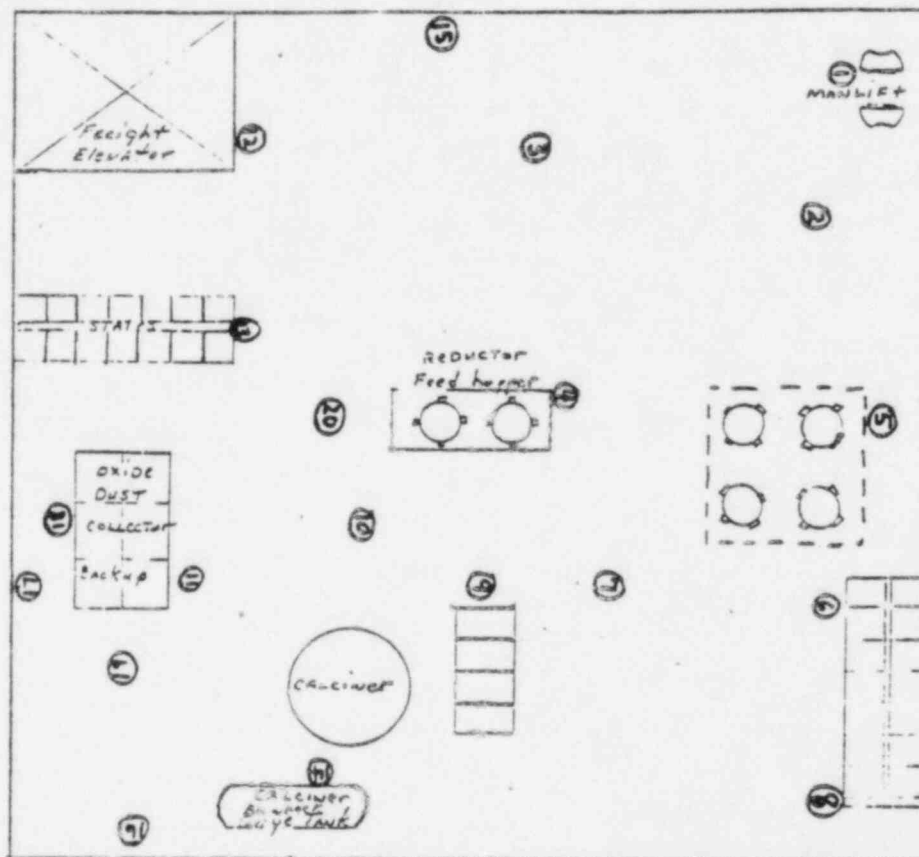


DATE & TIME 6th Floor Tech

ANALYZED BY		PRC-LIM W 42-1		Rockwell International Energy Systems Group		SUBMITTED BY	
DATE ANALYZED		7/5		HEALTH AND SAFETY ANALYSIS REPORT		DATE SAMPLED 11-9-83	
FILM NO.		(DO NOT WRITE IN THIS BOX)				BIDG. AND ROOM NO. 1A6 - 7th Floor	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA		BETA		RESIDUALS	
		counts	cpm/100cm ²	counts	cpm/100cm ²	counts	cpm/100cm ²
1	1 m ² floor grout (see attached map)	12	11.6	200	215.82		
2		10	8.28	243	637.65		
3		8	4.97	207	284.49		
4		7	8.03	304	743.87		
5		15	24.12	248	173.23		
6		52	98.47	205	-264.94		
7		11	16.08	289	591.02		
8		12	18.09	341	1120.90		
9		9	12.06	294	641.97		
10		11	16.08	257	264.94		
11		15	24.12	507	2812.44		
12		7	8.04	206	-254.75		
13		25	38.79	169	-601.80		
14		23	35.41	315	887.40		
15		9	11.80	180	-489.60		
16		21	32.04	312	856.80		
17		17	25.30	273	459.00		
18		48	77.57	315	881.40		
19		21	32.04	290	632.40		
20		4	3.37	246	183.60		
COMMENTS:		X-RAY BKG (M) EFF GEO		BETTER BKG		EFF EFF GEO	
1-3	01	1.0	5.18	07	35.6	9.81	5
4-12	03	0.6	6.28	05	46.2	10.19	↓
13-20	02	0.4	5.27	04	45.6	10.20	↓
LEDGER ACCOUNT		CONTRACT OR ORDER		SUB. ACCOUNT		WORK RELEASE	
LOG BOOK NO.		PAGE		OTHER		IDENTITY	

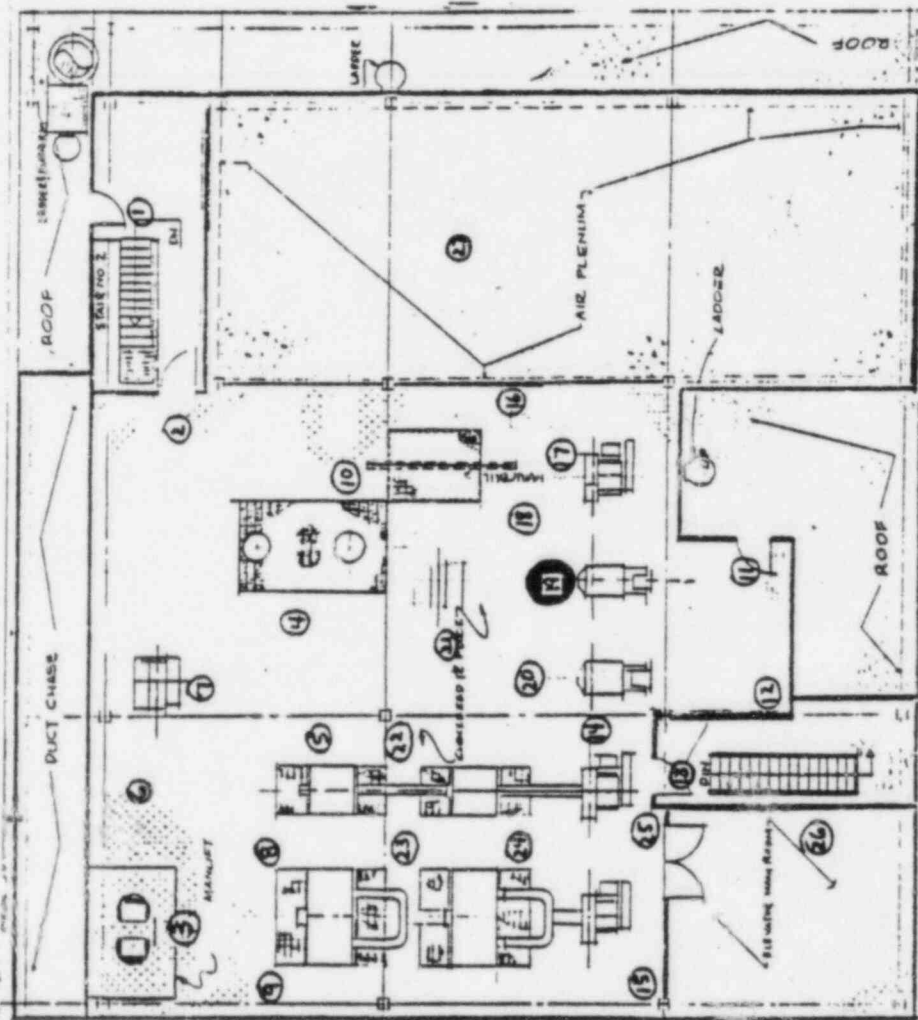
7th Floor. UFG Bldg.

Date & Time
Tech



7th Floor

FORM 742-A (REV. 8-78)



TECH

8th Floor

Date
Time


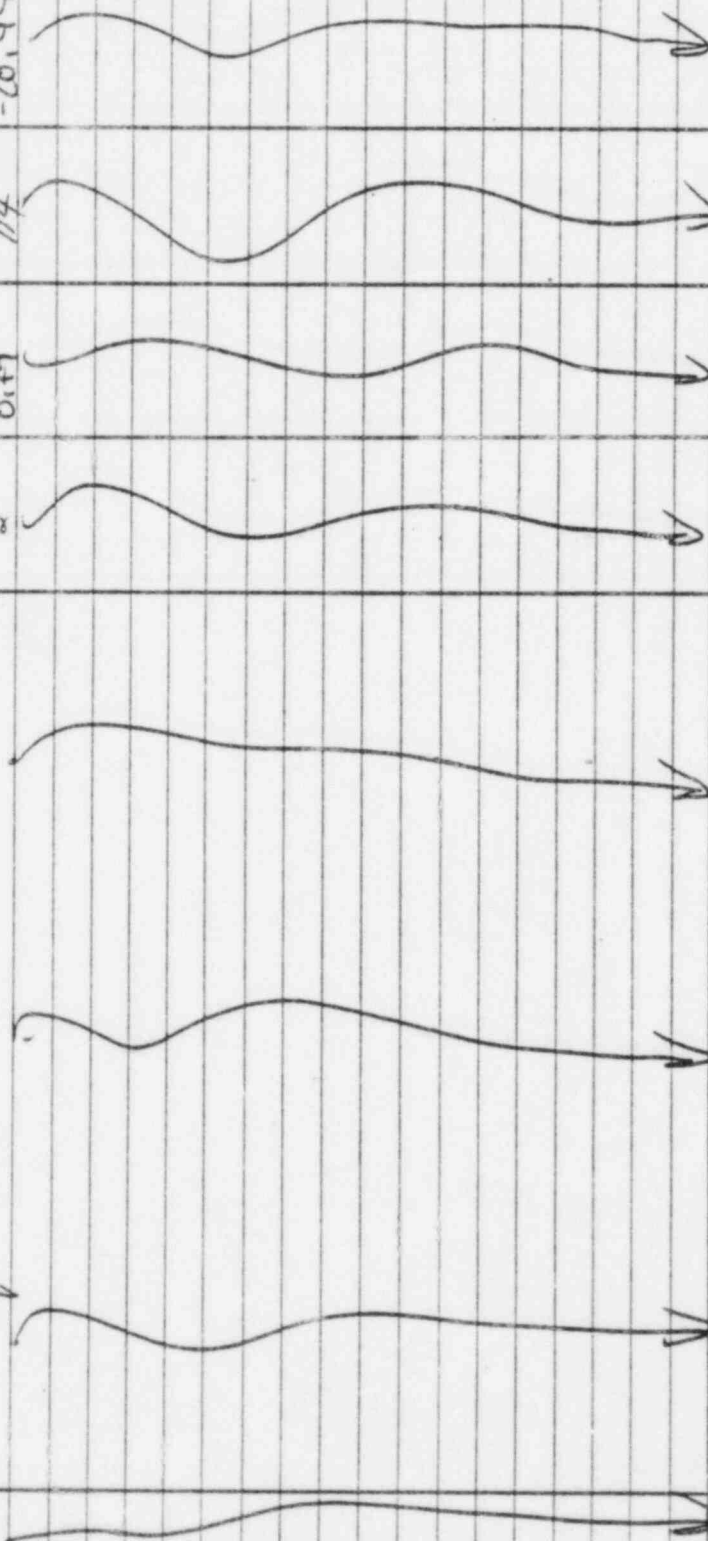
ESG-83-48

ANALYZED BY		Rockwell International Energy Systems Group		SUBMITTED BY	
DATE ANALYZED		HEALTH AND SAFETY ANALYSIS REPORT		DATE SAMPLED	
FILM NO.		DESCRIPTION AND LOCATION		BI DG. AND ROOM NO.	
HOT SPOTS		Beta Camera		counts	
4-1	FOURTH FLOOR	column flange (left)		9875	
4-2	column flange (right)			352K	
4-3	under M-102 oxide blender			17522	
4-4	next to S-104 hot box			8885	
	THIRD FLOOR			8324	
3-1	column			—	
	SECOND FLOOR			3493	
2-1	column			—	
2-2	stack			5172	
COMMENTS:		p Initial Bx. 2FF. GED		TYPE OF SAMPLE: SOIL — WATER — AIR	
		6 47.8 gpm 7.17 5.0		SMEAR — OTHER —	
				TYPE OF ANALYSIS: Hot Spots	
				RADIOMETRIC — BERYLLIUM —	
				OTHER —	
LEDGER ACCOUNT		CONTRACT OR ORDER		WORK RELEASE	
LOG BOOK NO.		PAGE		INDEX	


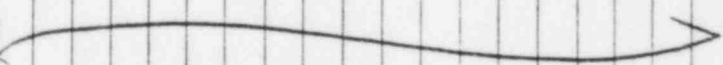
ESG-83-48

ANALYZED BY		PRELIMINARY		Rockwell International Energy Systems Group		HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY	
DATE ANALYZED		11-11-83		DATE SAMPLED		11-11-83		BLDG. AND ROOM NO.	
FILM NO.		100 NOT WRITE IN THIS BOX		11-11-83		11-11-83		VF 6	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	counts	Results						
HOT SPOTS									
SEVENTH FLOOR									
7-1	insulation on side of calciner	4944	175 K						
7-2	" " "	22073	780 K						
7-3	pneath Molten Salt Break Tank	1726	60 K						
GRATING BETWEEN 6 + 7									
6.5-1	yellow deposit on pipe insulation	6340	225 K						
6.5-2	silver-painted area of calciner	38603	1382 K						
SIXTH FLOOR									
6-1	floor near pipe penetration	5249	186 K						
6-2	near E-101 vapor condenser	1607	56 K						
6-3	hole near decon room door (left)	34640	1240 K						
6-4	hole near decon room door (right)	28436	1017 K						
FIFTH FLOOR									
5-1	cdumn	3106	110 K						
5-2	on floor near column	8401	300 K						
5-3	near vacuum system pipe penetration (top)	1972	69 K						
5-4	near vacuum system pipe penetration (bottom)	23225	830 K						
COMMENTS: beta 34 EFF 660 6 47.8cpm 7.17 5.0									
TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SMEAR _____ OTHER _____ TYPE OF ANALYSIS: Hot Spots RADIOLOGIC _____ BERYLLIUM _____ OTHER _____									
LEDGER ACCOUNT		CONTRACT OR ORDER		SUB-ACCOUNT		WORK RELEASE			
LOG BOOK NO.		PAGE							

GENERAL AREA AND HOT SPOTS SMEAR SURVEY
NOVEMBER 1983

 Rockwell International Energy Systems Group		HEALTH AND SAFETY ANALYSIS REPORT													
ANALYZED BY <u>22</u> DATE ANALYZED <u>11-23-83</u> FILM NO. <u>11-23-83</u>		SUBMITTED BY <u>D. L. Spear</u> DATE SAMPLED <u>11-11-83</u> BLDG. AND ROOM NO. <u>11E-131 Floor</u>													
SAMPLE NUMBER 1 2	DESCRIPTION AND LOCATION 1 m ² FLOOR GRIDS	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="width:15%;">ALPHA COUNTS</th> <th style="width:15%;">RESULTS</th> <th style="width:15%;">BETA COUNTS</th> <th style="width:15%;">RESULTS</th> </tr> <tr> <td>2</td> <td>0.79</td> <td>16.2</td> <td>16.2</td> </tr> <tr> <td>2</td> <td>0.79</td> <td>114</td> <td>20.44</td> </tr> </table>	ALPHA COUNTS	RESULTS	BETA COUNTS	RESULTS	2	0.79	16.2	16.2	2	0.79	114	20.44	
ALPHA COUNTS	RESULTS	BETA COUNTS	RESULTS												
2	0.79	16.2	16.2												
2	0.79	114	20.44												
COMMENTS:		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SMEAR <u>✓</u> OTHER <u>Smear-Count</u> TYPE OF ANALYSIS: RADIO-METRIC <u>✓</u> BERYLLIUM _____ OTHER _____													
LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ SUB-ACCOUNT _____ WORK RELEASE _____		LOG BOOK NO. _____ PAGE _____													

FORM 732-A REV. 5-78


ANALYZED BY <u>P.L. S</u>		SUBMITTED BY <u>P.L. S</u>			
DATE ANALYZED <u>11-23-83</u>		DATE SAMPLED <u>11-23-83</u>			
FILM NO. <u>11-23-83</u>		BLDG. AREA ROOM NO. <u>4th - 2nd Floor</u>			
 HEALTH AND SAFETY ANALYSIS REPORT		RESULTS			
SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA		BETA	
		COUNTS	APR/CM ²	COUNTS	APR/CM ²
1	<u>1 m² FLOOR GRIDS</u> 	3	1.73	163	17.00
2		4	2.66	161	15.47
3		2	0.79	133	5.92
4		5	3.60	137	2.87
5		1	-0.14	162	16.24
6		6	4.53	130	8.21
7		4	2.66	148	5.54
8		2	0.79	154	10.12
9		3	1.73	154	10.12
10		2	0.79	143	1.72
11		1	-0.14	164	17.76
12		6	4.53	136	3.63
13		2	0.79	146	4.01
14		2	0.79	155	10.89
15		7	9.46	149	6.30
16		2	0.79	172	23.88
17		4	2.66	148	5.54
18		1	-0.14	183	32.28
19		5	3.60	156	11.65
20		3	1.73	139	1.39
COMMENTS:		TYPE OF SAMPLE: SOIL <input type="checkbox"/> WATER <input type="checkbox"/> AIR <input type="checkbox"/> SMEAR <input checked="" type="checkbox"/> OTHER <input type="checkbox"/> <u>Min. Counts</u> TYPE OF ANALYSIS: RADIOMETRIC <input checked="" type="checkbox"/> BERYLLIUM <input type="checkbox"/> OTHER <input type="checkbox"/> (IDENTIFY)			
LEDGER ACCOUNT <input type="checkbox"/> CONTRACT OR ORDER <input type="checkbox"/> SUB-ACCOUNT <input type="checkbox"/> WORK RELEASE <input type="checkbox"/>					
LOG BOOK NO. <u>11-23-83</u> PAGE <u>1 of 2</u>					

ANALYZED BY <u>PLS</u>		Rockwell International Energy Systems Group		HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY <u>PLS</u>	
DATE ANALYZED <u>11-21-83</u>				DATE SAMPLED <u>11-10-83</u>			
FILM NO. <u>100</u>				BLDG. AND ROOM NO. <u>116-3rd FLOOR</u>			
SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA COUNTS	BETA COUNTS	RESULTS	ALPHA COUNTS	BETA COUNTS	RESULTS
1	CALCATED 11/21/83	3	173	146	-0.57	-21.20	10.12
2	1 m ² FLOOR GRIDS	5	3.60	113	154	135	153
3		2	0.79	154	135	153	197
4		5	3.60	153	135	153	149
5		5	3.60	153	135	153	149
6		5	3.60	153	135	153	149
7		6	4.53	149	135	153	149
8	CALCATED 11/22/83	1	-0.14	141	174	235	20.82
9	1 m ² FLOOR GRIDS	19	16.67	174	235	20.82	39.92
10		33	29.75	168	193	25.40	9.36
11		7	5.46	174	153	133	-5.92
12		12	10.13	153	168	20.82	6.30
13		7	5.46	133	149	44.50	-2.87
14		7	5.46	133	149	44.50	-2.87
15		6	4.38	168	149	44.50	-2.87
16		8	6.40	149	137	137	137
17		5	3.60	149	137	137	137
18		10	8.27	149	137	137	137
19		5	3.60	137	137	137	137

ESG-83-48

ANALYZED BY <u>DL Scott</u>		SUBMITTED BY <u>DL Scott</u>	
DATE ANALYZED <u>11-22-83</u>		DATE SAMPLED <u>11-18-83</u>	
FILM NO. <u>108</u>		BLDG. AND ROOM NO. <u>4156 - 3rd Floor</u>	
HEALTH AND SAFETY ANALYSIS REPORT		RESULTS	
DESCRIPTION AND LOCATION		ALPHA	BETA
SAMPLE NUMBER	DESCRIPTION AND LOCATION	COUNTS	COUNTS
20	1m ² FLOOR GRIDS	19167	231
21		20.41	240
			60.95
			75.83
COMMENTS:			
TYPE OF SAMPLE: SOIL <input type="checkbox"/> WATER <input type="checkbox"/> AIR <input type="checkbox"/>			
SMEAR <input checked="" type="checkbox"/> OTHER <input type="checkbox"/> <u>5 min. count</u>			
TYPE OF ANALYSIS:			
RADIOMETRIC <input checked="" type="checkbox"/> BERYLLIUM <input type="checkbox"/>			
OTHER <input type="checkbox"/>			
LEDGER ACCOUNT	CONTRACT OR ORDER	SUB-ACCOUNT	WORK RELEASE
LOG BOOK NO.	PAGE		

Page 2 of 2

ANALYZED BY <u>D. L. Grant</u>		SUBMITTED BY <u>D. L. Grant</u>	
DATE ANALYZED <u>11-21-83</u>		DATE SAMPLED <u>11-16-83</u>	
FILM NO. <u>100</u>		BLDG. AND ROOM NO. <u>4th Fl.</u>	
 HEALTH AND SAFETY ANALYSIS REPORT		RESULTS	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA	BETA
1	1 m ² FLOOR GRIDS	6	137
2		4.53	18.53
3		2.46	13.18
4		9.20	22.35
5		3.60	33.04
6		11.07	8.60
7		3.60	23.11
8		5.46	15.47
9		2.66	53.67
10		8.27	30.75
11		4.53	36.80
12		12.00	15.47
13		5.46	10.12
14		2.66	219.46
15		82.05	29.22
16		4.53	13.18
17		4.53	32.28
18		4.53	23.88
19		6.40	42.98
20		5.46	32.28
COMMENTS:		TYPE OF SAMPLE: SOIL <input type="checkbox"/> WATER <input type="checkbox"/> AIR <input type="checkbox"/>	
		SMEAR <input checked="" type="checkbox"/> OTHER <input type="checkbox"/> <u>no. 100</u>	
		TYPE OF ANALYSIS:	
		RADIOMETRIC <input checked="" type="checkbox"/> BERYLLIUM	
		OTHER <input type="checkbox"/> IDENTIFY	
LEDGER ACCOUNT		WORK RELEASE	
CONTRACT OR ORDER		SUB-ACCOUNT	
LOG BOOK NO.		PAGE	

FORM 732 A REV. 6-78

ANALYZED BY _____

DATE ANALYZED 11-21-83

FILM NO. _____ (DO NOT WRITE IN THIS BOX)

