

MAY 1 1985

FCUP:MLH

DOCKET NO.: 70-1007

APPLICANT: General Electric Company (GE)  
San Jose, California

SUBJECT: CATEGORICAL EXCLUSION FOR REQUEST DATED  
APRIL 14, 1982 TO TERMINATE LICENSE

By letter dated April 14, 1982, GE requested termination of Materials License No. SNM-54. Buildings H and J at the San Jose site have since been decontaminated and, based on findings in Inspection Report Nos. 07001007/83-1 and 07001007/84-1, the NRC has released these buildings for unrestricted use. The residual material possessed under this license will be transferred to California License No. 0418-59. This action is administrative in nature and will have no environmental impacts. Therefore, in accordance with 10 CFR 51.22(c)(11), an Environmental Assessment or an Environmental Impact Statement is not warranted for this proposed action.

FOR THE NUCLEAR REGULATORY COMMISSION

Original Signed By:  
W. T. Crow

W. T. Crow, Acting Chief  
Uranium Fuel Licensing Branch  
Division of Fuel Cycle and  
Material Safety, NMSS

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PDR ADOCK 07001007  
C PDR

OFFICE	FCUP <i>MLH</i>	FCUF <i>X</i>	FCUF <i>WTC</i>				
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DATE	4/29/85	4/29/85	5/1/85				

U.S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT

REGION V

Report No. 70-1007/83-01

Docket No. 70-1007

License No. SNM-54

Licensee: General Electric Company  
175 Curtner Avenue  
San Jose, California 95125

Facility Name: General Electric Company

Inspection at: San Jose, California 95125

Inspection conducted: May 12-13, 16-18, 1983

Inspectors: B. L. Brock  
B. L. Brock, Fuel Facilities Inspector

7/1/83  
Date Signed

P. R. Zurakowski  
P. R. Zurakowski, Radiation Specialist

1 July 83  
Date Signed

J. F. Pang  
J. F. Pang, Radiation Specialist

7-1-83  
Date Signed

Approved By: R. D. Thomas  
R. D. Thomas, Chief, Materials Radiation  
Protection Inspection and Licensing Section

7/1/83  
Date Signed

Approved By: H. E. Book  
H. E. Book, Chief, Radiological Safety Branch

7/7/83  
Date Signed

Summary:

Inspection of May 12-13, 16-18, 1983 (Report No. 70-1007/83-01)

On April 19, 1983, the licensee requested NRC Region V to conduct a confirmatory survey of the facility to establish that the buildings can be released for unrestricted use prior to the transfer of the operations to the state license and the termination of NRC License SNM-54. On May 12, 1983, three Region V inspectors began the confirmatory survey in Building J of the facility. The survey was completed on May 18, 1983.

Results: This survey, conducted with Micro-R portable gamma scintillation survey instruments, air proportional alpha survey instruments, contamination wipes, and soil samples found the contamination levels were within the NRC guidelines as shown in attached tables. Based on the results of this survey, it was determined that the facility can be released for unrestricted use and that no additional decontamination will be required. A total of 72 man-hours were expended on site utilizing three inspectors in conducting this survey.

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## DETAILS

### 1. Persons Contacted

B. L. Epstein, Program Manager, Support Programs  
G. E. Cunningham, Senior Licensing Engineer  
C. Berry, Manager, Facilities Engineering & Planning  
M. Hensley, Construction Engineer, Facilities  
A. H. Lane, Radiation Protection Technician

### 2. Background

The licensee discontinued activities involving SNM (specifically enriched uranium) in the Building J facility during the 2nd quarter of 1969. At that time, all contaminated equipment was removed and either sent to a licensed burial site or to another facility authorized to accept the material. All ventilation ducting was removed (including that on the roof) and also sent to a burial facility. The building was then decontaminated. The decontamination efforts included the jack hammering and removal of contaminated concrete. Following decontamination, the floors in the contaminated areas were retiled and the facility was internally released for unrestricted use by the licensee and used for over twelve years for activities not involving radioactive materials.

In late July of 1982 the licensee requested NRC to conduct a survey of Building J to confirm that the facility meets the NRC limits for unconditional release with respect to uranium contamination.

On August 5, 1982, three inspectors from NRC Region V conducted a preliminary survey of the old  $UF_6$ - $UO_2$  conversion area where a known spill of approximately 300 lbs. of uranium hexafluoride occurred on December 30, 1967. After the discovery of some contamination under floor tile that did not meet NRC release criteria, it was determined that additional decontamination would be required in this area of Building J.

In response to these findings, the licensee took the following actions in this 6450 ft<sup>2</sup> section of the building:

1. All interior walls surrounding this area were removed.
2. All floor tile was removed.
3. The entire concrete floor surface was removed (scabbled) to a depth of approximately 1/4 inch.
4. Approximately 500 linear feet of floor containing expansion joints were removed. The area of these trenches added up to about 1400 ft<sup>2</sup>.
5. All contaminated drain lines were removed.
6. An extensive survey of the building was made and the results sent to NRC Region V on April 19, 1983.

In addition to the survey results, the licensee also forwarded a letter requesting NRC Region V to conduct a 2nd survey to confirm that the facility meets the NRC limits for unconditional release. On May 12-18, 1983, three inspectors expended a total of 72 inspector hours conducting confirmatory surveys on floor, wall, supporting girder and roof areas of Building J. The survey criteria were based on NRC requirements established by the "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material, July 1982", and on Policy and Guidance Directive FC-3: "Standard Review Plan for Termination of Special Nuclear Material Licenses of Fuel Cycle Facilities", April 1, 1983.