Rockwell International
Energy Systems Group

HEALTH AND SAFETY ANALYSIS REPORT

SUBMITTED BY U.S. 1

DATE SAMPLED 11-10-83

BLDG. AND ROOM NO. 212-511/100

SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS			
		ALPHA	BETA	GM/CM ²	SP/CM ²
1	1 m ² FLOOR GRIDS	GM/CM ²	GM/CM ²	GM/CM ²	GM/CM ²
10		181	30.75		
18		209	52.11		
7		164	17.86	28.00	
27		227	65.90		
8		170	22.35		
8		146	4.01		
7		164	17.76		
6		130	-3.03		
49		324	140.00		
13		195	41.45		
8		182	31.52		
10		167	20.06		
7		172	23.88		
17		234	71.74		
7		169	21.58		
10		177	27.70		
5		182	31.52		
9		217	58.26		
259		1099	732.10		
31	245	79.65			

TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____

SHEAR ☒ OTHER 5 MIN. CALL

TYPE OF ANALYSIS:

RADIOMETRIC ☒ BERYLLIUM _____

OTHER _____

LOG BOOK NO. _____

FORM 737-A REV. 8-78

Page 1 of 2



Page 2 of 2

ANALYZED BY <u>U.L. Spent</u>		Rockwell International Energy Systems Group		HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY <u>U.L. Spent</u>	
DATE ANALYZED <u>11-21-83</u>				DATE SAMPLED <u>11-9-83</u>		BLDG. AND ROOM NO. <u>4F-6-62b Floor</u>	
FILM NO. <u>(Do not write in this box)</u>							
SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS		BETA			
		ALPHA COUNTS	AMPERES 2	COUNTS	APPROX. dpm/100"		
1	1 m ² Floor GRIDS	2	0.79	205	49.09		
2		14.10	244	78.88			
3		8.27	187	35.34			
4		8.27	188	36.10			
5		24.14	273	101.01			
6		35.35	544	308.08			
7		3.60	184	33.04			
8		7.33	182	31.52			
9		17.61	217	58.26			
10		10.13	164	17.60			
11		12.00	208	51.38			
12		12.00	174	25.40			
13		22.28	230	68.19			
14		34.42	252	85.00			
15		18.54	231	68.95			
16		13.87	197	42.98			
17		8.27	171	23.11			
18		4.53	154	10.12			
19		6.40	175	26.17			
20		1.73	168	20.82			
COMMENTS:		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____					
		SNEAR <input checked="" type="checkbox"/> OTHER <u>5 min. Counts</u>					
		TYPE OF ANALYSIS:					
		RADIOMETRIC <input checked="" type="checkbox"/> BERYLLIUM _____					
		OTHER _____					
LEDGER ACCOUNT _____		SUB. ACCOUNT _____		WORK RELEASE _____			
LOG BOOK NO. _____		PAGE _____					

Page 1 of 2

ANALYZED BY _____		Rockwell International Energy Systems Group		SUBMITTED BY <i>W. Spent</i>	
DATE ANALYZED <i>11-21-83</i>		HEALTH AND SAFETY ANALYSIS REPORT		DATE SAMPLED <i>11-17-83</i>	
FILM NO. _____				BLDG. AND ROOM NO. <i>4E6-6</i>	
DESCRIPTION AND LOCATION		RESULTS		RELAT	
SAMPLE NUMBER		ALPHA	RESULTS	RELAT	
21	1m ² FLOOR GRIDS	224.15	11.07	21.58	
22		13	5.46	29.99	
23		25	22.88	85.76	
24		149	138.09	776.42	
25		184	170.78	1559.52	
COMMENTS:					
TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____					
SHEAR <input checked="" type="checkbox"/> OTHER <i>5 min. 2000</i>					
TYPE OF ANALYSIS:					
RADIO-METRIC <input checked="" type="checkbox"/> BERYLLIUM					
OTHER					
LEDGER ACCOUNT _____	CONTRACT OR ORDER _____	SUB-ACCOUNT _____	WORK RELEASE _____		
LOG BOOK NO. _____	PAGE _____				

Page 2 of 2

 Rockwell International Energy Systems Group		HEALTH AND SAFETY ANALYSIS REPORT			
ANALYZED BY <u>DLG</u> DATE ANALYZED <u>11-21-83</u> FILM NO. <u>100 NOT WRITE IN THIS BOX</u>		SUBMITTED BY <u>DLG</u> DATE SAMPLED <u>11-9-83</u> BLDG. AND ROOM NO. <u>44E6 - 7th Floor</u>			
SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS			
		ALPHA COUNTS	Beta COUNTS	Gamma COUNTS	APPROXIMATE COUNTS
1	<u>1 m² FLOOR GRIDS</u> 	6	163	17,000	
2		6	161	15,477	
3		5	145	3,25	
4		8	174	25,40	
5		24	221	61,31	
6		13	216	57,49	
7		9	176	26,93	
8		12	211	53,67	
9		5	193	39,92	
10		2	132	6,64	
11		2	151	7,83	
12		4	146	4,01	
13		5	181	30,75	
14		8	225	49,09	
15		0	133	-5,92	
16		5	189	36,86	
17		6	174	25,40	
18		5	165	18,53	
19		6	135	-4,39	
20		4	143	1,72	
COMMENTS:		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SMEAR <input checked="" type="checkbox"/> OTHER <u>Smear Counts</u> TYPE OF ANALYSIS: RADIO-METRIC <input checked="" type="checkbox"/> BERYLLIUM OTHER _____			
LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ SUB-ACCOUNT _____ WORK RELEASE _____ LOG BOOK NO. _____ PAGE _____		FORM 132-A REV. 8-78			

ANALYZED BY <u>DL</u>		Rockwell International Energy Systems Group		HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY <u>DL</u>	
DATE ANALYZED <u>11-21-83</u>				DATE SAMPLED <u>11-21-83</u>		BLDG. AND ROOM NO. <u>4E6 - 8th FLOOR</u>	
FILM NO. <u>(DO NOT WRITE IN THIS BOX)</u>							
SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS		ALPHA COUNTS	BETA COUNTS	ALPHA/BETA RATIO	REMARKS
		ALPHA COUNTS	BETA COUNTS				
1	1 m ² FLOOR AIR	0	1451	0	1451	100.03	
2		6	173	4.53	173	24.64	
3		8	160	6.40	160	14.71	
4		8	185	6.40	185	33.81	
5		17	172	14.80	172	23.88	
6		12	197	10.13	197	47.98	
7		3	159	1.73	159	13.91	
8		5	154	3.60	154	10.12	
9		5	186	3.60	186	34.57	
10		13	204	11.07	204	48.32	
11		4	155	2.64	155	10.89	
12		9	171	7.33	171	23.11	
13		7	157	5.46	157	12.42	
14		3	173	1.73	173	24.64	
15		6	176	4.53	176	26.93	
16		8	170	6.40	170	22.35	
17		13	228	11.07	228	44.60	
18		7	177	5.46	177	29.22	
19		7	182	5.46	182	31.52	
20		1	155	0.14	155	10.89	

COMMENTS:		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____	
		SMEAR <input checked="" type="checkbox"/> OTHER <input checked="" type="checkbox"/> <u>5 m² FLOOR</u>	
		TYPE OF ANALYSIS:	
		RADIOMETRIC <input checked="" type="checkbox"/> BERYLLIUM _____	
		OTHER _____	
LEDGER ACCOUNT _____	CONTRACT OR ORDER _____	SUB-ACCOUNT _____	WORK RELEASE _____
LOG BOOK NO. _____	PAGE _____		

Page 1 of 2

ANALYZED BY		Rockwell International Energy Systems Group		HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY	
DATE ANALYZED 11-21-83						DATE SAMPLED 11-21-83	
FILM NO.		100 NOT MATED IN THIS BOX				BUILDING AND ROOM NO. 4F4-8	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS		COUNTS		APPROXIMATE	
		ALPHA	BETA	ALPHA	BETA	ALPHA	BETA
21	1 m ² FLOOR GRIDS	7	178	5.46	28.46	178	28.46
22		11	168	9.20	20.82	168	20.82
23		9	176	7.33	26.43	176	26.43
24		9.7	183	5.46	32.28	183	32.28
25		7.12	183	10.13	32.28	183	32.28
26		7.21	143	-0.14	1.72	143	1.72
27		7.7	186	5.46	11.65	186	11.65
COMMENTS:							
TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SHEAR <input checked="" type="checkbox"/> OTHER <input checked="" type="checkbox"/> <u>5 min. counts</u> TYPE OF ANALYSIS: RADIO-METRIC <input checked="" type="checkbox"/> BERYLLIUM _____ OTHER _____							
LEDGER ACCOUNT		CONTRACT OR ORDER		SUB. ACCOUNT		WORK RELEASE	
LOG BOOK NO.		PAGE				Page 2 of 3	

U.S. - 1

ANALYZED BY		Rockwell International Energy Systems Group		SUBMITTED BY <i>DL Sp-1</i>	
DATE ANALYZED <i>11-23-83</i>		HEALTH AND SAFETY ANALYSIS REPORT		DATE SAMPLED <i>11-11-83</i>	
FILM NO.		DESCRIPTION AND LOCATION		BLDG. AND ROOM NO. <i>416-4th Floor</i>	
DO NOT WRITE IN THIS BOX					
SAMPLE NUMBER	HOT SPOTS	ALPHA COUNTS	BETA COUNTS	RESULTS	
4-1	<i>[Handwritten mark]</i>	457	1733	425.74	425.74
4-2	<i>[Handwritten mark]</i>	311	1288	289.40	876.50
4-3	<i>[Handwritten mark]</i>	673	5207	627.51	3870.62
4-4	<i>[Handwritten mark]</i>	540	2111	503.29	1505.27
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ANALYZED BY <u>D. L. Spaul</u>		Rockwell International Energy Systems Group	
DATE ANALYZED <u>11-23-83</u>		HEALTH AND SAFETY ANALYSIS REPORT	
FILM NO. <u>11-23-83</u>		BLDG. AND ROOM NO. <u>406-5th Floor</u>	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS	
		ALPHA COUNTS	RESULTS
5-1	Hot Spots	28,811	26.8
5-2		353,85	326.7
5-3		166,111	82.2
			2388.46
			520.48
			97.72


TYPE OF SAMPLE: SOIL	WATER	AIR
SHEAR <input checked="" type="checkbox"/>	OTHER <input checked="" type="checkbox"/> MIN. COUNTS	
TYPE OF ANALYSIS:		
RADIOMETRIC <input checked="" type="checkbox"/>	DEPLETION	
OTHER		

LEDGER ACCOUNT	CONTRACT OR ORDER	SUB-ACCOUNT	WORK RELEASE
LOG BOOK NO. <u>11-23-83</u>	PAGE <u>1</u>		

ANALYZED BY <u>DL-23-53</u>		Rockwell International Energy Systems Group		SUBMITTED BY <u>DL-23-53</u>	
DATE ANALYZED <u>11-23-83</u>		HEALTH AND SAFETY ANALYSIS REPORT		DATE SAMPLED <u>11-11-83</u>	
FILM NO. <u>DO NOT WRITE IN THIS BOX</u>		DESCRIPTION AND LOCATION		BLDG. AND ROOM NO. <u>6F6 - 6th Floor</u>	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA COUNTS	ALPHA DPM/100GM	BETA COUNTS	BETA DPM/100GM
6-5-1	HOT SPOTS	35.2	327.69	1127	753.50
6-5-2		238	221.22	926	599.93
6-1		39	35.35	269	97.98
6-2		15	12.94	176	26.93
6-3		100	92.33	445	232.45
6-4		148	137.14	630	373.79
COMMENTS:					
TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____					
SMEAR <input checked="" type="checkbox"/> OTHER <input checked="" type="checkbox"/> <u>5 ALIA</u> <u>COUNTS</u>					
TYPE OF ANALYSIS:					
RADIOMETRIC <input checked="" type="checkbox"/> BERYLLIUM _____					
OTHER _____					
LEDGER ACCOUNT _____	CONTRACT OR ORDER _____	SUB-ACCOUNT _____	WORK RELEASE _____		
LOG BOOK NO. _____	PAGE _____				

FORM 732-A REV. 6-78

ESG-83-48

ANALYZED BY <u>DLG</u>		SUBMITTED BY <u>DLG</u>	
DATE ANALYZED <u>11-23-83</u>		DATE SAMPLED <u>11-11-83</u>	
FILM NO. _____		BIDG. AND ROOM NO. <u>416-7th Floor</u>	
<div>  Rockwell International Energy Systems Group </div>		HEALTH AND SAFETY ANALYSIS REPORT	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA COUNTS	BETA COUNTS
7-1	Hot Spots	46	302
7-2		108	587
7-3		169	946
			123,20
			340.97
			615.21
COMMENTS:		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SMEAR <input checked="" type="checkbox"/> OTHER <u>5 MIN. COUNTS</u> TYPE OF ANALYSIS: RADIO-METRIC <input checked="" type="checkbox"/> BERYLLIUM _____ OTHER _____	
LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ LOG BOOK NO. _____ SUB-ACCOUNT _____ WORK RELEASE _____		PAGE _____	

GENERAL AREA AND HOT SPOTS DIRECT READINGS
DECEMBER 1983

ESG-83-48

ANALYZED BY _____
 DATE ANALYZED _____
 FILM NO. _____
(DO NOT WRITE IN THIS BOX)



Flockwell International
 Energy Systems Group

HEALTH AND SAFETY ANALYSIS REPORT

SUBMITTED BY C.L. Sp-1
 DATE SAMPLED 12-7-83
 BLDG. AND ROOM NO. 116-1st FLOOR

SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS			
		ALPHA		BETA	
		COUNTS	dpm/100 cm ²	COUNTS	dpm/100 cm ²
1	1 m ² FLOOR GRIDS (HOT SPOT 805α/1888β CTS/LMIN.)	37	56.78	262	81.12
2		102	97.34	416	330.97
3		1279	2071.80	2922	4376.70
4		416	671.67	745	864.74
5		106	168.73	357	235.25
6		30	45.43	310	159.00
7		28	42.18	266	87.61
8		44	68.14	283	115.19
9		39	60.03	282	113.57
10		37	56.78	313	163.86
11		40	61.65	284	116.81
12		65	102.21	284	116.81
13		47	73.01	394	295.28
14		19	27.58	278	107.08
15		13	17.85	328	188.20
16		16	22.71	337	202.80
17		18	25.96	471	420.20
18		14	19.47	324	181.71
19		9	11.36	347	219.02
20		19	27.58	328	188.20

INSTR #	BKG	EFF	GEO	INSTR #	BKG	EFF	GEO
1	0.4	5.07	1.6	6	42.4	8.81	5.0

LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ SUB ACCOUNT _____ WORK RELEASE _____
 LOG BOOK NO. _____ PAGE _____

TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____
 SMEAR ☒ OTHER 5 MIN COUNTS
 TYPE OF ANALYSIS: GENERAL FLOOR AREA
 RADIO-METRIC ☒ BERYLLIUM _____
 OTHER _____

FORM 732-A REV. 8-78

FORM 732-A REV. 6-78

FORM 732-A REV. 6-78

ANALYZED BY _____

DATE ANALYZED _____

FILM NO. _____

Rockwell International
Energy Systems Group

HEALTH AND SAFETY ANALYSIS REPORT

SUBMITTED BY *W.L. Spaul*

DATE SAMPLED *12/7/83*

BLDG. AND ROOM NO. *6-6 FLOOR*

SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS		COUNTS	ALPHA	BETA
		APPROXIMATE	COUNTS			
1	RESURVEY			42	52.64	2373.60
2	1m ² FLOOR GRID #2			10	7.31	18,923
3	#5			202	282.24	962
4	#6			17	17.55	2838
5	#22			6	1.46	14,847
6	#23			1861	2714.21	1563
7	#24			2071	3021.31	24,275.65
	#25					

FIXED WITH YELLOW PAINT

TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____

SMEAR _____ OTHER *5 MIN. COUNT*

TYPE OF ANALYSIS: *GENERAL FLOOR AREA*

RADIOMETRIC _____ BERYLLIUM _____

OTHER _____

COMMENT	INSTR	EFF	GEO	DATE
3	5	37.8	5.0	12/7/83
3	5	38.4	9.89	12/8/83

LEDGER ACCOUNT _____

LOG BOOK NO. _____

CONTRACT OR ORDER _____

PAGE _____

WORK RELEASE _____

HEALTH AND SAFETY ANALYSIS REPORT

ANALYZED BY

DATE ANALYZED:

Film No. _____ 100 501 5011 5012 5013 5014

Flockwell International
Energy Systems Group

SUMMITTED BY

DATE SAMPLED 12-8-83

BLDG. AND ROOM NO. UF 6-7th FLOOR

SAMPLE

RESURVEY

1 m² FLOOR GRID ± 8

11-44

DESCRIPTION AND LOCATION

ALPHA

COUNTS

80

11	11
12	12

RESULTS

10m/1000m ²	con
------------------------	-----

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----

106.56	
106.56	

BETA

UNIT 5

307

0.0	0.0
0.1	0.1
0.2	0.2
0.3	0.3
0.4	0.4
0.5	0.5
0.6	0.6
0.7	0.7
0.8	0.8
0.9	0.9
1.0	1.0

COMMENTS

10

1

1

ENCLOSURE

CREDIT
ACCOUNT

LOG BOOM

ORM 792-A

ANALYZED BY _____		Rockwell International Energy Systems Group		HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY <u>W. J. A</u>	
DATE ANALYZED _____				DATE SAMPLED <u>12-8-83</u>			
FILM NO. _____		TOP LEFT WRITE IN THIS SPACE		BLDG. AND ROOM NO. <u>UF 6</u>			
SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA Counts/cm ²	BETA Counts/cm ²				
-	HOT SPOTS RESURVEY						
-	SEVENTH FLOOR						
7-1	INSULATION ON SIDE OF CALCINER						
7-2	" " "						
7-3	BENEATH MOLTEN SALT BREAK TANK						
-	GRATING BETWEEN 6 th AND 7 th FLOOR						
6-5-1	YELLOW DEPOSIT ON PIPE INSULATION						
6-5-2	SILVER-PAINTED AREA OF CALCINER (PAINTED RED AS OF 12/8/83)						
-	SIXTH FLOOR						
6-1	FLOOR NEAR PIPE PENETRATION						
6-2	NEAR E-101 VAPOR CONDENSOR						
6-3	HOLE NEAR DECON ROOM DOOR (LEFT)						
6-4	HOLE NEAR DECON ROOM DOOR (RIGHT)						
-	FIFTH FLOOR						
5-1	COLUMN						
5-2	FLOOR NEAR COLUMN (AS OF 12/8/83) (NEW SPOT ON FRESH PAINT)						
5-3	NEAR VACUUM SYSTEM PIPE PENETRATION (TOP)						
5-3	" " " (BOTTOM)						
COMMENTS: 6 INSTEAD OF 4							
BKG		EFF	GEO				
4		36.8	7.88	5.0			
TYPE OF SAMPLE: SOIL		WATER		AIR			
SMEAR		OTHER		MIN COUNT			
TYPE OF ANALYSIS:							
RADIOMETRIC		BY YLLRM					
OTHER		(SEE 12/8/83)					
LEDGER ACCOUNT		CONTRACT OR ORDER		SUB-ACCOUNT		WORK RELEASE	
LOG BOOK NO.		PAGE					

FORM 732-A REV. 6-78

ANALYZED BY		Rockwell International Energy Systems Group		SUBMITTED BY	
DATE ANALYZED		HEALTH AND SAFETY ANALYSIS REPORT		DATE SAMPLED	
FILM NO.		DESCRIPTION AND LOCATION		BLDG. AND ROOM NO.	
SAMPLE NUMBER	HOT SPOTS			BETA	RESULTS
1	HOLES IN FLOOR FOR DOOR STAYS - DECON ARM ENTRANCE			19,345	142,225.10
2	" " " " " " " "			22,304	144,736.50
3	END OF DOOR STAY			1,946	12,826.55
4	" " " " " " " "			5,160	3,738.70
5	SUPPORT COLUMN			18,320	134,649.10
6	6" HOLE IN FLOOR NEXT TO COLUMN			15,095	110,655.10
7	" " " " " " " "			6,030	43,211.50
8	2" PIPE IN FLOOR NEXT TO COLUMN			23,125	170,398.30
9	SPOT ON FLOOR NEXT TO GRID #6			1,457	9,188.40
10	FLOOR DRAIN OUTSIDE OF SHOWER			5,415	38,635.90
COMMENTS: 8 INSTR. BK6. EFF 610.					
4 444 7.44 5.0					
TYPE OF SAMPLE: SOIL		TYPE OF ANALYSIS: DIRECT READINGS		WATER AIR	
SMEAR		OTHER / MIN COUNT		BETTER	
RADIOMETRIC		OTHER		BETTER	
LEDGER ACCOUNT		CONTRACT OR ORDER		WORK RELEASE	
LOG BOOK NO.		SUB-ACCOUNT		PAGE	

FORM 732-A REV. 6-78

ANALYZED BY		Rockwell International Energy Systems Group		SUBMITTED BY <i>U. J.</i>	
DATE ANALYZED <i>12-22-83</i>		HEALTH AND SAFETY ANALYSIS REPORT		DATE SAMPLED <i>12-9-83</i>	
FILM NO. <small>DO NOT WRITE IN THIS BOX</small>				7 th THROUGH 2 nd FLOORS BLDG. AND ROOM NO. <i>UFG</i>	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS			
		ALPHA		BETA	
		COUNTS	dpm/100cm ²	COUNTS	dpm/100cm ²
-	HOT SPOTS				
-	SEVENTH FLOOR				
7-1	HOT SPOTS (INSULATION ON SIDE OF CALCINER)	39	59.40	357	531.46
7-2	" " " "	546	831.67	2947	9,127.76
7-3	" (BENEATH MOLTEN SALT BREAK TANK)	51	77.68	394	647.71
-	SIXTH FLOOR				
6-5-2	HOT SPOTS (PAINTED RED AS OF 11/8/83, GRATING BETWEEN 6 th AND 7 th FLOOR)	583	888.03	3890	12,260.03
6-2	" (NEAR E-101 VAPOR CONDENSOR)	6	9.14	154	-149.47
6-3	" (HOLE NEAR DECON ROOM DOOR - LEFT)	71	108.15	746	488.28
6-4	" (HOLE NEAR DECON ROOM DOOR - RIGHT)	94	143.18	1022	2,733.68
-	FIFTH FLOOR				
5-1	HOT SPOTS (COLUMN)	47	71.59	253	179.37
5-2	" (FLOOR NEAR COLUMN)	157	239.14	741	1,800.31
-	FOURTH FLOOR				
4-1	HOT SPOTS (COLUMN FLANGE - LEFT)	198	301.59	196	3,311.64
4-2	" (COLUMN FLANGE - RIGHT)	308	469.15	1147	3,148.88
4-3	" (UNDER M-102 OXIDE BLENDER)	59	89.87	311	372.02
4-4	" (NEXT TO S-104 HOT BOX)	12	18.28	167	-106.29
-	THIRD FLOOR				
3-1	HOT SPOT (COLUMN)	3	4.57	145	-179.37
2-1	SECOND FLOOR HOT SPOT (COLUMN)	16	24.37	235	119.58
COMMENTS	INSTR # <i>3</i> BKG <i>0</i> EFF <i>4.76</i> GEO <i>1.6</i> INSTR # <i>5</i> BKG <i>39.8</i> EFF <i>10.38</i> GEO <i>5.0</i>		TYPE OF SAMPLE: SOIL <input type="checkbox"/> WATER <input type="checkbox"/> AIR <input type="checkbox"/> SMEAR <input checked="" type="checkbox"/> OTHER <i>5 MIN. COUNT</i> TYPE OF ANALYSIS: RADIOMETRIC <input checked="" type="checkbox"/> BERYLLIUM <input type="checkbox"/> OTHER <input type="checkbox"/>		
LEDGER ACCOUNT	CONTRACT OR ORDER	SUB-ACCOUNT	WORK RELEASE		
LOG BOOK NO.	PAGE				

GENERAL AREA AND HOT SPOTS SMEAR SURVEY
DECEMBER 1983

ESG-83-48

ANALYZED BY		Rockwell International Energy Systems Group		SUBMITTED BY <i>Mike Spaul</i>	
DATE ANALYZED <i>12-12-83</i>		HEALTH AND SAFETY ANALYSIS REPORT		DATE SAMPLED <i>12-7-83</i>	
FILM NO.		DESCRIPTION AND LOCATION		BLDG. AND ROOM NO. <i>416-1st Floor</i>	
ESG 881 WRITE IN THIS SPACE					
SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA COUNTS	BETA COUNTS	RESULTS	BETA
1	1 m ² FLOOR GRIDS	1	160	0.46	20.85
2		12	168	10.60	27.27
3		35	242	31.81	86.62
4		12	154	10.60	40.10
5		11	206	9.68	57.74
6		8	156	6.92	17.64
7		5	180	4.15	36.89
8		12	188	10.60	43.31
9		2	167	1.38	26.47
10		5	144	4.15	8.02
11		9	192	7.84	46.52
12		1	144	0.46	8.02
13		2	130	1.38	-3.21
14		10	136	8.76	1.60
15		6	141	5.07	5.61
16		2	149	1.38	12.03
17		1	180	0.46	36.89
18		3	166	2.31	25.66
19		3	131	2.31	-2.41
20		3	142	2.31	6.42
COMMENTS:					
TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____					
SMEAR <input checked="" type="checkbox"/> OTHER <input type="checkbox"/> MIN. COUNTS _____					
TYPE OF ANALYSIS:					
RADIMETRIC <input checked="" type="checkbox"/> BERYLLIUM _____					
OTHER _____					
LEDGER ACCOUNT		CONTRACT OR ORDER		SUB ACCOUNT	
LOG BOOK NO.		PAGE		WORK RELEASE	


Rockwell International <small>Environmental Systems Group</small>		SUBMITTED BY <u>[Signature]</u> DATE SAMPLED <u>12-1-83</u> BLDG. AND ROOM NO. <u>41E-2-1420R</u>	
ANALYZED BY _____ DATE ANALYZED <u>12-12-83</u> FILM NO. _____ <small>DO NOT WRITE IN THIS BOX</small>		HEALTH AND SAFETY ANALYSIS REPORT	
SAMPLE NUMBER <u>RESURVEY</u> <u>1m² FLOOR GRID #21</u>	DESCRIPTION AND LOCATION <div style="border: 1px solid black; height: 100px; width: 100%; position: relative;"> <div style="position: absolute; top: 0; left: 0; right: 0; bottom: 0;"> </div> </div>	RESULTS <u>ALP14</u> <u>15.21</u> <u>183</u> <u>43.31</u>	TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SMEAR <input checked="" type="checkbox"/> OTHER <u>SMALL COUNT</u> TYPE OF ANALYSIS: RADIOMETRIC <input checked="" type="checkbox"/> BERYLLIUM _____ OTHER _____
COMMENTS: <div style="border: 1px solid black; height: 100px; width: 100%; position: relative;"> <div style="position: absolute; top: 0; left: 0; right: 0; bottom: 0;"> </div> </div>			
LEDGER ACCOUNT _____ CONTRACT _____ SUB. ACCOUNT _____ WORK RELEASE _____ OR ORDER _____			
LOG BOOK NO. _____ PAGE _____			

FORM 732-A REV. 6-78

ANALYZED BY _____		Rockwell International Energy Systems Group		SUBMITTED BY <u>W. Spat</u>	
DATE ANALYZED <u>12-12-83</u>		DATE SAMPLED <u>12-7-83</u>			
FILM NO. _____		BLDG. AND ROOM NO. <u>4F6-3 5th Floor</u>			
HEALTH AND SAFETY ANALYSIS REPORT					
DESCRIPTION AND LOCATION		RESULTS			
SAMPLE NUMBER	RESURVEY	ALPHA RESULTS BETA			
1	1m ² FLOOR GRID #4	COUNTS	COUNTS	COUNTS	COUNTS
2	" " #10	3,23	158	19,25	133,13
		41	37,34	158	300
COMMENTS:		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____			
		SHEAR <input checked="" type="checkbox"/> OTHER <u>5 MIN. COUNT</u>			
		TYPE OF ANALYSIS:			
		RADIO-METRIC <input checked="" type="checkbox"/> BERYLLIUM			
		OTHER _____			
LEDGER ACCOUNT _____		CONTRACT OR ORDER _____		SUB-ACCOUNT _____	
LOG BOOK NO. _____		PAGE _____		WORK RELEASE _____	

FORM 732-A REV. 6-78

ANALYZED BY _____ DATE ANALYZED <u>12-22-83</u> FILM NO. _____		Rockwell International Energy Systems Group HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY <u>HL-522-1</u> DATE SAMPLED <u>12-7-83</u> BLDG. AND ROOM NO. <u>442-476/100R</u>	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS	RESULTS	RESULTS	RESULTS
1	RE-SURVEY	ALPHA	BETA	ALPHA	BETA
2	1st FLOOR GRID # 11	5.99	13.63	5.99	13.63
	" " " # 14	26.28	51.33	26.28	51.33
COMMENTS:		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SMEAR <input checked="" type="checkbox"/> OTHER <input checked="" type="checkbox"/> MIB-CALCANT (IDENTIFY) TYPE OF ANALYSIS: RADIOMETRIC <input checked="" type="checkbox"/> BERYLLIUM OTHER _____ (IDENTIFY)			
LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ SUB-ACCOUNT _____ WORK RELEASE _____ LOG BOOK NO. _____ PAGE _____		FORM 732-A REV. 6-78			

 Rockwell International Energy Systems Group		ANALYZED BY <u>Alt. 521</u>	
DATE ANALYZED <u>12-12-83</u>		SUBMITTED BY <u>Alt. 521</u>	
FILM NO. <u>12-12-83</u>		DATE SAMPLED <u>12-7-83</u>	
(DO NOT WRITE IN THIS BOX)		BLDG. AND ROOM NO. <u>46-5TH FLOOR</u>	
HEALTH AND SAFETY ANALYSIS REPORT		RESULTS	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA	BETA
1	RESURFCE	2,31	268
2	1m ² FLOOR GRID #9	8,76	107,47
3	#18	6,92	44,91
	#20		28,07
COMMENTS:		TYPE OF SAMPLE: SOIL <input type="checkbox"/> WATER <input type="checkbox"/> AIR <input type="checkbox"/> SMEAR <input checked="" type="checkbox"/> OTHER <input type="checkbox"/> MIN. COUNT (REQUIRED) TYPE OF ANALYSIS: RADIO-METRIC <input checked="" type="checkbox"/> GERTLHM OTHER <input type="checkbox"/> IDENTIFY:	
LEDGER ACCOUNT _____ CONTRACT OR ORDER _____		WORK RELEASE _____	
LOG BOOK NO. _____ PAGE _____		FORM 732-A REV. 6-78	

ANALYZED BY _____ DATE ANALYZED <u>12-12-83</u> FILM NO. _____		Rockwell International Energy Systems Group HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY <u>HL. S.</u> DATE SAMPLED <u>12-7-83</u> BLDG. AND ROOM NO. <u>446-6 4th FLOOR</u>	
(DO NOT WRITE IN THIS BOX)		DESCRIPTION AND LOCATION			
SAMPLE NUMBER	RESURVEY				
1	1m ² FLOOR GRIID #2				
2	#5				
3	#6				
4	#22				
5	#23				
6	#24				
7	#25				
COMMENTS:		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SHEAR <input checked="" type="checkbox"/> OTHER <u>5 MIN. COLLN'S</u> TYPE OF ANALYSIS: _____ RADIO-METRIC <input checked="" type="checkbox"/> BERYLLIUM _____ OTHER _____			
LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ LOG BOOK NO. _____	SUB-ACCOUNT _____ PAGE _____	WORK RELEASE _____			

ANALYZED BY		Rockwell International Energy Systems Group		SUBMITTED BY	
DATE ANALYZED 12-12-83		HEALTH AND SAFETY ANALYSIS REPORT		DATE SAMPLED 12-7-83	
FILM NO.		DESCRIPTION AND LOCATION		BLDG. AND ROOM NO. 018-7th Floor	
RESULTS		RESULTS		RESULTS	
ALPHA		BETA		BETA	
COUNTS		COUNTS		COUNTS	
7		5.99		154	
3		2.31		182	
				38.50	
1	RESURVEY	1m ² FLOOR GRID #8			
2	"	" # 11			
3					
4					
5					
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100					

UF₆ TANK FARM

Hot Spots Direct Readings, November 1983

General Area Direct Readings, December 1983

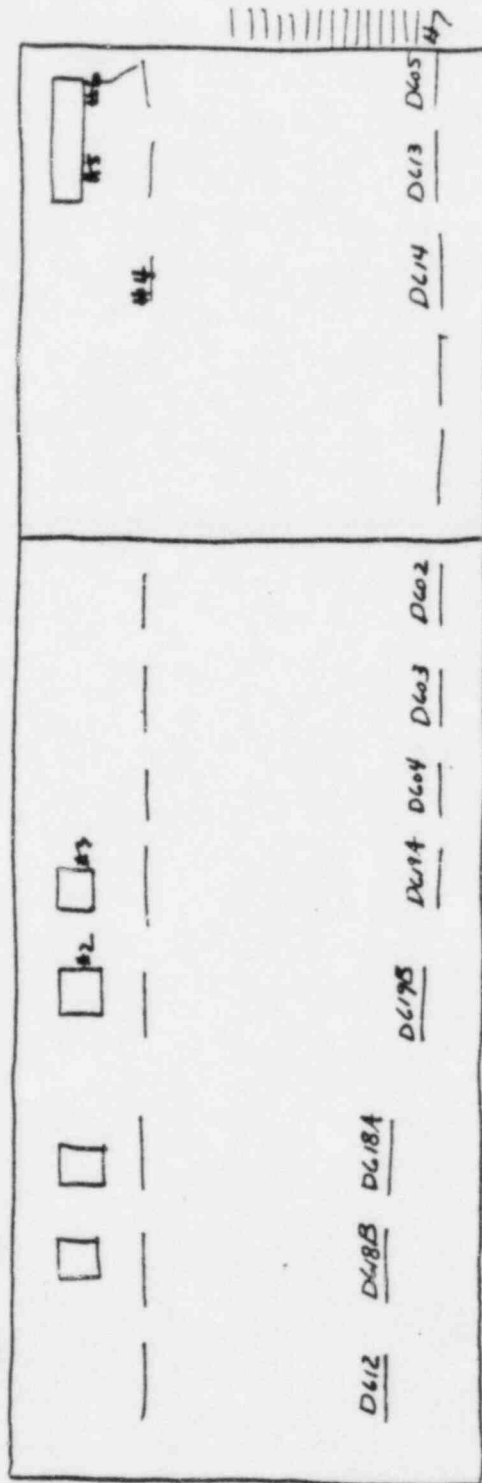
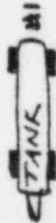
HOT SPOTS DIRECT READINGS
NOVEMBER 1983

ESG-83-48

ANALYZED BY		PRELIMINARY		Rockwell International Energy Systems Group		HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY	
DATE ANALYZED		DCS		DESCRIPTION AND LOCATION		SEE ALSO MAP		DATE SAMPLED	
FILM NO.		HOT SPOTS		DESCRIPTION AND LOCATION		SEE ALSO MAP		BLDG. AND ROOM NO.	
FILM NO.		HOT SPOTS		DESCRIPTION AND LOCATION		SEE ALSO MAP		TANK ROOM	
SAMPLE NUMBER	1	gravel under door of mobile tank (outside pool)							
	2	concrete at side of HNO ₃ pump							
	3	"							
	4	"							
	5	under uranyl nitrate pumps on concrete							
	6	"							
	7	at edge of							
	8	at edge of sump grate							
	9	loose black granular material on tank pool							
	10	"							
	11	yellow stain at crack in wall							
	12	at edge of sump grate							
<p>NOTE: Noticeable increase in readings with Gun probe held over sump grating indicating significant uranium in pit.</p>									
<p>COMMENTS: 67496 DCA EFF. GEO 47.8 cpm 7.17 5.0</p>									
<p>LEDGER ACCOUNT CONTRACT OR ORDER SUB ACCOUNT WORK RELEASE</p>									
<p>LOG BOOK NO. PAGE</p>									
<p>FORM 732-A REV. 8-78</p>									

4M
3373
9857
21,183
7324
7733
7203
4004
2238
3474
3905
525
1382

SURVEY POINT
#1
#2
#3
#4
#5
#6
#7
#8
#9
#10
#11
#12



GENERAL AREA DIRECT READINGS
DECEMBER 1983

ESG-83-48

ANALYZED BY _____

DATE ANALYZED _____

FILM NO. _____

Rockwell International
Energy Systems Group

HEALTH AND SAFETY ANALYSIS REPORT

SUBMITTED BY D.L. SPEED

DATE SAMPLED 12-8-83

BLDG. AND ROOM NO. 11F6 TANK FARM

SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA RESULTS		BETA RESULTS	
		COUNTS	dpm/100cm ²	COUNTS	dpm/100cm ²
1	1 m ² FLOOR GRIDS	64	79.84	3168	28,411.25
2		151	218.76	771	5,519.90
3	(AREA HAS BEEN PAINTED TO FIX CONTAMINATION)	5	14.37	12,468	117,224.25
4		62	76.65	419	2158.30
5		89	119.76	471	2654.90
6		269	407.18	1968	16,951.25
7		258	389.62	3635	32,871.10
8		56	67.07	353	1528.00
9		42	44.71	540	3313.85
10		144	207.58	1080	8,470.85

NOTE: Sumps have been deconned with HNO₃ solution and have been filled with sand. Sand fill prevents measurements which could confirm decontamination efforts. DLS

COMMENT	INSTR	BKG	EFF	GEO	INSTR	BKG	EFF	GEO
1	2.8	4.99	1.6	6	38.6	9.55	5.0	

LEDGER ACCOUNT _____

LOG BOOK NO. _____

CONTRACT OR ORDER _____

SUB-ACCOUNT _____

WORK RELEASE _____

PAGE _____

TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____

SMEAR _____ OTHER 5 MIN. COUNTS

TYPE OF ANALYSIS: DIRECT READINGS

RADIOMETRIC _____ BERYLLIUM _____

OTHER _____

UF₆ WASTE TREATMENT AREA

Hot Spots Direct Readings, November 1983

Hot Spots Smear Survey, November 1983

General Area Direct Readings, December 1983

General Area Smear Survey, December 1983

Hot Spots Smear Survey, December 1983

HOT SPOTS DIRECT READINGS
NOVEMBER 1983

ESG-83-48

HOT SPOTS SMEAR SURVEY
NOVEMBER 1983

ESG-83-48


GENERAL AREA DIRECT READINGS
DECEMBER 1983

ESG-83-48

FORM 732-A REV. 8-78

GENERAL AREA SMEAR SURVEY
DECEMBER 1983

ESG-83-48

 Rockwell International Energy Systems Group		HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY <u>UL Ser</u>	
ANALYZED BY _____		DATE ANALYZED <u>12-12-83</u>		DATE SAMPLED <u>12-8-83</u>	
FILM NO. _____		(DO NOT WRITE IN THIS BOX)		BLDG. AND ROOM NO. <u>WASIZ TREATMENT AREA</u>	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS			
		ALPHA COUNTS	ALPHA dpm/cm ²	BETA COUNTS	BETA dpm/cm ²
1	1 m ² FLOOR GRIDS	2	1.38	165	24.86
2		2	1.38	155	16.84
3		7	5.99	167	26.47
4		10	8.76	178	35.29
5		2	1.38	148	11.23
6		2	1.38	139	4.01
COMMENTS:		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____			
		SWEAR <input checked="" type="checkbox"/> OTHER <input type="checkbox"/> MIN. COUNT			
		TYPE OF ANALYSIS:			
		RADIO-METRIC <input checked="" type="checkbox"/> BERYLLIUM _____ OTHER _____			
LEDGER ACCOUNT _____		CONTRACT OR ORDER _____		SUB-ACCOUNT _____	
LOG BOOK NO. _____		PAGE _____		WORK RELEASE _____	

ESG-83-48

HOT SPOTS SHEAR SURVEY
DECEMBER 1983

ESG-83-48

ANALYZED BY _____ DATE ANALYZED <u>12-12-83</u> FILM NO. _____ <small>FOR DOT WRITE IN THIS BOX</small>		Rockwell International Energy Systems Group HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY <u>St. Spent</u> DATE SAMPLED <u>12-9-83</u> BLDG. AND ROOM NO. <u>6F-4 TACK FACT</u>	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA		BETA	
		COUNTS	PER HOUR ²	COUNTS	PER HOUR ²
1	HOT SPOTS	1	0.46	154	16.04
2		1	0.46	143	7.22
3		7	5.99	145	8.82
4		2	1.38	128	-4.81
5		3	2.31	120	-11.23
6		9	7.84	197	50.53
7		8	6.92	271	109.87
8		2	1.38	138	3.21
9		4	3.23	158	19.25
10		4	3.23	130	-3.21
COMMENTS:		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SHEAR <input checked="" type="checkbox"/> OTHER <u>5. HAN. COUNT</u> TYPE OF ANALYSIS: RADIO-METRIC <input checked="" type="checkbox"/> BERYLLIUM _____ OTHER _____			
LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ LOG BOOK NO. _____ PAGE _____		WORK RELEASE _____ SUB-ACCOUNT _____			

SEPARATIONS AND HOT/COLD LABORATORY FACILITIES

μ R Survey, November 1983

General Area and Hot Spots Direct Readings, November 1983

General Area and Hot Spots Smear Survey, November 1983

General Area Smear Surveys, December 1983


General Area and Hot Spots Smear Survey, December 1983

μR SURVEY
NOVEMBER 1983


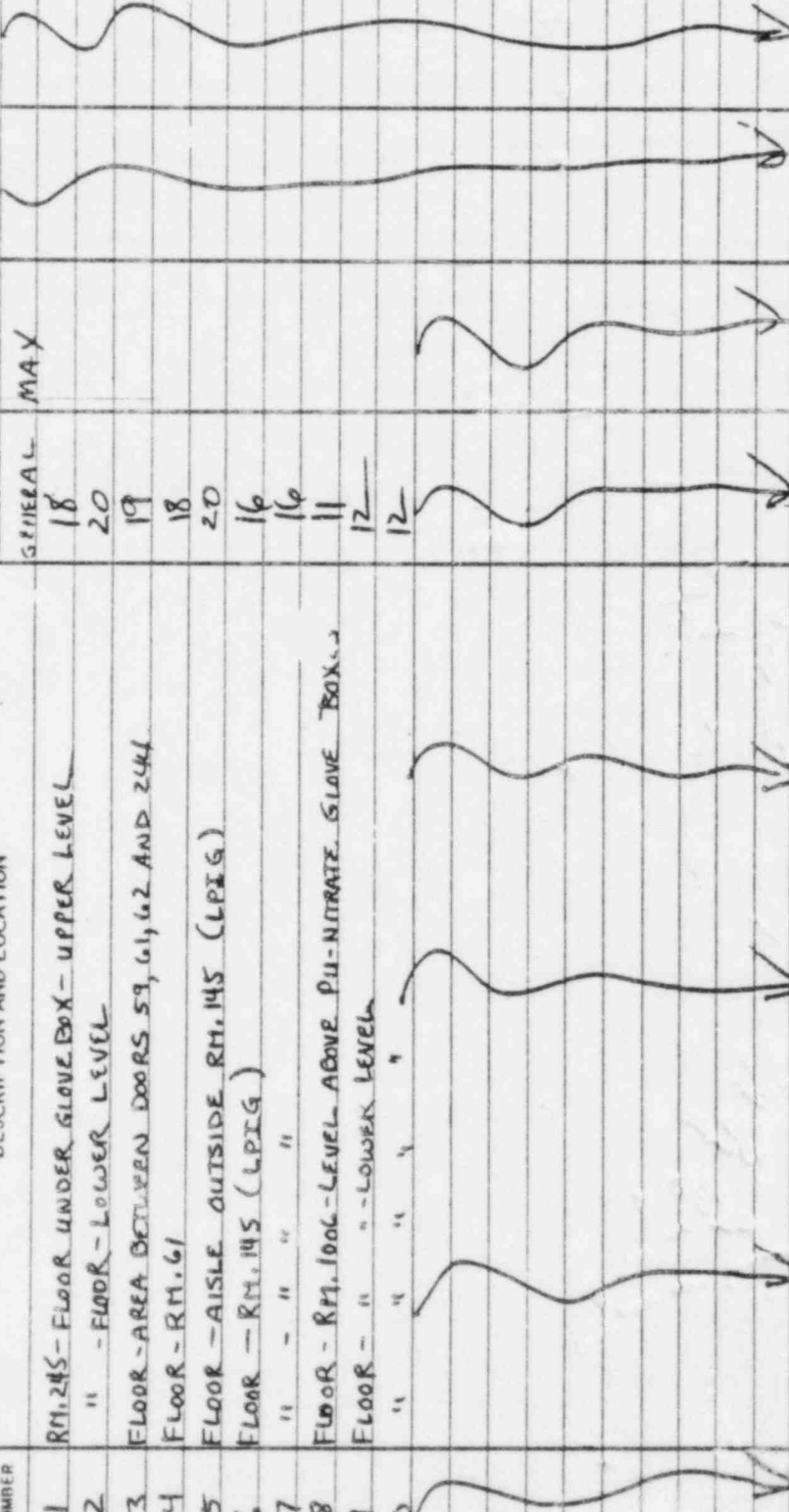
ESG-83-48

ANALYZED BY		PRELIMINARY		Rockwell International		LAB AREA		SUBMITTED BY	
DATE ANALYZED		DLS		Energy Systems Group		1ST FLOOR		DATE SAMPLED	
FILM NO.		HEALTH AND SAFETY ANALYSIS REPORT						BLDG. AND ROOM NO. SEPARATION	
100 NOT WRITE IN THIS BOX		DESCRIPTION AND LOCATION		RESULTS					
SAMPLE NUMBER				GENERAL	MAX	TRAP	OTHER		
1	wood	kitchen 82A-805		15	—	15	—		
2	wood	veget stove 82A-805		14	—	—	—		
3	wood	82A-801F		14	—	14	—		
4	wood	82A-801E		14	—	13	—		
5	sink			14	—	—	—		
6	floor			14	—	—	—		
7	stove counter			14	—	—	—		
8	wood	82A-801D		13	—	14	—		
9	wood	82A-801C		14	—	14	—		
10	counter			13	—	—	—		
11	floor			13	—	40	—		
12	sink			14	—	—	—		
13	wood	82A-803A		12	—	12	—		
14	box	82A-806A		12	—	12	—		
15	wood	82A-803B		12	—	12	—		
16	box	82A-807A		12	—	12	—		
17	floor			12	—	—	—		
18	floor			13	—	—	—		
19	floor			12	—	—	—		
20	floor			18	—	—	—		
COMMENTS:									
LUDLUM 12.5 # 381502									
TYPE OF SAMPLE: SOIL — WATER — AIR — SMAR — OTHER — DIRECT GAMMA — TYPE OF ANALYSIS: — — — — — RADIOLOGIC — — — — — OTHER — — — — —									
LEDGER ACCOUNT — — — — — CONTRACT OR ORDER — — — — — LOG BOOK NO. — — — — — WORK RELEASE — — — — — SUB-ACCOUNT — — — — — PAGE — — — — —									

FORM 732-A REV. 5-78

ANALYZED BY <u>Preliminary</u>		SUBMITTED BY <u>D.L. S</u>	
DATE ANALYZED <u>11-16-83</u>		DATE SAMPLED <u>11-16-83</u>	
FILM NO. <u>100 401 WHITE IN THIS BOX</u>		LAB AREA <u>LAB AREA</u>	
 HEALTH AND SAFETY ANALYSIS REPORT		LAB AREA EXHAUSTION LAB 152 2nd BLDG. AND ROOM NO. Separation	
DESCRIPTION AND LOCATION		RESULTS	
SAMPLE NUMBER		GENERAL	MAX
25	lower level	17	—
26	↓	16	—
27	upper level	16	—
28	↓	12	—
29		12	—
30		13	—
31		13	—
COMMENTS: <u>bedroom 12 5 # 381502</u>		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SHEAR _____ OTHER _____ TYPE OF ANALYSIS: <u>Direct Gamma</u> RADIOLOGICAL _____ BERYLLIUM _____ OTHER _____	
LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ SUB-ACCOUNT _____ WORK RELEASE _____			
LOG BOOK NO. _____ PAGE _____			


FORM 732-A REV. 6-78

ANALYZED BY _____ DATE ANALYZED _____ FILM NO. _____		 HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY <u>DL Sp</u> DATE SAMPLED <u>11-17-83</u> BLDG. AND ROOM NO. <u>SEPARATION</u>			
DESCRIPTION AND LOCATION		RESULTS					
SAMPLE NUMBER	GENERAL	MAX					
1	RM. 245 - FLOOR UNDER GLOVE BOX - UPPER LEVEL	18					TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SMEAR _____ OTHER <u>DIRECT SAMPLING</u> TYPE OF ANALYSIS: <u>MR/HOUR</u> RADIOLOGIC _____ BERYLLIUM _____ OTHER _____
2	" - FLOOR - LOWER LEVEL	20					
3	FLOOR - AREA BETWEEN DOORS 59, 61, 62 AND 244	19					
4	FLOOR - RM. 61	18					
5	FLOOR - AISLE OUTSIDE RM. 145 (LPIG)	20					
6	FLOOR - RM. 145 (LPIG)	16					
7	" - " - "	16					
8	FLOOR - RM. 1006 - LEVEL ABOVE PH-NITRATE GLOVE BOX	11					
9	FLOOR - " - " - LOWER LEVEL	12					
10	" - " - " - "	12					
COMMENTS: <u>LUDLUM 125 # 381502</u>							
LEDGER ACCOUNT _____ CONTRACT OR ORDER _____		SUB-ACCOUNT _____		WORK RELEASE _____			
LOG BOOK NO. _____		PAGE _____					

ANALYZED BY: _____		PRELIMINARY		Rockwell International		LAB AREA		SUBMITTED BY: <u>D.L. Spaul</u>	
DATE ANALYZED: _____		DLS		Energy Systems Group		2nd floor		DATE SAMPLED: <u>11-15-83</u>	
FILM NO. _____		(DO NOT WRITE IN THIS BOX)		HEALTH AND SAFETY ANALYSIS REPORT		P7		BLDG. AND ROOM NO.: <u>Separation</u>	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS							
		general	max	trap	other				
1	Floor grid	16	—	—	—				
2	Floor grid	16	—	—	—				
3	Floor grid	14	—	—	—				
4	Floor grid	13	—	—	—				
5	sink	10	—	10	—				
6	box	9	—	10	—				
7	hood	9	—	9	—				
8	box	9	—	10	—				
9	hood	10	—	10	—				
10	box	12	—	12	12				
11	box	10	—	10	—				
12	hood	10	—	10	—				
13	box	10	—	10	—				
14	sink	10	—	10	—				
15	box	12	—	12	—				
16	hood	12	—	12	—				
17	hood	11	—	10	—				
18	box	10	—	10	—				
19	Floor grid	11	—	—	—				
20	Floor grid	12	—	—	—				
COMMENTS:		TYPE OF SAMPLE: SOIL — WATER — AIR — SMEAR — OTHER <u>Direct gamma</u> TYPE OF ANALYSIS: <u>MR/M</u> RADIO-METRIC — BERYLLIUM — OTHER — (IDENTIFY)							
Ludlum 123 #381502 floor grids were used at 1m above center of grid hoods & glove boxes measured at face plate & trap		WORK RELEASE SUB-ACCOUNT _____ CONTRACT OR ORDER _____ LOG BOOK NO. _____ PAGE _____							

ANALYZED BY		SUBMITTED BY	
DATE ANALYZED		DATE SAMPLED	
FILM NO.		Bldg. and Room No.	
<p>PRELIMINARY</p> <p>Rockwell International Energy Systems Group</p> <p>LAB AREA</p> <p>2nd floor</p> <p>HEALTH AND SAFETY ANALYSIS REPORT p8</p>		<p>D.L. Sand</p> <p>11-15-83</p> <p>Seperations</p>	
DESCRIPTION AND LOCATION		RESULTS	
SAMPLE NUMBER		wax	trap
21	sink	12	12
22	box	14	14
23	floor	14	14
24	sink	10	9
25	sink	9	9
26	box	10	10
27	hood	10	10
28	box	12	12
29	box	12	12
30	hood	10	10
31	floor	12	12
32	box	12	12
33	hood	14	14
34	box	14	14
35	box	14	40
36	hood	10	10
37	floor	12	12
38	box	12	12
39	hood	12	12
40	box	13	14
<p>COMMENTS: Ludlum 12 S # 381502</p> <p>floor grids measured at 1m above center of gap</p> <p>hoods & glove boxes & sinks measured at face plate & traps</p>		<p>TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____</p> <p>SMEAR _____ OTHER _____</p> <p>TYPE OF ANALYSIS: <u>Direct gamma</u></p> <p>RADIOLOGIC _____ BERYLLIUM _____</p> <p>OTHER _____</p>	
<p>LEDGER ACCOUNT _____</p> <p>CONTRACT OR ORDER _____</p> <p>SUB-ACCOUNT _____</p> <p>WORK RELEASE _____</p>		<p>LOG BOOK NO. _____</p> <p>PAGE _____</p>	

FORM 732-A (REV. 8-78)


ANALYZED BY _____		SUBMITTED BY <u>D.L. Smith</u>		
DATE ANALYZED _____		DATE SAMPLED <u>11-15-83</u>		
FILM NO. _____		BLDG. AND ROOM NO. <u>Specimen</u>		
 Rockwell International Energy Systems Group		LAB AREA <u>2nd floor</u>		
PREPARED BY <u>DS</u>		HEALTH AND SAFETY ANALYSIS REPORT <u>PA</u>		
(DO NOT WRITE IN THIS BOX)				
SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS		
41	sink	general	trap	other
42	box	12	12	12
43	hood	10	10	10
44	box	12	12	10
45	floor	10	10	10
46	box	10	10	10
47	hood	10	10	10
48	box	10	10	10
49	sink	10	10	10
50	box	12	10	10
51	hood	9	10	10
52	box	10	10	10
53	floor	11	10	10
54	hood	10	10	10
55	box	10	10	10
56	sink	12	10	10
57	box	10	10	10
58	hood	10	10	10
59	floor	12	10	10
60	box	10	10	10
COMMENTS: <u>Ludlum 125 #381502</u>		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SMEAR _____ OTHER _____ <u>Direct gamma</u> TYPE OF ANALYSIS: <u>uR/hour</u> RADIOLOGIC _____ BERYLLIUM _____ OTHER _____		
LEDGER ACCOUNT _____		SUB-ACCOUNT _____ WORK RELEASE _____		
LOG BOOK NO. _____		PAGE _____		


ANALYZED BY		PRELIMINARY		LAB AREA		SUBMITTED BY	
DATE ANALYZED		DLS		2nd floor		D.L. Spauld	
FILM NO.		100-461-1177 (IN THIS BOX)		HEALTH AND SAFETY ANALYSIS REPORT P10		DATE SAMPLED 11-15-83	
						BLDG. AND ROOM NO. Separation	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	general	max	trap	other	RESULTS	
601	wood	10	—	60	—		
602	box	10	—	10	—		
603	sluc	12	—	10	—		
604	box	10	—	11	—		
605	wood	9	—	8	—		
606	box	9	—	—	—		
607	floor	12	—	—	—		
608	box	110	300	12	—		
609	wood	12	—	12	—		
70	box	40	80	12-23	—		
71	box	10	10	12-23	—		
72	wood box	180	600	12	—		
73	wood	10	—	12	—		
74	box	280	800	—	—		
75	floor	50	—	—	—		
76	floor	10	—	—	—		
77	floor	11	—	—	—		
78	floor	11	—	—	—		
79	floor	12	—	—	—		
80	floor	13	—	—	—		
COMMENTS: Ludlum 125 # 381502							
TYPE OF SAMPLE: SOIL		WATER AIR					
SMEAR		OTHER Direct gamma					
TYPE OF ANALYSIS:		NR/hour					
RADIOMETRIC		BERYLLIUM					
OTHER		IDENTITY					
LEDGER ACCOUNT		CONTRACT OR ORDER		SUB-ACCOUNT		WORK RELEASE	
LOG BOOK NO.		PAGE					

FORM 732-A REV. 5-78

ANALYZED BY _____		SUBMITTED BY <u>D.L. Scott</u>				
DATE ANALYZED _____		DATE SAMPLED <u>11-15-83</u>				
FILM NO. _____		BLDG. AND ROOM NO. <u>Separation</u>				
<p>PRELIMINARY</p> <p>Rockwell International Energy Systems Group</p> <p>LAB AREA <u>2nd floor</u></p> <p>HEALTH AND SAFETY ANALYSIS REPORT P11</p>		<p>RESULTS</p> <table border="1"> <thead> <tr> <th>max</th> <th>trap</th> <th>other</th> </tr> </thead> </table>		max	trap	other
max	trap	other				
SAMPLE NUMBER	DESCRIPTION AND LOCATION					
81	NOTE: SEE PAGES 1-5 OF LAB AREA/2nd floor FOR DETAILED DESCRIPTION OF SURVEY POINTS	general 12				
82		10				
83		18				
84	(surrounded on 3 sides by concrete walls)	18				
<p>81 floor</p> <p>82 floor</p> <p>83 floor</p> <p>84 floor</p>						
<p>COMMENTS: <u>Lithium 12S #384502</u></p>		<p>TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____</p> <p>SMEAR _____ OTHER _____</p> <p>TYPE OF ANALYSIS: <u>direct gamma</u></p> <p>RADIOMETRIC _____ BERYLLIUM _____</p> <p>OTHER _____</p>				
<p>LEDGER ACCOUNT _____ CONTRACT _____ SUB-ACCOUNT _____ WORK RELEASE _____</p> <p>LOG BOOK NO. _____ PAGE _____</p>						

ESG-83-48

 Rockwell International Energy Systems Group		HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY <u>D.L.S.</u> DATE SAMPLED <u>11-17-83</u> BLDG. AND ROOM NO. <u>SEPARATION</u>	
ANALYZED BY _____ DATE ANALYZED _____ FILM NO. _____ <small>(DO NOT WRITE IN THIS BOX)</small>					
SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS			
		GENERAL	MAX		
1	F.L. 265	24			
2		21			
3		20			
4		15			
5		24			
6		14			
7		18			
8		18			
9		16			
10		14			
11		10			
12		22			
COMMENTS: <u>LUDLUM 125 #381502</u>		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SHEAR _____ OTHER <u>DIRECT GAMMA</u> <small>(IDENTITY)</small> TYPE OF ANALYSIS: <u>HR/HOUR</u> RADIO-METRIC _____ BERYLLIUM _____ OTHER _____ <small>(IDENTITY)</small>			
LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ SUB-ACCOUNT _____ WORK RELEASE _____ LOG BOOK NO. _____ PAGE _____					

 Flockwell International Energy Systems Group		HEALTH AND SAFETY ANALYSIS REPORT		ANALYZED BY _____ DATE ANALYZED _____ FILM NO. _____ (DO NOT WRITE IN THIS BOX)		SUBMITTED BY <u>DLS-1</u> DATE SAMPLED <u>11-17-83</u> BLDG. AND ROOM NO. <u>FUEL SEPARATIONS</u>	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS					
		GENERAL	MAX				
1	FUEL STORAGE (ALL LEVELS EXCEPT STORAGE POOLS)	18					
2		18					
3		16					
4		19					
5		20					
6		31					
7		16					
8		18					
9		22					
10		30					
11		18					
12		24					
13		17					
14		14					
15		15					
16		16					
17		18					
18		22					
19		24					
20		24					
COMMENTS: <u>LUDLUM 125 #381501</u>							
LEDGER ACCOUNT _____		CONTRACT OR ORDER _____		SUB-ACCOUNT _____			
LOG BOOK NO. _____		PAGE _____		WORK RELEASE _____			
TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SWEAR _____ OTHER <u>DIRECT GANMA</u> TYPE OF ANALYSIS: <u>MR/HOUR</u> RADIOLOGIC _____ BERYLLIUM _____ OTHER _____							

ANALYZED BY		Rockwell International Energy Systems Group		TPIG		SUBMITTED BY	
DATE ANALYZED		HEALTH AND SAFETY ANALYSIS REPORT				DATE SAMPLED	
FILM NO.		DESCRIPTION AND LOCATION				BLDG. AND ROOM NO.	
SAMPLE NUMBER				RESULTS			
1	TPIG	EL 305-310	General Max	15			
2				12			
1		EL 295-300		13			
2				12			
1		EL 275-290		18			
2				22			
1		EL 290 (740)		18			
2				18			
COMMENTS: FIRST 3 LEVELS - LUDLUM 125 #381501							
LAST LEVEL - LUDLUM 125 381507							
LEDGER ACCOUNT		CONTRACT OR ORDER		SUB-ACCOUNT		WORK RELEASE	
LOG BOOK NO.		PAGE					

TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____
 SHEAR _____ OTHER _____
 TYPE OF ANALYSIS:
 RADIO-METRIC _____ BERYLLIUM _____
 OTHER _____

ANALYZED BY _____		Rockwell International Energy Systems Group		315-A ABOVE		SUBMITTED BY <u>D. L. S.</u>	
DATE ANALYZED _____		HEALTH AND SAFETY ANALYSIS REPORT		DATE SAMPLED 11-17-83		BLDG. AND ROOM NO. SEPARATIONS	
FILM NO. _____		DESCRIPTION AND LOCATION		EL. 315' ABOVE		RESULTS	
SAMPLE NUMBER				GENERAL	MAX		
1				18			
2				16			
3				16			
4				14			
5				17			
6				16			
7				18			
8				22			
9				20			
10				16			
11				16			
12				20			
13				19			
14				24			
15				16			
16				13			
17				14			
18				14			
19				16			
20				16			
COMMENTS: LUDLUM 12S #381501				TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____			
				SMEAR _____ OTHER DIRECT GAMMA _____			
				TYPE OF ANALYSIS: <u>HR/HR</u>			
				RADIO-METRIC _____ BERYLLIUM _____			
				OTHER _____			
LEDGER ACCOUNT _____		CONTRACT OR ORDER _____		SUB-ACCOUNT _____		WORK RELEASE _____	
LOG BOOK NO. _____		PAGE _____					

FORM 732-A REV. 6-78

ANALYZED BY _____		Rockwell International Energy Systems Group		315' ABOVE SUBMITTED BY <i>D. L. Spill</i>	
DATE ANALYZED _____		HEALTH AND SAFETY ANALYSIS REPORT		DATE SAMPLED 11-17-83	
FILM NO. _____				BLDG. AND ROOM NO. SEPARATIONS	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	GENERAL	MAX	RESULTS	
21	EL. 315' ABOVE	16			
22		14			
23		13			
24		11			
25		12			
	CATWALK ABOVE EL. 315	5			
1		5			
2		12			
3		12			
4					
COMMENTS: LUDLUM 125 #381501					
LEDGER ACCOUNT _____		SUB-ACCOUNT _____		WORK RELEASE _____	
LOG BOOK NO. _____		PAGE _____		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____	
				SMEAR _____ OTHER DIRECT GAMMA (IDENTIFY) _____	
				TYPE OF ANALYSIS: <i>RR/HOUR</i>	
				RADIOMETRIC _____ BERYLLIUM _____	
				OTHER (IDENTIFY) _____	

FROM YES A NEW A YES

GENERAL AREA AND HOT SPOTS DIRECT READINGS
NOVEMBER 1983

ESG-83-48

ANALYZED BY		PRECIM W/171		Rockwell International Energy Systems Group		LAB AREA		SUBMITTED BY	
DATE ANALYZED		DS		HEALTH AND SAFETY ANALYSIS REPORT		1st floor		DATE SAMPLED 11-14-83/11-15-83	
FILM NO.		100-402-10117 IN THIS BOTT		DESCRIPTION AND LOCATION		ALPHA		BETA	
SAMPLE NUMBER		100-402-10117 IN THIS BOTT		DESCRIPTION AND LOCATION		counts		counts	
1	Room # 42	Radiochemistry Lab							
2	1st left hood					69	102.22	224	-27.57
3	2nd left hood					10	10.84	237	91.90
4	center hood					8	7.74	219	-73.52
5	right hood					9	9.29	214	-119.47
6	right bench (near sink)					418	698.22	408	16603.33
7	floor (hot spot) (general 32/321)					34	523.49	6527	57897.00
8	Room # 43	Cold Lab				32	44.92	321	865.86
9	left bench					177	269.49	190	-340.03
10	left hood					43	61.95	206	-192.99
11	right hood					30	41.82	235	73.53
12	right bench					45	65.05	226	-9.19
13	floor (hot spot) (general 41/276)					1161	1793.51	3757	32440.70
14	Room # 44	Standards Lab				41	58.85	236	2850.31
15	left bench near sink					337	619.57	575	3379.20
16	left hood					61	116.55	2407	172.80
17	right near glove box					90	131.13	235	87.06
18	right hood					5912	1280.68	892	6422.40
19	right front					1384	2081.44	348	906.25
20	floor					6	4.09	278	528.00

NOTE: couldn't get dial plate assembly inside glove box ports DS

ANALYZED BY		SUBMITTED BY	
DATE ANALYZED		DATE SAMPLED	
FILM NO.		BI DG. AND ROOM NO.	
		LAB <u>QAQA</u> 1st floor	
HEALTH AND SAFETY ANALYSIS REPORT <i>see also attached</i>		RESULTS ALPHA BETA	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	counts	counts dpm/1000 counts dpm/1000 counts
18	Room # 35	1	6.13
19	Room # 36	6	4.09
20	Hallway	20	32.72
21	between doors 32 + 33	7	6.13
22	inside door 32	6	4.09
23	" " "	8	8.18
24	between doors	6	4.09
COMMENTS: <u>INTER</u> <u>BRG</u> <u>EFF</u> <u>660</u> <u>BRG</u> <u>EFF</u> <u>660</u> <u>BRG</u> <u>EFF</u> <u>660</u>		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SMEAR _____ OTHER <u>5 min. counts</u> TYPE OF ANALYSIS: _____ RADIO-METRIC _____ BERYLLIUM _____ OTHER _____	
LEDGER ACCOUNT _____		WORK RELEASE _____	
LOG BOOK NO. _____		PAGE _____	

ANALYZED BY		Rockwell International		CNC-m LAB AREA		SUBMITTED BY	
DATE ANALYZED		Energy Systems Group		ENGINEERING LAB		DATE SAMPLED	
FILM NO.		HEALTH AND SAFETY ANALYSIS REPORT		3rd		11-16-83	
LOG NOT WRITE IN THIS BOX		DESCRIPTION AND LOCATION		RESULTS		SEPARATION	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	counts	APMA	APMA	counts	APMA	counts
25	1 m ² floor grids	9	upper level "painted"	18.02	359	1282.56	
26		4	"painted"	6.76	524	2935.86	
27		10	"painted"	20.28	422	1913.82	
28		35	upper level	76.60	292	611.22	
29		39		85.61	327	961.92	
30		47		103.63	2460	22,334.58	
31	NOTE: yellow steam on floor in grid	28		60.83	993	7635.24	
<p>NOTE: has been painted to fix contamination</p> <p>208 Kdpm</p> <p>100cm²</p> <p>* HOT SPOT ON DRAW</p> <p>IN CENTER OF FLOOR</p> <p>CONTAMINATION HAS BEEN PAINTED OVER</p>							
COMMENT:	2	0.20	7.04	6.0	1.0	46.20	10.02
LEDGER ACCOUNT							
LOG BOOK NO.							
TYPE OF SAMPLE: SOIL		WATER		AIR		5 min counts	
SMEAR		OTHER		OTHER		OTHER	
TYPE OF ANALYSIS:		RADIOMETRIC		GERYLLIN		OTHER	
WORK RELEASE		SUB ACCOUNT		CONTRACT OR ORDER		PAGE	

ANALYZED BY		PRELIMINARY		Rockwell International Energy Systems Group		LAB AREA		SUBMITTED BY	
DATE ANALYZED		TS		HEALTH AND SAFETY ANALYSIS REPORT		ALPHA LABS		DATE SAMPLED	
FILM NO.		(DO NOT WRITE IN THIS BOX)		PI		PI		BLDG. AND ROOM NO.	
FILM NO.		TS		PI		PI		BLDG. AND ROOM NO.	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA counts	ALPHA dpm/100sqft	BETA counts	BETA dpm/100sqft				
1	floor (1 m ² grids)	52	114.89	30	791.58				
2	floor	24578	173.47	245	140.28				
3	floor	130	290.61	269	380.76				
4	floor	52	114.89	289	581.16				
5	hood - (2 1m ² working area)	637	1419.26	12348	821.64				
6	floor (1 m ² grids)	67	148.68	482	2515.02				
7	floor	32	69.84	298	671.34				
8	1st platform	36	78.85	902	711.42				
<p>NOTE: ① X ACTIVITY POSSIBLY DUE TO TRU ACTIVITY</p> <p>② ADDITIONAL SMEARS TAKEN ON EACH OF (5) FIVE OVERHEAD PLATFORMS (FIVE (5) SMEARS ON EACH LEVEL</p> <p>③ THREE (3) SEALED GLOVE BOXES EXIST IN THIS AREA.</p>									
COMMENTS:									
all									
2		0.20	7.04	1.6	46.20	10.02	5.0		
LEADER ACCOUNT		CONTRACT OR ORDER		SUB-ACCOUNT		WORK RELEASE			
LOG BOOK NO.		PAGE							

ANALYZED BY: <u>PRELIMINARY</u> DATE ANALYZED: <u>11-16-83</u> FILM NO.: <u>100-401</u>		SUBMITTED BY: <u>D.L. Spaul</u> DATE SAMPLED: <u>11-16-83</u> BLDG. AND ROOM NO.: <u>Separation</u>	
HEALTH AND SAFETY ANALYSIS REPORT Rockwell International Energy Systems Group		SAMPLING ROOM NEAR: HP OFFICE	
SAMPLE MEMBER	DESCRIPTION AND LOCATION	RESULTS	
		ALPHA	BETA
1	1 m ² floor grids (Room 245) under glue box	counts 10	counts 14.74
2	lower level	counts 13	counts 21.06
COMMENTS: <u>all</u>		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SMEAR _____ OTHER _____ 5 min counts _____ TYPE OF ANALYSIS: <u>general floor area</u> RADIO-METRIC _____ BERYLLIUM _____ OTHER _____	
LOG BOOK NO. _____		WORK RELEASE _____	

ANALYZED BY		SUBMITTED BY	
DATE ANALYZED		DATE SAMPLED	
FILM NO.		BI DG. AND ROOM NO.	
<p>PRELIMINARY</p> <p>Rockwell International</p> <p>Health and Safety Analysis Report</p>		<p>ENTRANCE AREA</p> <p>11-16-83</p> <p>Separations</p>	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS	TYPE OF SAMPLE: SOIL WATER AIR
3	1st floor goods	18.95	OTHER 5 with counts
4	Room partition doors 58 61 62 + 244	6.32	TYPE OF ANALYSIS: Reverse
	Room 61	1231.92	RADIOMETRIC BERYLLIUM
		248	OTHER
		177.48	IDENTIFY
<p>COMMENTS:</p> <p>all</p>		<p>TYPE OF ANALYSIS: Reverse</p> <p>RADIOMETRIC BERYLLIUM</p> <p>OTHER</p>	
<p>LEDGER ACCOUNT</p> <p>CONTRACT OR ORDER</p> <p>LOG BOOK NO.</p>		<p>WORK RELEASE</p> <p>SUB-ACCOUNT</p> <p>PAGE</p>	

ESG-83-48

ANALYZED BY		Rockwell International		CAB AREA		SUBMITTED BY	
DATE ANALYZED		Energy Systems Group		2nd Room		DATE SAMPLED	
FILM NO.		HEALTH AND SAFETY ANALYSIS REPORT		P1		BLDG. AND ROOM NO.	
LOG NOT WRITE IN THIS BOX		DESCRIPTION AND LOCATION		RESULTS		SPECIALS	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA- COUNTS	BETA- COUNTS	SPM/100CM	SPM/100CM		
1	Room #83 Counting Room	11	14.31	257	230.40		
2	Room #85 Miss Spectroscopy	13	18.40	231	19.20		
3	Room #88 Spectroscopy Prep.	4	6	255	211.20		
4	near sink	4	6	251	172.80		
5	front left glove box (#6)	7	6.13	236	28.80		
6	left hood	6	4.52	185	275.50		
7	rear left glove box (#6)	2	-4.01	181	-304.50 PP		
8	rear central glove box (#6)	8	7.54	187	-261.00		
9	rear central glove box (#6)	3	-2.01	187	-432.48		
10	rear central glove box (#6)	7	6.03	187	420.50		
11	rear right glove box (#6)	12	13.58	189	-246.50		
12	right hood	17	26.58	193	-384.00		
13	front right glove box (#6)	9	9.04	177	-333.50		
14	Room #80 Absorption EX-Ram	6	4.09	203	-288.00		
15	near sink	4	1.51	212	-79.75		
16	central glove box (#6)	5	2.04	211	-211.20		
COMMENTS:		TYPE OF SAMPLE: SOIL WATER AIR					
2 0.8 6.39 1.6 4 46.60 9.60 5.0		SHEAR OTHER 5 MIN COUNTS					
6 0.16 4.71 1 6 44.60 7.25		TYPE OF ANALYSIS:					
		RADIOMETRIC					
		OTHER					
LEDGER ACCOUNT		WORK RELEASE					
CONTRACT OR ORDER		SUB-ACCOUNT					
LOG BOOK NO.		PAGE					

FORM 732-A REV. 6-78

ANALYZED BY		LAB AREA		SUBMITTED BY	
DATE ANALYZED		2nd floor		11-15-83	
FILM NO.		HEALTH AND SAFETY ANALYSIS REPORT #3		DATE SAMPLED	
105-40310-1011		Rockwell International Energy Systems Group		11-15-83	
		PRECEDENCE		IN D.C. AND ROOM NO.	
		D.S.		Squadrons	
		D.S.		Squadrons	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA counts	BETA counts	SPM/100CM ²	SPM/100CM ²
31	Room #95 General Chemistry (continued)	4	233	0.00	0.00
32	Room #96 Sample Receiving	5	210	-94.25	-94.25
33	left glove box (#6)	8	217	-153.60	-153.60
34	right van glove box (double)	12	227	43.50	43.50
35	right front glove box (single)	567	274	369.75	369.75
36	right hand glove box	3	201	-307.20	-307.20
37	floor (hot spot 23591C/5min = 16AK dpm/100cm ²)	14	299	633.60	633.60
38	Room #67 Radiochemistry I	7	329	768.50	768.50
39	left front glove box	2	220	-124.80	-124.80
40	left rear glove box (#6)	9	208	-108.75	-108.75
41	near sink	3	211	-211.20	-211.20
42	right van glove box (#6)	22	208	-108.75	-108.75
43	right hand glove box	34	234	9.60	9.60
44	right front glove box (#6)	2	190	-239.25	-239.25
45	floor	9	261	268.80	268.80
46	Room 68 Radiochemistry II	—	—	—	—
47	left front glove box (SEAL)	—	—	—	—
48	right front glove box (#6)	—	—	—	—
49	left front glove box (#6)	—	—	—	—
50	right front glove box (#6)	—	—	—	—
51	left front glove box (#6)	—	—	—	—
52	right front glove box (#6)	—	—	—	—
53	left front glove box (#6)	—	—	—	—
54	right front glove box (#6)	—	—	—	—
55	left front glove box (#6)	—	—	—	—
56	right front glove box (#6)	—	—	—	—
57	left front glove box (#6)	—	—	—	—
58	right front glove box (#6)	—	—	—	—
59	left front glove box (#6)	—	—	—	—
60	right front glove box (#6)	—	—	—	—
61	left front glove box (#6)	—	—	—	—
62	right front glove box (#6)	—	—	—	—
63	left front glove box (#6)	—	—	—	—
64	right front glove box (#6)	—	—	—	—
65	left front glove box (#6)	—	—	—	—
66	right front glove box (#6)	—	—	—	—
67	left front glove box (#6)	—	—	—	—
68	right front glove box (#6)	—	—	—	—
69	left front glove box (#6)	—	—	—	—
70	right front glove box (#6)	—	—	—	—
71	left front glove box (#6)	—	—	—	—
72	right front glove box (#6)	—	—	—	—
73	left front glove box (#6)	—	—	—	—
74	right front glove box (#6)	—	—	—	—
75	left front glove box (#6)	—	—	—	—
76	right front glove box (#6)	—	—	—	—
77	left front glove box (#6)	—	—	—	—
78	right front glove box (#6)	—	—	—	—
79	left front glove box (#6)	—	—	—	—
80	right front glove box (#6)	—	—	—	—
81	left front glove box (#6)	—	—	—	—
82	right front glove box (#6)	—	—	—	—
83	left front glove box (#6)	—	—	—	—
84	right front glove box (#6)	—	—	—	—
85	left front glove box (#6)	—	—	—	—
86	right front glove box (#6)	—	—	—	—
87	left front glove box (#6)	—	—	—	—
88	right front glove box (#6)	—	—	—	—
89	left front glove box (#6)	—	—	—	—
90	right front glove box (#6)	—	—	—	—
91	left front glove box (#6)	—	—	—	—
92	right front glove box (#6)	—	—	—	—
93	left front glove box (#6)	—	—	—	—
94	right front glove box (#6)	—	—	—	—
95	left front glove box (#6)	—	—	—	—
96	right front glove box (#6)	—	—	—	—
97	left front glove box (#6)	—	—	—	—
98	right front glove box (#6)	—	—	—	—
99	left front glove box (#6)	—	—	—	—
100	right front glove box (#6)	—	—	—	—

ESG-83-48

ANALYZED BY _____		PRELIMINARY		Rockwell International Energy Systems Group		LABS AREA 2nd floor		SUBMITTED BY <u>D.L. S.</u>	
DATE ANALYZED _____		DS		HEALTH AND SAFETY ANALYSIS REPORT P4		DATE SAMPLED <u>11-15-83</u>		BLDG. AND ROOM NO. <u>Separation</u>	
FILM NO. _____		DO NOT WRITE IN THIS BOX							
SAMPLE NUMBER	DESCRIPTION AND LOCATION				ALPHA counts	ALPHA dpm/100cm ²	BETA counts	BETA dpm/100cm ²	
—	Room # 68 Radiochemistry II (continued)				—	—	—	—	
47	left hood 82A-803 E				7	6.13	179	-518.40	
48	left rear glove box (SEALED) 82A-804 C				—	—	—	—	
49	near sink				14	20.15	210	-220.80	
50	right rear glove box (SEALED) 82A-804 E				—	—	—	—	
51	right hood 82A-803 F				114	224.93	291	556.80	
52	right front glove box (SEALED) 82A-804 F				—	—	—	—	
53	floor				1521	3101.96	433	1920.00	
—	Room # 69 Spectrophotometry & Chromatography				—	—	—	—	
54	left hood 82A-803 G				1321	2693.00	221	-115.20	
55	left glove box (SEALED) 82A-804 G				—	—	—	—	
56	near sink				104	204.48	508	2640.00	
57	right glove box (SEALED) 82A-804 H				—	—	—	—	
58	right hood 82A-803 H				3	-2.04	186	-451.20	
59	floor				6	4.09	237	38.40	
—	Room # 70 Uranium Product				—	—	—	—	
60	left front glove box (#6) 82A-804 J				21	27.13	175	-348.00	
61	left hood 82A-802 A				86	167.67	204	-218.40	
62	left rear glove box (#6) 82A-804 I				833	1250.98	287	464.00	
63	near sink				259	521.42	362	1238.40	
COMMENTS: <u>INSIDE</u> <u>BK</u> <u>EFF</u> <u>GEO</u> <u>INSIDE</u> <u>BK</u> <u>EFF</u> <u>GEO</u>					TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____				
<u>2</u> <u>0.8</u> <u>6.39</u> <u>1.6</u> <u>4</u> <u>46.60</u> <u>9.60</u> <u>5.0</u>					SMEAR _____ OTHER <u>5 min count</u>				
<u>6</u> <u>0.6</u> <u>4.71</u> <u>↓</u> <u>6</u> <u>44.60</u> <u>7.25</u> <u>↓</u>					TYPE OF ANALYSIS: _____				
LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ SUB-ACCOUNT _____ WORK RELEASE _____					RADIOMETRIC _____ BERYLLIUM _____				
LOG BOOK NO. _____ PAGE _____					OTHER _____ (IDENTIFY)				

ANALYZED BY		PRELIMINARY		Rockwell International Energy Systems Group		LAB AREA		SUBMITTED BY	
DATE ANALYZED		D.S.		HEALTH AND SAFETY ANALYSIS REPORT P5		2nd floor		DATE SAMPLED 11-15-83	
FILM NO.		LOG NOT WHITE IN THIS BOX		DESCRIPTION AND LOCATION		ALPHA		BETA	
SAMPLE NUMBER	ROOM #	DESCRIPTION AND LOCATION	CONTAINER	counts	dpm/100cm	counts	dpm/100cm	counts	dpm/100cm
64	Room #70	Vanadium Product (continued)	82A-807C	62	88.92	219	-29.00		
65	right rear glovebox		82A-802B	17	26.58	203	-288.00		
66	right front glovebox		82A-804K	112	164.28	173	-362.50		
67	floor			6	4.09	227	-57.60		
68	Room #71	Plutonium Product	82A-804L						
69	left glove box (SEALED)		82A-803I	649	1318.90	365	1267.20		
70	left near glovebox (SEALED)		82A-807F						
71	near sink (bottle in sink!)		82A-804M	171	341.48	242	86.40		
72	right rear glovebox (SEALED)		82A-803J	667	1355.70	313	768.00		
73	right hood		82A-804N						
74	right front glovebox (SEALED)			50	94.00	276	412.80		
75	Room #72	Analytical Records							
76	Room #71	Office		6	4.09	281	460.80		
77	Room #75	Office		12	16.36	298	624.00		
78	Room #75	Office		3	-2.04	263	288.00		
COMMENTS	Room #70	Room #71	Room #72	Room #75	Room #75	Room #75	Room #75	Room #75	Room #75
AS noted	Room #70	Room #71	Room #72	Room #75	Room #75	Room #75	Room #75	Room #75	Room #75
LEDGER ACCOUNT	CONTRACT OR ORDER	SUB-ACCOUNT	WORK RELEASE	TYPE OF ANALYSIS: RADIOMETRIC BERYLLIUM					
LOG BOOK NO.	PAGE	OTHER							

ANALYZED BY		LAB AREA		SUBMITTED BY	
DATE ANALYZED		2nd floor		D.L. Sogard	
FILM NO.		HEALTH AND SAFETY ANALYSIS REPORT PG 60		DATE SAMPLED 11-15-83	
DO NOT WRITE IN THIS BOX		Bldg. and Room No.		Separation	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS			
		ALPHA counts	BPM/1000 cm ²	BETA counts	dpm/1000 cm ²
79	Room # 76 Office	4	-8.26	183	-367.04
80	floor	10	4.13	219	-9.92
81	hallway	15	14.45	252	317.44
82	floor	58	103.20	208	-119.84
83		8	0.00	226	59.82
84		11	6.19	242	218.27
COMMENTS: 79-84 3 1.4 6.45 1.0 5 4.0 9.92 5.0 EFF GEO EFF GEO EFF GEO BLY BLY BLY BLY BLY BLY SUB-ACCOUNT CONTRACT GR ORDER WORK RELEASE		TYPE OF SAMPLE: SOIL WATER AIR SMEAR OTHER 5 min counts TYPE OF ANALYSIS: RADIO-METRIC BERYLLIUM OTHER IDENTIFY			
LEDGER ACCOUNT LOG BOOK NO. PAGE					

ANALYZED BY		Rockwell International		LPIG		SUBMITTED BY	
DATE ANALYZED		Energy Systems Group		HEALTH AND SAFETY ANALYSIS REPORT		DATE SAMPLED	
FILM NO.		DESCRIPTION AND LOCATION		ALPHA		BETA	
LOG 4017 WHITE IN THIS BOX				COUNTS		COUNTS	
5	1 m ² floor grids (gridle outside RM-145)			5	4.5	301	730.80
6	(Room 145 LPIG area)			5	4.2	181	-522.00
7	" " " "			11	16.84	270	467.16
8	" " " "						
9	" " " "						
10	" " " "						
11	" " " "						
12	" " " "						
13	" " " "						
14	" " " "						
15	" " " "						
16	" " " "						
17	" " " "						
18	" " " "						
19	" " " "						
20	" " " "						
21	" " " "						
22	" " " "						
23	" " " "						
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25	" " " "						
26	" " " "						
27	" " " "						
28	" " " "						
29	" " " "						
30	" " " "						
31	" " " "						
32	" " " "						
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ANALYZED BY

DATE ANALYZED

FILM NO. _____

Dec 1, 1914



Rockwell International

Energy Systems Group

HEALTH AND SAFETY ANALYSIS REPORT

SUBMITTED BY

DATE SAMPLED

BI DG. AND ROOM NO.

D.L. Scott

11-16-83

BI DG. AND ROOM NO. Separation

[illegible]

ANALYZED BY		PRELIMINARY		Rockwell International Energy Systems Group		EL 260		SUBMITTED BY		D.L. Spelt	
DATE ANALYZED		TXS		HEALTH AND SAFETY ANALYSIS REPORT		EL 260		DATE SAMPLED		11-15-83	
FILM NO.		DO NOT WRITE IN THIS ROW		HEALTH AND SAFETY ANALYSIS REPORT		EL 260		IN ENG. AND ROOM NO.		Separation room	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA	BETA	TYPE OF SAMPLE: SOIL	TYPE OF ANALYSIS	TYPE OF ANALYSIS	TYPE OF ANALYSIS	TYPE OF ANALYSIS	TYPE OF ANALYSIS	TYPE OF ANALYSIS	TYPE OF ANALYSIS
1	1 m ² floor grid	19	245	counts	19.43	counts	245	counts	19.43	counts	245
2		15	246		14.45		246		14.45		246
3		35	413		47.69		413		47.69		413
4		15	424		14.45		424		14.45		424
5		8	468		8.20		468		8.20		468
6		25	304		35.09		304		35.09		304
7		31	393		40.63		393		40.63		393
8		12	347		8.20		347		8.20		347
9		13	612		8.83		612		8.83		612
10		17	320		18.58		320		18.58		320
11		24	568		416.87		568		416.87		568
12		10	348		4.13		348		4.13		348
13		28	456		482.23		456		482.23		456
14		406	1552		945.31		1552		945.31		1552
15											
16											
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ANALYZED BY		Rockwell International Energy Systems Group		SUBMITTED BY	
DATE ANALYZED		HEALTH AND SAFETY ANALYSIS REPORT		DATE SAMPLED	
FILM NO.		DESCRIPTION AND LOCATION		BLDG. AND ROOM NO.	
1 m ² floor grids		ALPHA		RESULTS	
SAMPLE NUMBER	counts	dm/hrm ²	dm/hrm ²	dm/hrm ²	dm/hrm ²
1	6	-3.53	304	904.8	
2	7	-2.06	268	476.16	
3	16	14.13	233	441.12	
4	15	14.45	149	-704.32	
5	27	33.56	335	1102.80	
6	16	16.51	182	-376.96	
7	12	7.07	240	321.65	
8	36	57.79	295	744.00	
9	14	10.60	160	-413.55	
10	8	φ	174	-456.32	
11	11	5.30	121	-771.96	
12	6	-4.13	261	406.72	
COMMENTS:		TYPE OF SAMPLE: SOIL		WATER	
odd		SMEAR		OTHER	
even		TYPE OF ANALYSIS		general floor area	
LEDGER ACCOUNT		RADIOLOGIC		BERYLLIUM	
CONTRACT OR ORDER		OTHER			
SUB ACCOUNT		WORK RELEASE			
LOG BOOK NO.		PAGE			

ESG-83-48

ANALYZED BY		Rockwell International Energy Systems Group		SUBMITTED BY	
DATE ANALYZED		HEALTH AND SAFETY ANALYSIS REPORT		DATE SAMPLED	
FILM NO.		DESCRIPTION AND LOCATION		BUILDING AND ROOM NO.	
SAMPLE NUMBER	1 m ² floor grids	alpha counts	alpha counts	alpha counts	alpha counts
1		11.62	9	270	270
2		11.62	9	294	294
3		1.94	4	284	284
4		1.94	4	316	316
5		7.74	7	299	299
6		7.74	3	304	304
7		7.74	7	292	292
8		7.74	3	296	296
9		7.74	7	319	319
10		11.62	9	320	320
11		7.74	7	338	338
12		11.62	9	318	318
13		7.74	3	234	234
14		7.74	7	220	220
15		15.49	11	219	219
16		9.68	8	199	199
17		9.68	8	316	316
18		17.42	12	296	296
19		1.94	4	336	336
20		7.74	7	294	294
COMMENTS	1-20 2 0.6 605 1.6 4 53.6 10.60 5.0 1-20 2 0.6 605 1.6 4 53.6 10.60 5.0 1-20 2 0.6 605 1.6 4 53.6 10.60 5.0				
LEDGER ACCOUNT	CONTRACT OR ORDER	SUB. ACCOUNT	WORK RELEASE	TYPE OF SAMPLE: SOIL WATER AIR	
LOG BOOK NO.	PAGE	SHEAR OTHER 5 min counts TYPE OF ANALYSIS: general floor area RADIMETER: BERYLLIUM			

618 528 7487



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TAG

HEALTH AND SAFETY ANALYSIS REPORT

SUBMITTED BY

DATE SAMPLED 11-16-83

Bldg. and Room No. Separations

SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA		RESULTS BETA	
		counts	dpm/100cm ²	counts	dpm/100cm ²
1	1 m ² floor grids	326	680.11	1470	12435.16
2		17	29.48	299	709.92
	HOT SPOTS IN GRID #1 (FLOOR)	758	1589.73	4615	45,768.96
	DRAIN IN GRID #1	224	465.34	2607	24,805.44
	HOT SPOT BETWEEN DRAIN GRATZ AND FLOOR IN GRID #1	212	440.07	5172	51,584.04
COMMENTS:		β INSTR # BKG EFF GEO 3 0.0 6.58 1.6 5 46.2 10.44 5.0		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SMEAR _____ OTHER 5 min counts TYPE OF ANALYSIS: general floor area RADIOMETRIC _____ BERYLLIUM _____ OTHER _____	
LEDGER ACCOUNT _____ LOG BOOK NO. _____		CONTRACT OR ORDER _____ PAGE _____		SUB-ACCOUNT _____ WORK RELEASE _____	

ESG-83-48

239

ANALYZED BY		Rockwell International		EQ 290		SUBMITTED BY	
DATE ANALYZED		DLS		TP16		11-17-83	
FILM NO.		HEALTH AND SAFETY ANALYSIS REPORT		Energy Systems Group		DATE SAMPLED	
DO NOT WRITE IN THIS BOX		DESCRIPTION AND LOCATION		BUILDING AND ROOM NO.		Japane	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS		RESULTS		RESULTS	
		ALPHA		BETA		BETA	
		counts	cpm/100 cm ²	counts	cpm/100 cm ²	counts	cpm/100 cm ²
1	1 m ² floor grids	326	680.11	1470	291.92	12935.16	
2	hot spot	17	29.48	299	45768.96		
3	hot spot (drain)	758	1589.73	4615	51581.04		
4	hot spot (drain hole)	224	465.34	5172	24805.44		
5	hot spot	212	440.07	2607			
COMMENTS:		all 13 0.6 6.58 1.6 5 46.2 10.44 5.0 INSTR BKG EFF GEO INSTR BKG EFF GEO LEDGER ACCOUNT CONTRACT OR ORDER SUB-ACCOUNT WORK RELEASE LOG BOOK NO. PAGE					
TYPE OF SAMPLE:		SOIL WATER AIR SMEAR OTHER 5 min counts TYPE OF ANALYSIS general 10 min RADIO-METRIC BERYLLIUM OTHER					

ANALYZED BY: PRELIMINARY

DATE ANALYZED: 11-14-83

FILM NO. 100

Rockwell International
Energy Systems Group

HEALTH AND SAFETY ANALYSIS REPORT

SUBMITTED BY: D.L. Sp...

DATE SAMPLED: 11-14-83

BLDG. AND ROOM NO.: 315

DESCRIPTION AND LOCATION

1 m² floor grids

ALPHA

counts

BETA

counts

SAMPLE NUMBER	ALPHA	BETA	RESULTS
1	12	285	18.05
2	8	314	9.68
3	17	285	29.33
4	14	290	21.30
5	18	235	13.54
6	8	217	9.68
7	8	413	18.74
8	8	300	9.68
9	10	630	13.54
10	9	306	11.62
11	7	412	6.77
12	12	303	11.28
13	12	337	18.05
14	14	867	22.56
15	13	258	20.30
16	4	259	0
17	11	340	15.79
18	10	275	13.54
19	0	274	4.51
20	—	5566	—

TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____

SHEAR _____ OTHER 5 min. equil.

TYPE OF ANALYSIS: _____

RADIOMETRIC _____ BERYLLIUM _____

OTHER _____

ANALYZED BY		SUBMITTED BY	
DATE ANALYZED		DATE SAMPLED	
FILM NO.		BUILDING AND ROOM NO.	
PRELIMINARY DS		Rockwell International Energy Systems Group HEALTH AND SAFETY ANALYSIS REPORT	
SAMPLE NUMBER 20 21 22 23 24 25 1 2 3		DESCRIPTION AND LOCATION 1 m ² floor grids CATWALK ABOVE EL. 315' RESULTS ALPHA counts 3 10 9 27 15 9 12 7 6 13	
COMMENTS: good even		TYPE OF SAMPLE: SOIL WATER AIR OTHER TYPE OF ANALYSIS: RADIOMETRIC OTHER	
CONTRACT OR ORDER 1 3		WORK RELEASE 7 5	
LOG BOOK NO.		PAGE	

10.32	260	396.80
3.53	288	762.77
2.06	285	644.80
33.56	303	900.62
14.45	266	456.32
1.77	254	450.31
7.07	162	-395.17
-2.06	157	-624.96
-3.53	238	303.27
10.32	264	436.48

ANALYZED BY: PRECEDENTIAL

DATE ANALYZED: 11-1-83

FILM NO. 100 (DO NOT WRITE IN THIS SPACE)

Rockwell International
Energy Systems Group

HEALTH AND SAFETY ANALYSIS REPORT

SUBMITTED BY: DLJ

DATE SAMPLED: 11-1-83

BLDG. AND ROOM NO.: Separation 320

SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA		BETA		RESULTS	TYPE OF SAMPLE: SOIL WATER AIR
		counts	cpm/cm ²	counts	cpm/cm ²		
1	1m ² floor grids	10	13.54	330	1138.50		
2		6	5.81	284	662.40		
3		11	15.79	286	683.10		
4		14	21.30	301	838.35		
5		13	20.30	328	1117.80		
6		19	30.98	288	703.80		
7		38	76.70	318	1014.30		
8		7	7.74	301	838.35		
9		9	11.28	295	776.25		
10		5	3.87	290	724.50		
11		11	15.79	261	424.35		
12		12	17.42	256	372.60		
13		11	15.79	268	496.80		
14		8	9.68	287	693.45		
15		5	2.26	215	-51.75		
16		8	9.68	265	465.75		
17		11	15.79	271	527.85		
		X					

COMMENTS: 8 INTRC BKA EFF GEO BKA BKA EFF GEO

ODD	3	0.8	7.05	1.6	5	44.0	10.35	5.0
EVEN	2	0.6	0.05	1	4	53.0	10.60	

LEDGER ACCOUNT: _____ SUB-ACCOUNT: _____ WORK RELEASE: _____

LOG BOOK NO. _____ PAGE: _____

TYPE OF ANALYSIS: SWIN counts general floor area

RADIOMETRIC: _____ BERYLLIUM: _____ OTHER: _____

ANALYZED BY		SUBMITTED BY	
DATE ANALYZED		DATE SAMPLED	
FILM NO.		BLDG. AND ROOM NO.	
PRELIMINARY DS TOP LEVEL SAMPLES CELLS HEALTH AND SAFETY ANALYSIS REPORT		D.L. Seal 11-17-83 Separation	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS	
		ALPHA counts dpm/cm ²	BETA counts dpm/cm ²
1	Platform scaffold hot spot	—	6765
2	SAC-4 cell	923	1853
3	port opening in cell	1526	3081
4	SAC-3 cell	310	620
5	port opening in cell	8768	17644
6	SAC-8 cell	794	1594.14
7	port opening in cell	391	783
COMMENTS: all 2 0.4 6.29 6.0 43.6 9.85 6.0 EFF EFF EFF EFF EFF EFF EFF EFF		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SMEAR _____ OTHER _____ TYPE OF ANALYSIS: AS NOTED RADIO-METRIC _____ BERYLLIUM _____ OTHER _____	
LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ SUB-ACCOUNT _____ WORK RELEASE _____		LOG BOOK NO. _____ PAGE _____	

ANALYZED BY: <u>PRELIMINARY</u>		Rockwell International Energy Systems Group		HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY: <u>D.L. Seal</u>	
DATE ANALYZED: <u>12-17-83</u>		DESCRIPTION AND LOCATION		FILTER ROOM		DATE SAMPLED: <u>11-17-83</u>	
FILM NO. <u>PRELIMINARY</u>		1 M ² floor grids		ALPHA		BUILDING AND ROOM NO. <u>Separation</u>	
SAMPLE NUMBER	1	2	3	4	5	6	7
1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56
57	58	59	60	61	62	63	64
65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80
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97	98	99	100	101	102	103	104
105	106	107	108	109	110	111	112
113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128
129	130	131	132	133	134	135	136
137	138	139	140	141	142	143	144
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537	538	539	540	541	542	543	544
545	546	547	548	549	550	551	552
553	554	555	556	557	558	559	560
561	562	563	564	565	566	567	568
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737	738	739	740	741	742	743	744
745	746	747	748	749	750	751	752
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777	778	779	780	781	782	783	784
785	786	787	788	789	790	791	792
793	794	795	796	797	798	799	800
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809	810	811	812	813	814	815	816
817	818	819	820	821	822	823	824
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865	866	867	868	869	870	871	872
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889	890	891	892	893	894	895	896
897	898	899	900	901	902	903	904
905	906	907	908	909	910	911	912
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921	922	923	924	925	926	927	928
929	930	931	932	933	934	935	936
937	938	939	940	941	942	943	944
945	946	947	948	949	950	951	952
953	954	955	956	957	958	959	960
961	962	963	964	965	966	967	968
969	970	971	972	973	974	975	976
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985	986	987	988	989	990	991	992
993	994	995	996	997	998	999	1000

ANALYZED BY		PRELIMINARY		Rockwell International Energy Systems Group		HEALTH AND SAFETY ANALYSIS REPORT		NOT SPOTS IN LARGE CELLS ER 260		SUBMITTED BY DATE SAMPLED BLDG. AND ROOM NO.	
DATE ANALYZED		DS						11-17-83		Separation	
FILM NO.		(DO NOT WRITE IN THIS BOX)									
SAMPLE NUMBER	DESCRIPTION AND LOCATION	B counts	cpm/100cm ² µR/hr	RESULTS							
→ 1	UPC	144	22.K								
2	entry area	121	17.K	14-18							
3	foot spot in center	660	131.K								
→ 4	PRC	0									
5	entry	4200	878.K								
6	entry	1970	407.K								
7	general area	270	49.K	14-18							
8	general area	309	70.K								
→ 9	HLC	0									
10	entry	77	8.K								
11	general area	87	10.K	16-20							
12	general area	110	15.K	30. NEAR SAMPLE BOTTLES							
→ 13	HLC	0									
14	entry	115	16.K								
15	general area	120	17.K	14-18							
16	general area	145	22.K								
17	general area	43	21.K								
18	general area	45	1.K	14-18							
19	general area	1423	292.K								
COMMENTS		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____									
all		SHEAR _____ OTHER _____ WITH COUNTS _____									
		TYPE OF ANALYSIS: _____ AS NOTED _____									
		RADIO-METRIC _____ BERYLLIUM _____									
		OTHER _____									
LEDGER ACCOUNT		WORK RELEASE									
LOG BOOK NO.		SUB-ACCOUNT									
		CONTRACT OR ORDER									
		PAGE									

ANALYZED BY		PRELIMINARY		Rockwell International Energy Systems Group		HEALTH AND SAFETY ANALYSIS REPORT		HOT SPOTS IN SWAPS		SUBMITTED BY		DATE SAMPLED		Bldg. and Room No.		
DATE ANALYZED		DS		62 RA 106		62 RA 106		260' + 265'		D.L. Spaul		11-17-83		Separations		
FILM NO.		HOT SPOTS		DESCRIPTION AND LOCATION		ALPHA		BETA		RESULTS		COUNTS		dpm/100cm ²		
SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA	BETA	RESULTS	COUNTS	dpm/100cm ²	ALPHA	BETA	RESULTS	COUNTS	dpm/100cm ²	ALPHA	BETA	RESULTS	COUNTS	dpm/100cm ²
1	Swamp with piping marked	62 RA 106	62 RA 106	62 RA 106	4	2167.00	47	289	699.35	438	2167.00	47	289	699.35	438	2167.00
2	" " " "	" " " "	" " " "	" " " "	56	216.70	" " " "	" " " "	" " " "	240	216.70	" " " "	" " " "	" " " "	240	216.70
3	" " " "	" " " "	" " " "	" " " "	21	462.95	" " " "	" " " "	" " " "	265	462.95	" " " "	" " " "	" " " "	265	462.95
4	" " " "	" " " "	" " " "	" " " "	159	5447.05	" " " "	" " " "	" " " "	771	5447.05	" " " "	" " " "	" " " "	771	5447.05
5	Swamp with piping marked	52 P 16	52 P 16	52 P 16	47	699.35	47	289	699.35	289	699.35	47	289	699.35	289	699.35

COMMENTS:	2	0.4	6.29	1.66	3.74	43.6	9.85	5.0
LEDGER ACCOUNT	CONTRACT OR ORDER		SUB-ACCOUNT		WORK RELEASE			
LOG BOOK NO.	PAGE							

FORM 752-A REV. 8-78

GENERAL AREA AND HOT SPOTS SMEAR SURVEY
NOVEMBER 1983

ANALYZED BY		Rockwell International Energy Systems Group		LAB. AREA		SUBMITTED BY	
DATE ANALYZED 11-28-83				2 ND FLOOR		DATE SAMPLED 11-15-83	
FILM NO.		DO NOT WRITE IN THIS BOX		HEALTH AND SAFETY ANALYSIS REPORT			
				BLDG. AND ROOM NO. SEPARATIONS			
SAMPLE MEMBER	DESCRIPTION AND LOCATION	ALPHA COUNTS	RESULTS	BETA COUNTS			
1	Room #83 COUNTING ROOM	5	3.60	137	-2.87		
2	FLOOR	3	1.73	141	0.19		
3	Room #85 MASS SPECTROSCOPY	6	4.53	152	8.60		
4	FLOOR	5	3.60	163	17.00		
5	Room #88 SPECTROSCOPY PREP	4	2.66	171	23.11		
6	NEAR SINK	2	0.79	137	-2.87		
7	FRONT LEFT GLOVE BOX 82A-807L	1	-0.14	151	7.83		
8	LEFT HOOD	2	0.79	156	11.65		
9	REAR LEFT GLOVE BOX 82A-807M	5	3.60	143	1.72		
10	REAR CENTRAL HOOD	2	0.79	151	7.83		
11	REAR CENTRAL GLOVE BOX 82A-807K	3	1.73	173	24.67		
12	REAR RIGHT GLOVE BOX 82A-807J	6	4.53	155	10.87		
13	RIGHT HOOD	2	0.79	169	21.58		
14	FRONT RIGHT GLOVE BOX 82A-807I	11	9.20	166	19.29		
15	Room #90 ATOMIC ABSORPTION & X-RAY	2	0.79	138	-2.10		
16	NEAR SINK	3	1.73	149	6.30		
COMMENTS:							
TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____							
SMEAR <input checked="" type="checkbox"/> OTHER <input type="checkbox"/> COUNT _____							
TYPE OF ANALYSIS:							
RADIOMETRIC _____ BERYLLIUM _____							
OTHER _____							
LEDGER ACCOUNT	CONTRACT OR ORDER	SUB-ACCOUNT	WORK RELEASE				
LOG BOOK NO.	PAGE						

Page 1 of 6

ANALYZED BY		Rockwell International Energy Systems Group		LAB AREA 2 ND FLOOR		SUBMITTED BY	
DATE ANALYZED 11-28-83		HEALTH AND SAFETY ANALYSIS REPORT		COUNTS		DATE SAMPLED 11-15-83	
FILM NO.		DESCRIPTION AND LOCATION		RESULTS		BLDG. AND ROOM NO. 5E/RAILROADS	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA COUNTS	BETA COUNTS	SM/1000	CPM/1000		
-	ROOM #90 ATMIC ABSORPTION X-RAY (cont'd)	-	-	-	-		
17	RIGHT HOOD	6	193	4.53	59.92		
18	RIGHT GLOVE BOX #16 FCB	1	163	0.14	17.00		
19	FLOOR	7	151	5.46	7.83		
-	ROOM #88	-	-	-	-		
20	FLOOR	3	155	1.73	10.89		
-	ROOM #93 EMISSION SPECTROSCOPY	-	-	-	-		
21	NEAR SINK	2	139	0.79	-1.34		
22	IN GLOVE BOX #16 FCB	3	133	1.73	-5.92		
23	FLOOR NEAR GLOVE BOX	3	145	1.73	3.25		
-	ROOM #94 BACK ROOM TO ROOM #93	-	-	-	-		
24	NEAR SINK	0	144	-1.07	2.48		
-	ROOM #95 GENERAL CHEMISTRY	-	-	-	-		
25	NEAR SINK	2	141	0.79	0.19		
26	FRONT LEFT GLOVE BOX #16 FCB	4	171	2.66	23.11		
27	LEFT HOOD	2	158	0.79	13.18		
28	REAR LEFT GLOVE BOX #16 FCB	5	196	3.60	42.21		
29	RIGHT GLOVE BOX #16 FCB	3	146	1.73	4.01		
30	RIGHT HOOD	11	155	9.20	10.89		
COMMENTS:							
TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____							
SMEAR _____ OTHERS <u>SEE COUNTS</u>							
TYPE OF ANALYSIS:							
RADIOMETRIC <input checked="" type="checkbox"/> BERYLLIUM _____							
OTHER _____							
LEDGER ACCOUNT		SUB-ACCOUNT		WORK RELEASE			
1 DG BOOK NO.		PAGE					

Page 2 of 6

ANALYZED BY		Rockwell International Energy Systems Group		LAB AREA		SUBMITTED BY	
DATE ANALYZED 11-28-83		HEALTH AND SAFETY ANALYSIS REPORT		2nd FLOOR		DATE SAMPLED 11-15-83	
FILM NO.		DESCRIPTION AND LOCATION		COUNTS		RESULTS	
DO NOT WRITE IN THIS BOX				APPROX		BETA	
SAMPLE NUMBER						COUNTS	APPROX
31	ROOM #95 - GENERAL CHEMISTRY (Cont'd)			3		179	29.22
32	ROOM #96 - SAMPLE RECEIVING			2		154	10.12
33	LEFT GLOVE BOX		82A-804D	6		155	10.89
34	LEFT HOOD			2		180	29.49
35	RIGHT REAR GLOVE BOX (DOUBLE)		82A-804C	24		167	20.04
36	RIGHT FRONT GLOVE BOX (SINGLE)		82A-807G	1		189	30.86
37	RIGHT HOOD			1		160	14.71
38	FLOOR (HOT SPOT)						
39	ROOM #17 RADIOCHEMISTRY I			1		130	8.21
40	LEFT FRONT GLOVE BOX		82A-804B	13		172	23.88
41	LEFT HOOD		82A-803C	2		152	8.60
42	LEFT REAR GLOVE BOX		82A-804A	10		134	5.10
43	NEAR SINK			2		161	15.47
44	RIGHT REAR GLOVE BOX		82A-807B	16		173	24.64
45	RIGHT HOOD		82A-803D	0		148	5.54
46	RIGHT FRONT GLOVE BOX		82A-807D/C	10		183	32.28
47	FLOOR						
48	ROOM #18 - RADIOCHEMISTRY II			1		153	9.36
49	LEFT FRONT GLOVE BOX (SEALED)		82A-804D				

COMMENTS:

TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____
 SWEAT _____ OTHER 5 MIN COUNT _____
 TYPE OF ANALYSIS: _____
 RADIOCHEMISTRY _____ BERYLLIUM _____
 OTHER _____

LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ SUB-ACCOUNT _____ WORK RELEASE _____
 LOG BOOK NO. _____ PAGE _____

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ANALYZED BY		Rockwell International Energy Systems Group		LAB AREA		SUBMITTED BY	
DATE ANALYZED 11-28-83		HEALTH AND SAFETY ANALYSIS REPORT		2 ND FLOOR		DATE SAMPLED 11-15-83	
FILM NO.		DESCRIPTION AND LOCATION		ALPHA COUNTS		BETA COUNTS	
DO NOT WRITE IN THIS BOX							
47	ROOM #68 - RADIOCHEMISTRY II (Cont'd.)	82A-803E	15	12.94	142	0.46	
48	LEFT HOOD	82A-804C	2	0.79	183	32.28	
49	LEFT REAR GLOVE BOX (SEALED)		5	3.60	168	20.82	
50	NEAR SINK		3	1.73	164	17.76	
51	RIGHT REAR GLOVE BOX (SEALED)	82A-804E	13	11.07	555	316.49	
52	RIGHT HOOD	82A-803F	1	-0.14	168	20.82	
53	RIGHT FRONT GLOVE BOX (SEALED)	82A-804F	5	3.60	150	7.07	
54	FLOOR		—	—	—	—	
55	ROOM #69 SPECTROPHOTOMETRY, CHROMATOGRAPHY	82A-803G	46	41.89	177	27.70	
56	LEFT HOOD	82A-804G	6	4.53	160	14.71	
57	LEFT GLOVE BOX (SEALED)		2	0.79	140	-0.57	
58	NEAR SINK		2	0.79	189	36.80	
59	RIGHT GLOVE BOX (SEALED)	82A-804H	7	5.46	167	20.06	
60	RIGHT HOOD	82A-803H	4	2.66	144	2.48	
61	FLOOR		—	—	—	—	
62	ROOM #70 URANIUM PRODUCT	82A-804J	2	0.79	160	14.71	
63	LEFT FRONT GLOVE BOX	82A-802A	4	2.66	163	17.00	
64	LEFT HOOD		13	11.07	188	36.10	
65	LEFT REAR GLOVE BOX	82A-804I	4	2.66	157	12.42	
66	NEAR SINK		—	—	—	—	

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ANALYZED BY		Rockwell International Energy Systems Group		SUBMITTED BY																
DATE ANALYZED 11-28-83		LAB AREA		DATE SAMPLED 11-15-83																
FILM NO. (PG 27) WRITE IN THIS BOX		HEALTH AND SAFETY ANALYSIS REPORT		BLDG. AND ROOM NO. SEPARATIONALS																
SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA COUNTS	BETA COUNTS	RESULTS	APPROVALS															
64	ROOM #70 URANIUM PRODUCT (Cont'd)	3	155	10.84																
65	RIGHT REAR GLOVE BOX	7	149	6.30																
66	RIGHT FRONT HOOD	0	170	22.35																
67	RIGHT FRONT GLOVE BOX	8	166	19.29																
68	ROOM #71 PLUTONIUM PRODUCT	2	127	8.98																
69	LEFT FRONT GLOVE BOX (SEALED)	258	388	188.90																
70	LEFT HOOD	7	161	15.47																
71	LEFT REAR GLOVE BOX (SEALED)	40	153	9.30																
72	REAR SINK	3	140	0.57																
73	RIGHT REAR GLOVE BOX (SEALED)	372	404	201.12																
74	RIGHT HOOD	2	155	10.89																
75	RIGHT FRONT GLOVE BOX (SEALED)	6	154	10.12																
76	ROOM #72 ANALYTICAL RECORDS	3	199	44.50																
77	FLOOR	8	166	19.29																
78	ROOM #74 OFFICE	5	147	4.78																
COMMENTS: <table border="0"> <tr> <td>TYPE OF SAMPLE: SOIL</td> <td>WATER</td> <td>AIR</td> </tr> <tr> <td>SMEAR</td> <td>✓ OTHER</td> <td>5 MIN COUNT</td> </tr> <tr> <td colspan="3">TYPE OF ANALYSIS:</td> </tr> <tr> <td>RADIOMETRIC</td> <td>✓</td> <td>REYLLIUM</td> </tr> <tr> <td>OTHER</td> <td></td> <td></td> </tr> </table>						TYPE OF SAMPLE: SOIL	WATER	AIR	SMEAR	✓ OTHER	5 MIN COUNT	TYPE OF ANALYSIS:			RADIOMETRIC	✓	REYLLIUM	OTHER		
TYPE OF SAMPLE: SOIL	WATER	AIR																		
SMEAR	✓ OTHER	5 MIN COUNT																		
TYPE OF ANALYSIS:																				
RADIOMETRIC	✓	REYLLIUM																		
OTHER																				
LEDGER ACCOUNT		CONTRACT OR ORDER		SUB-ACCOUNT																
LOG BOOK NO.		PAGE		WORK RELEASE																

ANALYZED BY <u>ESG-48</u> DATE ANALYZED <u>11-28-83</u> FILM NO. <u> </u>		Rockwell International Energy Systems Group HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY <u>ESG-48</u> DATE SAMPLED <u>11-15-83</u> BLDG. AND ROOM NO. <u>SEABOARD</u>	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS			
		ALPHA COUNTS	APPROXIMATE	BETA COUNTS	APPROXIMATE
77	ROOM #76 - OFFICE	9	7.33	153	9.36
80	HALLWAY	1	-0.14	155	10.89
81	FLOOR	9	7.33	153	9.36
82		5	3.60	164	17.76
83		2	0.79	147	4.78
84		1	-0.14	145	3.25
COMMENTS:		TYPE OF SAMPLE: SOIL <input type="checkbox"/> WATER <input type="checkbox"/> AIR <input type="checkbox"/> SMEAR <input checked="" type="checkbox"/> OTHER <u>SMALL CRYSTALS</u> TYPE OF ANALYSIS: RADIOLOGIC <input checked="" type="checkbox"/> BERYLLIUM <input type="checkbox"/> OTHER <input type="checkbox"/>			
LEDGER ACCOUNT <u> </u> CONTRACT OR ORDER <u> </u> SUB-ACCOUNT <u> </u> WORK RELEASE <u> </u>		LOG BOOK NO. <u> </u> PAGE <u> </u>			

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ANALYZED BY		Rockwell International Energy Systems Group		LAB AREA ALPHA LAB		SUBMITTED BY	
DATE ANALYZED 11-29-83		HEALTH AND SAFETY ANALYSIS REPORT		DATE SAMPLED 11-16-83		BLDG. AND ROOM NO. SEPARATIONS	
FILM NO.		100 NOT WRITE IN THIS BOX		ALPHA		BETA	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	COUNTS	ALPHA	COUNTS	BETA	IDENTIFICATION	
1	5-LEVEL GLOVE BOX AREA						
2	FLOOR		3	1.73	138		-2.10
3	"		4	2.66	151		7.83
4	"		4	2.66	141		0.19
5	GLOVE BOXES		3	1.73	145		3.25
6	"		9	7.33	158		13.18
7	FLOOR		8	6.40	141		0.19
8	"		5	3.60	144		2.48
9	"		4	2.66	151		7.83
10	GLOVE BOXES		4	2.66	164		17.76
11	"		1	-0.14	142		0.96
12	FLOOR		9	7.33	151		7.83
13	"		6	4.53	159		13.94
14	"		7	5.46	145		3.25
15	GLOVE BOXES		1	-0.14	143		1.72
16	"		8	6.40	168		20.82
17	FLOOR		7	5.46	136		-3.63
18	"		2	0.79	205		49.09
19	"		17	14.80	150		7.07
20	GLOVE BOXES		18	15.74	155		10.89
21	"		13	11.07	166		4.14
COMMENTS:							
TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____							
SMEAR _____ OTHER 5 MIN. COUNTS _____							
TYPE OF ANALYSIS:							
RADIONETRIC _____ BERYLLIUM _____							
OTHER _____							
LEDGER ACCOUNT		CONTRACT OR ORDER		SUB-ACCOUNT		WORK RELEASE	
LOG BOOK NO.		PAGE					

Page 1 of 2

ANALYZED BY		Rockwell International Energy Systems Group		LAB AREA		SUBMITTED BY	
DATE ANALYZED 11-29-83		HEALTH AND SAFETY ANALYSIS REPORT		ALPHA LAB		DATE SAMPLED 11-16-83	
FILM NO.		DESCRIPTION AND LOCATION		ALPHA		BETA	
DO NOT WRITE IN THIS BOX				COUNTS	APPROX. 2	COUNTS	APPROX. 2
21	5-LEVEL GLOVE BOX AREA	(1 ST LEVEL)		1	0.11	169	2158
22	"			0	1.07	137	2287
23	"			3	1.73	158	1318
24	GLOVE BOXES			7	5.46	126	1127
25	"			8	6.40	156	1165
26	FLOOR	(FLOOR LEVEL)		3	1.73	166	1929
27	"			5	3.60	162	1624
28	"			7	5.46	144	248
29	"			13	11.07	131	743
30	"			8	6.40	158	1311
31	HOOD			9	7.33	148	557
32	FLOOR			4	2.66	172	2388
33	"			5	3.60	179	2922
34	"			3	1.73	151	783
35	"			7	5.46	149	630
36	"			11	9.20	183	3228
37	"			7	5.46	173	2464
38	"			6	4.53	141	0197
39	"			11	9.20	162	1624
40	"			✓	✓	✓	✓

COMMENTS:		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____	
		SMEAR <input checked="" type="checkbox"/> OTHER <input checked="" type="checkbox"/> HULL COCAUT	
		TYPE OF ANALYSIS: <input checked="" type="checkbox"/> BERYLLIUM	
		RADIOMETRIC <input checked="" type="checkbox"/> OTHER _____	
LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ SUB-ACCOUNT _____ WORK RELEASE _____		LOG BOOK NO. _____ PAGE _____	

Page 2 of 2

ANALYZED BY		Rockwell International Energy Systems Group		SUBMITTED BY	
DATE ANALYZED 11-23-83		HEALTH AND SAFETY ANALYSIS REPORT		DATE SAMPLED 11-15-83	
FILM NO.		LABS. - FIRST FLOOR		BLOC. AND ROOM NO.	
DO NOT WRITE IN THIS BOX		LABS. - FIRST FLOOR		BLOC. AND ROOM NO.	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA COUNTS	BETA COUNTS		
1	RADIOCHEM. LAB - ROOM 42	2	146	21.01	
2	1 ST LEFT HOOD	4	151	7.83	
3	2 ND LEFT HOOD	8	158	13.10	
4	CENTER HOOD	9	160	14.71	
5	RIGHT HOOD	4	158	13.10	
6	RIGHT BENCH NEAR SINK	4	169	21.58	
7	FLOOR	0	164	17.76	
8	LEFT BENCH	9	155	10.89	
9	LEFT HOOD	3	140	-0.57	
10	RIGHT HOOD	2	160	14.71	
11	RIGHT BENCH	5	160	14.71	
12	FLOOR	4	201	46.03	
13	LEFT BENCH NEAR SINK	6	154	10.12	
14	1 ST HOOD	1	127	-10.51	
15	RIGHT RAR GLOVE BOX #6	269	276	103.33	
16	RIGHT HOOD	19	253	85.76	
17	RIGHT FRONT GLOVE BOX #6	4	169	21.58	
18	FLOOR	1	154	10.12	
19	Room 35	1	144	2.48	
20	Room 36	3	164	17.76	
BETWEEN DOORS 32 & 33					
COMMENTS:					
TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____					
SMEAR <input checked="" type="checkbox"/> OTHER <input checked="" type="checkbox"/> MIN COUNT					
TYPE OF ANALYSIS:					
RADIO-METRIC <input checked="" type="checkbox"/> BERYLLIUM _____					
OTHER _____					
LEDGER ACCOUNT		CONTRACT OR ORDER		WORK RELEASE	
LOG BOOK NO.		PAGE		IDENTITY	

Page 1 of 2

ANALYZED BY <u>HP-11A</u> DATE ANALYZED <u>11-23-83</u> FILM NO. <u>100 NOT WRITE IN THIS BOX</u>		Rockwell International Energy Systems Group HEALTH AND SAFETY ANALYSIS REPORT LABS. SUBMITTED BY <u>D. L. [Signature]</u> DATE SAMPLED <u>11-14-83</u> BLDG. AND ROOM NO. <u>SEPARAZA-3</u>	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA COUNTS	BETA RESULTS
21	ROOM 36	23	0.79
22	BETWEEN DOORS 31 & 32	23	20.41
23	INSIDE DOOR 32	2	0.79
24	" "	6	4.53
	BETWEEN DOORS		15.3
			15.6
			10.89
			9.36
			11.65
COMMENTS:		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SMEAR <input checked="" type="checkbox"/> OTHER <u>5 AND CELLS</u> TYPE OF ANALYSIS: RADIOMETRIC <input checked="" type="checkbox"/> BERYLLIUM OTHER _____	
LEDGER ACCOUNT _____ LOG BOOK NO. _____		CONTRACT OR ORDER _____ SUB-ACCOUNT _____ WORK RELEASE _____ PAGE _____	

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ANALYZED BY <u>DLG</u>		Rockwell International Energy Systems Group		HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY <u>DLG</u>	
DATE ANALYZED <u>11-23-83</u>				DATE SAMPLED <u>11-23-83</u>		BLDG. AND ROOM NO. <u>SEPARATIONS</u>	
FILM NO. <u>100</u>		DO NOT WRITE IN THIS SPACE					
SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA COUNTS	BETA COUNTS	BETA $\mu\text{Ci}/\text{sq. in.}$			
1	ROOM 245 (FLOOR UNDER GLOVE BOX)	1	6.3	17.00			
2	(LOWER LEVEL)	3	1.73	10.12			
3	RETURN DOORS 59, 61, 62, 244	2	0.79	-0.57			
4	ROOM 61	4	2.66	6.30			
5	aisle OUTSIDE ROOM 145 (LPIG)	0	-1.07	2.48			
6	ROOM 145 (LPIG)	3	1.73	4.78			
7		4	2.66	-6.61			
8	ROOM 100C (TENT ABOVE PU-NITRATE GLOVE BOXES)	3	1.73	-11.27			
9	(LOWER LEVEL)	1	0.14	13.18			
10		3	1.73	5.54			
COMMENTS:		TYPE OF SAMPLE: SOIL <u>✓</u> WATER <u>✓</u> AIR <u>✓</u> SMEAR <u>✓</u> OTHER <u>3 MIN COUNT</u> TYPE OF ANALYSIS: RADIO-METRIC <u>✓</u> BERYLLIUM OTHER <u>IDENTITY</u>					
LEDGER ACCOUNT		CONTRACT OR ORDER		SUB-ACCOUNT		WORK RELEASE	
LOG BOOK NO.		PAGE					

ANALYZED BY <u>11-22-83 and 11-23-83</u>		Rockwell International Energy Systems Group		HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY <u>11-22-83</u>	
DATE ANALYZED <u>11-23-83</u>				FZIG		DATE SAMPLED <u>11-15-83</u>	
FILM NO. <u>(DO NOT WRITE IN THIS BOX)</u>				BLDG. AND ROOM NO. <u>SEPARATION</u>			
SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS		ALPHA COUNTS	BETA COUNTS	APPROX. $\mu\text{Ci}/\text{sq. in.}$	APPROX. $\mu\text{Ci}/\text{sq. in.}$
1	1 m ² FLOOR GRIDS (COUNT 11/22/83)	3	189	1.73	36.86		
2		7	229	5.46	67.42		
3		12	248	10.13	81.94		
4		7	188	5.46	36.10		
5		2	135	0.78	4.39		
6		11	246	9.20	80.41		
7		11	197	9.20	47.98		
8		10	233	8.27	70.48		
9		5	167	3.60	20.00		
10		4	150	2.66	7.07		
11	(COUNT 11/23/83)	75	722	68.98	444.08		
12		5	184	2.60	33.01		
13		30	238	20.95	74.30		
COMMENTS:							
TYPE OF SAMPLE: SOIL <input type="checkbox"/> WATER <input type="checkbox"/> AIR <input type="checkbox"/>							
SMEAR <input checked="" type="checkbox"/> OTHER <input type="checkbox"/> <u>5 M/L</u> <u>CALCULATED</u> (IDENTIFY)							
TYPE OF ANALYSIS:							
RADIOMETRIC <input checked="" type="checkbox"/> BERYLLIUM <input type="checkbox"/>							
OTHER <input type="checkbox"/> (IDENTIFY)							
LEDGER ACCOUNT	CONTRACT OR ORDER	SUB-ACCOUNT	WORK RELEASE				
LOG BOOK NO.	PAGE						

ANALYZED BY		Rockwell International Energy Systems Group		SUBMITTED BY	
DATE ANALYZED 1-23-83		HEALTH AND SAFETY ANALYSIS REPORT		DATE SAMPLED 11-17-83	
FILM NO.		DESCRIPTION AND LOCATION		BLDG. AND ROOM NO. 242607/4A15	
SAMPLE NUMBER				RESULTS	
1	1 m ² FLOOR GRIDS	ALPHA	RESULTS	ALPHA	RESULTS
2		COUNTS	1,73	COUNTS	132
3			0.17		155
4			0.79		118
5			-0.14		144
6			-0.14		144
7			-1.07		162
8			0.79		175
9			1.73		159
10			1.73		150
11			0.79		125
12			2.66		149
13			-0.14		132
14			2.66		130
15			-0.14		154
16			1.73		178
17			-1.07		143
18			4.53		147
19			0.79		130
20			1.73		145
			0.79		159
COMMENTS:		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____			
		SHEAR <input checked="" type="checkbox"/> OTHER <input checked="" type="checkbox"/> MIN. COUNT			
		TYPE OF ANALYSIS:			
		RADIOMETRIC <input checked="" type="checkbox"/> BERYLLIUM			
		OTHER			
LEDGER ACCOUNT		SUB-ACCOUNT		WORK RELEASE	
LOG BOOK NO.		PAGE		IDENTITY	

Page 2 of 2

ANALYZED BY <u>EL</u> DATE ANALYZED <u>11-23-83</u> FILM NO. <u>108</u> (DO NOT WRITE IN THIS BOX)		Rockwell International Energy Systems Group HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY <u>D.L. [Signature]</u> DATE SAMPLED <u>11-15-83</u> BLDG. AND ROOM NO. <u>SEPARAZZALIS</u>	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS			
		ALPHA		BETA	
		COUNTS	dpm/100cm ²	COUNTS	dpm/100cm ²
1	1 m ² FLOOR GAUGES	13	11.07	243	18.12
2		7	5.46	180	29.99
3		17	14.80	215	56.73
4		3	1.73	144	7.48
5		6	4.53	152	8.60
6		1	-0.14	157	12.42
7		3	1.73	147	4.78
8		7	5.46	157	12.12
9		1	-0.14	202	46.88
10		7	5.46	183	32.28
COMMENTS:					
TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SMEAR <input checked="" type="checkbox"/> OTHER <input checked="" type="checkbox"/> <u>5 MIN COUNTS</u> TYPE OF ANALYSIS: RADIO-METRIC <input checked="" type="checkbox"/> BERYLLIUM _____ OTHER _____					
LEDGER ACCOUNT _____ CONTRACT _____ OR ORDER _____ LOG BOOK NO. _____ PAGE _____		WORK RELEASE _____ SUB-ACCOUNT _____			

FORM 732-A REV. 6-78

ANALYZED BY		Rockwell International Energy Systems Group		HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY	
DATE ANALYZED		11-22-83		DATE SAMPLED		11-14-83	
FILM NO.		11-22-83		E.C. 311-3201		BLDG. AND ROOM NO. 500/11-15-83	
TOB NOT WRITE IN THIS BOX							
SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA COUNTS	ALPHA dpm/100cm ²	BETA COUNTS	BETA dpm/100cm ²		
1	1m ² FLOOR GRIDS	4	2.66	143	1.72		
2		5	3.60	157	12.42		
3		2	0.79	144	2.48		
4		4	2.60	183	32.28		
5		4	2.66	164	17.76		
6		3	1.73	153	9.36		
7		10	8.27	162	16.24		
8		0	-1.07	141	0.19		
9		2	0.79	161	15.47		
10		1	-0.14	153	9.36		
11		1	-0.14	126	-11.27		
12		1	-0.14	139	-1.34		
13		2	0.79	163	17.00		
14		1	-0.14	144	2.48		
15		1	-0.14	143	1.72		
16		0	-1.07	140	-0.57		
17		4	2.66	150	7.07		
18		0	-1.07	136	11.65		
19		2	0.79	134	-5.16		
20		7	5.46	204	48.32		
COMMENTS:		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____					
		SMEAR <input checked="" type="checkbox"/> OTHER <input type="checkbox"/> HALOGENS					
		TYPE OF ANALYSIS: <input checked="" type="checkbox"/> RADIOMETRIC <input type="checkbox"/> RERYLLIM					
		OTHER _____					
LEDGER ACCOUNT		CONTRACT OR ORDER		SUB-ACCOUNT		WORK RELEASE	
LOG BOOK NO.		PAGE					

FORM 732-A REV. 6-78

ANALYZED BY <u>Rockwell International</u>		HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY <u>Rockwell</u>	
DATE ANALYZED <u>11-23-83</u>		DATE SAMPLED <u>11-16-83</u>		DATE SAMPLED <u>11-16-83</u>	
FILM NO. <u>100</u>		FILM NO. <u>100</u>		FILM NO. <u>100</u>	
DESCRIPTION AND LOCATION		RESULTS		RESULTS	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA COUNTS	BETA COUNTS	ALPHA COUNTS	BETA COUNTS
1	1m ² FLOOR GRIDS	4	126	126	11.27
2		0	148	148	5.54
3		2	142	142	6.30
COMMENTS:		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____			
		SHEAR <input checked="" type="checkbox"/> OTHER <u>5 MIN. COUPLES</u>			
		TYPE OF ANALYSIS: <input checked="" type="checkbox"/> RADIOMETRIC <input checked="" type="checkbox"/> BERYLLIUM			
		OTHER _____			
LEDGER ACCOUNT _____		CONTRACT OR ORDER _____		SUB-ACCOUNT _____	
LOG BOOK NO. _____		PAGE _____		WORK RELEASE _____	

ANALYZED BY		TOP LEVEL		SUBMITTED BY	
DATE ANALYZED 11-28-83		SAMPLING CELLS		DATE SAMPLED 11-17-83	
FILM NO.		HEALTH AND SAFETY ANALYSIS REPORT		BLDG. AND ROOM NO. 5828-471AAL-5	
DO NOT WRITE IN THIS BOX		DESCRIPTION AND LOCATION		RESULTS	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA COUNTS	BETA COUNTS	SMOKE	IDENTIFY
1	PLATFORM SCAFFOLD	38	328	34.42	143.06
2	HOT SPOT	98	451	90.46	237.03
3	SAC-4 CELL	5	152	3.60	8.60
4	PORT OPENING	444	1548	413.62	1075.14
5	IN CELL	19	171	16.67	23.11
6	SAC-8 CELL	9	179	7.33	29.82
7	PORT OPENING	1	267	0.14	96.46
8	IN CELL				
9					
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ANALYZED BY		Rockwell International Energy Systems Group		HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY	
DATE ANALYZED 11-28-83		Hot Spots In Large Cells FL-2601		Bldg. and Room No. SEPARATIONS		DATE SAMPLED 11-17-83	
FILM NO.		DO NOT WRITE IN THIS BOX		ALPHA		BETA	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	COUNTS	APPROXIMATE	COUNTS	APPROXIMATE		
1	UPC CELL	10	8.27	171	23.11		
2	GENERAL AREA	12	10.13	157	12.12		
3	HOT SPOT IN CENTER	149	138.09	1398	960.51		
4	PPC CELL	—	—	—	—		
5	ENTRY	91	83.92	999	655.70		
6	ENTRY	523	187.41	1907	1349.12		
7	GENERAL AREA	284	264.18	3337	2411.91		
8	GENERAL AREA	15	12.94	232	61.72		
9	HILC CELL	—	—	—	—		
10	ENTRY	10	8.27	266	95.61		
11	GENERAL AREA	10	8.27	433	213.28		
12	GENERAL AREA	4	2.66	187	35.34		
13	HILC CELL	—	—	—	—		
14	ENTRY	26	23.21	252	85.00		
15	GENERAL AREA	8	6.40	173	24.64		
16	GENERAL AREA	9	7.33	164	17.76		
17	HILC CELL	280	200.45	367	232.06		
18	GENERAL AREA	1	-0.14	142	0.96		
19	GENERAL AREA	114	105.40	519	288.98		

COMMENTS:		TYPE OF SAMPLE: SOIL — WATER — AIR	
		SWEAT <input checked="" type="checkbox"/> OTHER <input checked="" type="checkbox"/> 5 MIN. CRYSTALL	
		TYPE OF ANALYSIS:	
		RADIOMETRIC <input checked="" type="checkbox"/> BERYLLIUM	
		OTHER	
LEDGER ACCOUNT		SUB-ACCOUNT	
CONTRACT OR ORDER		WORK RELEASE	
LOG BOOK NO.		PAGE	

FORM 732-A REV. 8-78

ANALYZED BY		Rockwell International Energy Systems Group		HOT SAFTS IN SUMPS		SUBMITTED BY	
DATE ANALYZED 11-28-83		EL. 260' & 265'		DATE SAMPLED 11-17-83		BLDG. AND ROOM NO. SE23A11A1.5	
FILM NO.		HEALTH AND SAFETY ANALYSIS REPORT		RESULTS		BETA	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA COUNTS	ALPHA/INCH ²	BETA COUNTS	BETA/INCH ²		
1	EL. 260'	6	4.53	171	23.11		
2	SUMP WITH PIPING MARKED 62 RA 106	4	2.66	139	1.31		
3	" " " " (ON LEDGE)	71	65.24	351	160.63		
4	" " " " 51 P 8	2	0.79	147	4.78		
5	EL. 265'	—	—	—	—		
6	SUMP WITH PIPING MARKED 52 P 16	2	0.79	148	5.54		
COMMENTS:		TYPE OF SAMPLE: SOIL — WATER — AIR — SMEAR <input checked="" type="checkbox"/> OTHER <input checked="" type="checkbox"/> <u>RAW COUNT</u> TYPE OF ANALYSIS: RADIO-METRIC <input checked="" type="checkbox"/> BERYLLIUM OTHER <input type="checkbox"/> (IDENTIFY)					
LEDGER ACCOUNT		CONTRACT OR ORDER		SUB-ACCOUNT		WORK RELEASE	
LOG BOOK NO.		PAGE		PAGE			

GENERAL AREA SMEAR SURVEYS
DECEMBER 1983

ESG-83-48


ANALYZED BY <u>AL. J.</u> DATE ANALYZED <u>12-8-83</u> FILM NO. <u>12-8-83</u> <small>(DO NOT WRITE IN THIS BOX)</small>		Rockwell International Energy Systems Group HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY <u>AL. J.</u> DATE SAMPLED <u>12-8-83</u> BLDG. AND ROOM NO. <u>SEPARATIONS</u>	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS			
		ALPHA COUNTS	ALPHA $\mu\text{m}/\text{hr}/\text{cm}^2$	BETA COUNTS	BETA $\mu\text{m}/\text{hr}/\text{cm}^2$
1	1 st FLOOR GRID # 11	12	10.60	186	41.70
		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SMEAR <input checked="" type="checkbox"/> OTHER <input checked="" type="checkbox"/> MIN. COUNT (INCENTIVE) TYPE OF ANALYSIS: RADIO-METRIC <input checked="" type="checkbox"/> BERYLLIUM (INCENTIVE) OTHER _____			
		COMMENTS: _____			
		LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ SUB-ACCOUNT _____ WORK RELEASE _____			
		LOG BOOK NO. _____ PAGE _____			

FORM 772-A REV. 8-78

ANALYZED BY		Rockwell International Energy Systems Group		SUBMITTED BY	
DATE ANALYZED 12-12-83		HEALTH AND SAFETY ANALYSIS REPORT		DATE SAMPLED 12-9-83	
FILM NO. (DO NOT WRITE IN THIS BOX)				BLDG. AND ROOM NO. 302A/202A.5	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA	RESULTS	BETA	
1	FLOOR UNDER 25 lb. START GENERATOR #71 & 716	1.38	167	26.47	
2	" " " " " "	13.37	333	159.60	
3	" " " " " "	12.45	316	145.96	
THIS AREA WAS NOT SURVEYED ON PREVIOUS TRIP, BUT IT HAD OBVIOUSLY BEEN PAINTED RECENTLY.					
COMMENTS:					
TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____					
SHEAR <input checked="" type="checkbox"/> OTHER <input checked="" type="checkbox"/> <i>5 MIN. COUPLER</i>					
TYPE OF ANALYSIS:					
RADIOMETRIC <input checked="" type="checkbox"/> BERYLLIUM					
OTHER					
LEDGER ACCOUNT _____ CONTRACT _____ SUB-ACCOUNT _____ WORK RELEASE _____					
LOG BOOK NO. _____ PAGE _____					

GENERAL AREA AND HOT SPOTS SMEAR SURVEY
DECEMBER 1983

ESG-83-48

 Rockwell International Energy Systems Group		SUBMITTED BY <u>HLG-1</u> DATE SAMPLED <u>12-8-83</u> BLDG. AND ROOM NO. <u>EL. 260 AND 265, SEPARATE TAILS</u>	
ANALYZED BY <u>12-8-83</u> DATE ANALYZED <u>12-8-83</u> FILM NO. <u>100 DO NOT WRITE IN THIS BOX</u>		HEALTH AND SAFETY ANALYSIS REPORT	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS	
		ALPHA COUNTS	BETA COUNTS
1	HOT SPOTS IN SUMPS EL. 265 - SUMP WITH PIPING MARKED 52 PIG	6	191
2	EL. 260 - SUMP WITH PIPING MARKED 51 PIG	12	213
		5.07	45.71
		10.60	63.36
COMMENTS:		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SWEAT <input checked="" type="checkbox"/> OTHER <u>5 MIN. COUNTS</u> TYPE OF ANALYSIS: RADIO-METRIC <u>2</u> BERYLLIUM _____ OTHER _____	
LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ SUB-ACCOUNT _____ WORK RELEASE _____ LOG BOOK NO. _____ PAGE _____			

FORM 732-A REV. 6-78

ANALYZED BY _____ DATE ANALYZED <u>12-12-83</u> FILM NO. _____		Rockwell International Energy Systems Group HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY <u>W.H. Spent</u> DATE SAMPLED <u>12-9-83</u> BLDG. AND ROOM NO. <u>322A6A710A S</u>	
DESCRIPTION AND LOCATION <u>Hot Spot</u>		RESULTS ALPHA <u>Calms</u> <u>32.73</u> <u>6.92</u> <u>5.07</u> BETA <u>Calms</u> <u>272</u> <u>148</u> <u>147</u> <u>110.68</u> <u>11.23</u> <u>10.43</u>		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SMEAR <input checked="" type="checkbox"/> OTHER <u>5</u> <u>ALUMINUM</u> TYPE OF ANALYSIS: RADIOMETRIC <input checked="" type="checkbox"/> BERYLLIUM _____ OTHER _____	
COMMENTS: 		TYPE OF ANALYSIS: RADIOMETRIC <input checked="" type="checkbox"/> BERYLLIUM _____ OTHER _____			
LEDGER ACCOUNT _____ CONTRACT _____ SUB-ACCOUNT _____ WORK RELEASE _____		LOG BOOK NO. _____ PAGE _____ FORM 732-A REV. 6-78			

ANALYZED BY _____ DATE ANALYZED <u>12-12-83</u> FILM NO. _____ <small>DO NOT WRITE IN THIS BOX</small>		Rockwell International <small>Energy Systems Group</small> HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY <u>John Spent</u> DATE SAMPLED <u>12-9-83</u> BLDG. AND ROOM NO. <u>5400/6770A/15</u>	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____	TYPE OF ANALYSIS:
		COUNTS	COUNTS		
1	HOT SPOT UNDER PIPES MARKED 24P35	556	512.17	✓	SMEAR ✓ OTHER <u>5400/6770A/15</u>
				✓	RADIOMETRIC ✓ BERYLLIUM
				✓	OTHER _____ (IDENTIFY)
COMMENTS: _____					
LEDGER ACCOUNT _____		CONTRACT OR ORDER _____		SUB-ACCOUNT _____ WORK RELEASE _____	
LOG BOOK NO. _____		PAGE _____		FORM 732-A REV. 8-78	

ANALYZED BY <u>12-8-83</u>		Rockwell International Energy Systems Group		HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY <u>ALG</u>	
DATE ANALYZED <u>12-8-83</u>				EXHAUST SYSTEM		DATE SAMPLED <u>12-8-83</u>	
FILM NO. <u>12-8-83</u>				BUILDING AND ROOM NO. <u>3408BATTALIONS</u>			
SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS		ALPHA		BETA	
		COUNTS	SPM/100 CM ²	COUNTS	SPM/100 CM ²	COUNTS	SPM/100 CM ²
<u>THIRD STAGE</u>							
1	INSIDE FILTER PLenum ENTRANCE	2	1.38	132	-	-	-1.60
2	DUST ON DOOR IN FILTER PLenum ENTRANCE	0	70.46	130	-	-	-3.21
3	INSIDE HEPA FILTER ROOM	34	30.89	181	-	-	37.69
4	DUST ON DOOR IN HEPA FILTER ROOM	6	5.07	147	-	-	10.43
<u>SECOND STAGE</u>							
5	INSIDE HEPA FILTER CONTAINMENT STRACILED PPC (4cm ² SAEAR)	30	27.20	795	-	-	530.12
<u>FIRST STAGE</u>							
6	FLOOR - INSIDE DOOR 114	39	35.50	356	-	-	178.04
7	FLOOR - INSIDE DOOR 114	1	0.46	107	-	-	-21.65
COMMENTS:							
TYPE OF SAMPLE: SOIL <input type="checkbox"/> WATER <input type="checkbox"/> AIR <input type="checkbox"/>							
SMEAR <input checked="" type="checkbox"/> OTHER <input type="checkbox"/> <u>SMAL COUNT</u>							
TYPE OF ANALYSIS:							
RADIONUCLIDIC <input checked="" type="checkbox"/> BERYLLIUM <input type="checkbox"/>							
OTHER <input type="checkbox"/>							
LEDGER ACCOUNT		CONTRACT OR ORDER		SUB-ACCOUNT		WORK RELEASE	
LOG BOOK NO.		PAGE					

FORM 732-A REV. 8-78

MISCELLANEOUS AREAS

WTEG

Radiation Waste Concentration Area

Utilities Building

Warehouse

Machine Shop

Trailer

Model Shop

WTEG FACILITY

ESG-83-48

291

ANALYZED BY		PRELIMINARY		Rockwell International Energy Systems Group		HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY	
DATE ANALYZED		DS						DATE SAMPLED	
FILM NO.		100 201 201 10 1015 2011						BLDG. AND ROOM NO.	
								WTEG	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA counts	BETA counts	RESULTS					
1	1 m ² floor grids	5	317	8.42	1223.32				
2		10	326	5.05	1315.84				
3		8	340	11.78	1459.76				
4		12	672	11.78	4872.72				
5		12	313	8.42	1182.20				
6	(TANK ACCESS BLDG A) Floor grid	10	261	5.05	647.64				
7	(TANK ACCESS BLDG B) Floor grid	8	256	—	596.24				
8	Hot Spot	—	1853	—	17,013.40				
COMMENTS: 18-1-82 Bldg Eff 060 Bldg Bldg Eff 060 all 3 1.0 5.26 1.06 5 316 10.28 5.0		TYPE OF SAMPLE: SOIL WATER AIR SMEAR OTHER 5 mly counts TYPE OF ANALYSIS: General floor area RADIOMETRIC BERYLLIUM OTHER							
LEDGER ACCOUNT		CONTRACT OR ORDER		SUB-ACCOUNT		WORK RELEASE		LOG BOOK NO.	
								PAGE	

RADIATION WASTE CONCENTRATION AREA

ANALYZED BY _____

DATE ANALYZED _____

FILM NO. _____

Rockwell International
Energy Systems Group

HEALTH AND SAFETY ANALYSIS REPORT

SUBMITTED BY *Att. J. 1*

DATE SAMPLED *12-8-83*

RAD WASTE CONCENTRATION AREA

BLDG. AND ROOM NO. _____

SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS	
		ALPHA	BETA
1	1 m ² FLOOR GRIDS	COUNTS 449	COUNTS/cm ² 694.61
2		195	289.02
3		151	218.76
4		58	70.26
5		133	190.02
6		98	134.13
			4,400.64
			6,368.70
			485.90
			2,979.60
			7,960.88
			17,275.57

COMMENTS

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1

BKG

2.8

EFF

4.99

GEOR

1.6

BKG

38.6

EFF

9.55

GEOR

5.0

LEDGER ACCOUNT

CONTRACT OR ORDER


SUB-ACCOUNT

WORK RELEASE

LOG BOOK NO.

PAGE

FORM 732-A REV. 6-78

ANALYZED BY _____ DATE ANALYZED <u>12-12-83</u> FILM NO. _____ <small>(DO NOT WRITE IN THIS BOX)</small>		 Rockwell International Energy Systems Group		SUBMITTED BY <u>W. H. Spent</u> DATE SAMPLED <u>12-9-83</u> RAD WASTE CONCENTRATION BLDG. AND ROOM NO. <u>AREA</u>	
HEALTH AND SAFETY ANALYSIS REPORT					
SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS			
		ALPHA COUNTS	AMBIENT COUNTS	BETA COUNTS	AMBIENT COUNTS
1	1 st FLOOR GRIDS	3	2.31	130	-3.21
2		1	0.46	138	3.21
3		3	2.31	129	-4.01
4		8	6.92	168	27.27
5		7	5.99	209	60.15
6		4	3.23	174	32.08
COMMENTS:		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ "YEAR" <input checked="" type="checkbox"/> OTHER <u>5</u> <u>11/16/83</u> <small>(IDENTIFY)</small> TYPE OF ANALYSIS: RADIOMETRIC <input checked="" type="checkbox"/> BERYLLIUM _____ OTHER _____ <small>(IDENTIFY)</small>			
LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ SUB-ACCOUNT _____ WORK RELEASE _____		LOG BOOK NO. _____ PAGE _____			

UTILITIES BUILDING

ESG-83-48

299

ANALYZED BY: <u>PRELIMINARY</u>		Rockwell International Energy Systems Group		SUBMITTED BY: <u>D.L. Spaul</u>	
DATE ANALYZED: <u>11-17-83</u>		HEALTH AND SAFETY ANALYSIS REPORT		DATE SAMPLED: <u>11-17-83</u>	
FILM NO. _____		DESCRIPTION AND LOCATION		BLDG. AND ROOM NO. <u>UTILITY BLDG</u>	
THIS COPY WANTS IN THIS BOX:		RESULTS		ALPHA	
SAMPLE NUMBER		RESULTS		BETA	
1		1 m ² floor grids		counts dpm/100cm ² dpm/100cm ²	
2				15 16.83 313 1182.20	
3				12 11.78 304 1089.68	
4				17 20.20 311 1161.64	
5				14 15.15 373 1799.00	
6				10 8.42 273 771.00	
7				13 13.47 247 503.72	
8				11 10.10 263 668.20	
9				8 5.05 344 1509.88	
10				15 16.83 322 1274.72	
11				17 20.20 307 1120.52	
12				16 18.52 325 1305.55	
13				9 6.73 321 1264.44	
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FORM 732-A REV. 6-78

WAREHOUSE

ESG-83-48

303

ANALYZED BY		PRELIMINARY		Rockwell Interns. Jorad		HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY	
DATE ANALYZED		DS		Energy Systems Group		ALPHA		DATE SAMPLED	
FILM NO.		100 WEST WHITE IN THIS BOX		DESCRIPTION AND LOCATION		BETA		BLDG. AND ROOM NO.	
SAMPLE NUMBER	1	1 m ² floor grids	15	13.84	285	481.02	11-11-83	WAREHOUSE	
2	12		12	16.28	323	1082.90			
3	6		6	3.96	318	1119.99			
4	7		7	6.11	270	600.60			
5	12		12	7.91	296	898.01			
6	7		7	6.11	305	919.10			
7	9		9	1.98	304	978.73			
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MACHINE SHOP

ESG-83-48

ANALYZED BY		PRELIMINARY		Rockwell International Energy Systems Group	
DATE ANALYZED		DS		HEALTH AND SAFETY ANALYSIS REPORT	
FILM NO.		DO NOT WRITE IN THIS SPACE		Bldg. and Room No.	
SUBMITTED BY		DATE SAMPLED		Bldg. and Room No.	
SUBMITTED BY		DATE SAMPLED		Bldg. and Room No.	
1		1 m ² floor grids		ALPHA	
2				BETA	
3				counts	
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TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____

SMEAR _____ OTHER 5 min counts

TYPE OF ANALYSIS: general floor area

RADIOMETRIC _____ BERYLLIUM _____

OTHER _____ IDENTIFY: _____

LOG BOOK NO. _____

FORM 732-A REV. 8-78

ANALYZED BY <u>22</u> DATE ANALYZED <u>11-23-83</u> FILM NO. <u>100</u> (DO NOT WRITE IN THIS BOX)		Rockwell International Energy Systems Group HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY <u>Dr. Spal</u> DATE SAMPLED <u>11-11-83</u> BLDG. AND ROOM NO. <u>MACHINE SHOP</u>	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	RESULTS		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____	
		ALPHA COUNTS	BETA COUNTS	SHEAR <input checked="" type="checkbox"/> OTHER <input type="checkbox"/> <u>RAIN COUNT</u>	RADIOLOGIC <input checked="" type="checkbox"/> BERYLLIUM <input type="checkbox"/>
1	1 m ² FLOOR GRIDS	1	169	✓	✓
2		0	139		
3		1	152		
4		2	137		
COMMENTS:					
LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ SUB-ACCOUNT _____ WORK RELEASE _____		LOG BOOK NO. _____ PAGE _____			

TRAILER


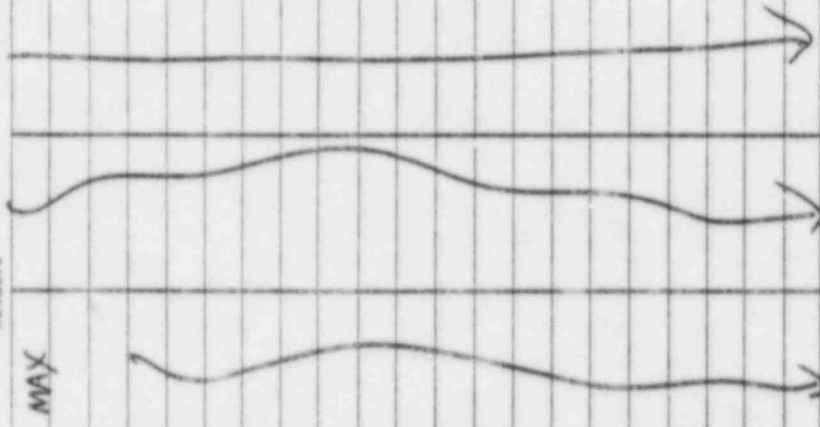
ESG-83-48

315

ANALYZED BY <u>Rockwell International</u> DATE ANALYZED <u>12-12-83</u> FILM NO. <u>100 NOT WRITE IN THIS BOX</u>		HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY <u>Rockwell International</u> DATE SAMPLED <u>12-9-83</u> BLDG. AND ROOM NO. <u>TRAILER</u>	
SAMPLE NUMBER	DESCRIPTION AND LOCATION	ALPHA COUNTS	RESULTS		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____
			Alpha	Beta	
1	TRAILER FLOOR	1	0.46	118	-12.83
2	FLOOR UNDER SUMP PUMP	9	7.84	146	9.62
COMMENTS: TYPE OF ANALYSIS: SMear <input checked="" type="checkbox"/> OTHER <input type="checkbox"/> TYPE OF ANALYSIS: RADIOLOGIC <input checked="" type="checkbox"/> BERYLLIUM <input type="checkbox"/> OTHER <input type="checkbox"/>					
LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ SUB-ACCOUNT _____ WORK RELEASE _____ LOG BOOK NO. _____ PAGE _____					

MODEL SHOP

ESG-83-48

 Rockwell International Energy Systems Group		HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY <u>DL Smith</u> DATE SAMPLED <u>11-16-83</u> IN D.C. AND ROOM NO. <u>MODEL SHOP</u>	
ANALYZED BY _____ DATE ANALYZED _____ FILM NO. <u>000 001 00112 IN TUBE 0011</u>					
SAMPLE NUMBER	DESCRIPTION AND LOCATION	GENERAL	MAX	RESULTS	
1	FLOOR GRIDS 1 m above center	14			
2		14			
COMMENTS: <u>LUDLUM 125 #381501</u>					
LEDGER ACCOUNT _____ LOG BOOK NO. _____		SUB-ACCOUNT _____ WORK RELEASE _____		TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SMEAR _____ OTHER <u>DIRECT GAMMA</u> TYPE OF ANALYSIS: <u>HR/HR</u> RADIO-METRIC _____ BERYLLIUM _____ OTHER _____	

ANALYZED BY		Rockwell International		SUBMITTED BY	
DATE ANALYZED		Health and Safety Group		DATE SAMPLED	
FILM NO.		HEALTH AND SAFETY ANALYSIS REPORT		BI ENG. AND ROOM NO.	
1		1 m ² floor grids		Model Shop	
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ESG-83-48

ANALYZED BY <u>DL Spad</u> DATE ANALYZED <u>11-22-83</u> FILM NO. <u>11-22-83</u>		Rockwell International Energy Systems Group HEALTH AND SAFETY ANALYSIS REPORT		SUBMITTED BY <u>DL Spad</u> DATE SAMPLED <u>11-11-83</u> BLDG. AND ROOM NO. <u>700XL SHOP</u>	
SAMPLE NUMBER 1 2	DESCRIPTION AND LOCATION 1 m ² Floor GR03	RESULTS Counts 152 154 10,12	ACID 0.14 2.66	TYPE OF SAMPLE: SOIL _____ WATER _____ AIR _____ SMEAR <input checked="" type="checkbox"/> OTHER <u>5 MIN. CORALS</u>	
				TYPE OF ANALYSIS: RADIOLOGIC <input checked="" type="checkbox"/> BERYLLIUM _____ OTHER _____	
COMMENTS:		TYPE OF ANALYSIS:			
LEDGER ACCOUNT _____ CONTRACT OR ORDER _____ SUB-ACCOUNT _____ WORK RELEASE _____		LOG ROOM NO. _____ PAGE _____			