### 3. Discussion

The survey results, compared favorably with the licensee's measurements with the exception of several dozen isolated "hot spots" associated with the old  $UF_6$ - $UO_2$  conversion area. Most of the spots on the ground floor were in areas not accessible to the scabbling machine used by the licensee. The contamination on the roof (most probably associated with the spill of 1967) was in the area where filter banks and ventilation ducting was removed in 1969. Most of the contamination found in the girders was associated with an inside wall (removed prior to the inspection) which protected the girders from the decontamination efforts of early 1968 (high pressure water was used). The licensee was allowed to decontaminate these isolated spots while the inspectors were surveying other parts of the building. After the decontamination efforts were completed by the licensee, a resurvey indicated that NRC guidelines had been met for the isolated spots. A review of all survey results indicates that Building "J" meets NRC guidelines for unrestricted use.

### 4. Procedure

#### A. General

The procedure used during this survey for the floor and roof areas was to locate potential areas of contamination using gamma scintillation survey meters held at a distance of approximately one inch from the surfaces being surveyed. Contaminated areas located were subsequently surveyed with an air proportional alpha meter to determine the alpha contamination level. The gamma scintillation survey meters were sufficiently sensitive for this survey. Wipes were collected where appropriate. Both the controlled and uncontrolled areas of Building J were included in this survey.

The licensee's decontamination efforts included removal of portions of the concrete floor in the old  $UF_6$ - $UO_2$  conversion area and some of the soil thus exposed.

Soil samples were collected from randomly selected locations as well as those locations where the presence of potential contamination was indicated by a gamma survey.

## B. Instruments Used

The instruments used in this survey are the Eberline Model PRM-7 gamma scintillation survey meters, LRL alpha survey meters, and a Ludlum alpha survey meter. A Tennelec Gas Flow Proportional counter was used to count the wipes. The specific instruments used are as follows:

<u>Instrument</u>	<u>Serial No.</u>	<u>Calibration due date</u>
LRL Alpha Survey Meter	NRC 374	10-21-83
LRL Alpha Survey Meter	NRC 375	9-14-83
Ludlum Alpha Survey Meter	NRC 3565	10-20-83
Eberline PRM-7 Survey Meter	NRC 6383	3-28-84
Eberline PRM-7 Survey Meter	NRC 8596	3-11-84
Eberline PRM-7 Survey Meter	NRC 10839	8-16-83
Tennelec Gas Flow Proportional Counter	57514	N.A.

## C. Areas Covered

The areas surveyed were the floors, walls, ceiling girders and roof of Building J and are described in detail as follows:

### (1) Floor

Floor areas were surveyed where possible i.e., where the floor was not covered by equipment or furniture (Figure 1). An estimate of the percent of the floor area surveyed is given below:

<u>Location</u>	<u>Total Est. Area (Ft<sup>2</sup>)</u>	<u>% of Total Area Surveyed</u>
UF <sub>6</sub> -UO <sub>2</sub> Conversion Area	6000	100
South Controlled Area	4700	75
North Controlled Area	4800	60
Furnace Room	4100	90
Change Rooms	850	80
Offices & Machine Shop Area	2800	75
Uncontrolled Area	28,000	90

### (2) Roof

As with the floor area, all of the tar and gravel roof areas were surveyed where possible with gamma scintillation survey meters (Figure 2). It is estimated that approximately 80% of the roof area was surveyed for gamma radiation. An alpha survey was also made of the equipment on the roof such as vents, ducts, and machinery.



### (3) Walls

#### a. $\text{UF}_6$ - $\text{UO}_2$ Conversion Area

The existing wall surface of the  $\text{UF}_6$ - $\text{UO}_2$  conversion area was surveyed for alpha and gamma radiation from the floor to an approximate height of 7 feet. In addition, two randomly selected areas of wall having the dimensions 28 feet by 10 feet were also surveyed for alpha radiation. It is estimated that 3% of the actual wall area of these two randomly selected areas were surveyed for alpha radiation.

#### b. North and South Controlled Area

The east wall of the south controlled area was surveyed for alpha radiation from the floor to the height of approximately 7 feet because of suspected potential contamination based on information provided by a licensee representative. It is estimated that 1% of the perimeter wall area of the north and south controlled area was surveyed.

### (4) Girders

Several roof girders in both controlled and uncontrolled areas were selected for survey. The estimated height of these girders above the floor is approximately 35 feet. The approximate location of these girders are indicated in Figure 3. Alpha and wipe surveys were conducted.

### D. Soil Survey

Six samples had been collected from the soil underneath the concrete floor which had been exposed as a result of decontamination efforts by the licensee (Figure 4, Table 1). One sample was also collected from the soil which had been underneath the liquid waste treatment facility which was outside and adjacent to the south wall of Building J. This facility including equipment had been completely demolished and disposed. A soil sample from near Building L was collected as a representative background sample.

## 5. Results of Surveys

### A. Floors Survey

A total of 10 areas of contamination were found on the floor area (Figure 1, Table 2). Of these 10 areas, 9 were located in the  $\text{UF}_6$ - $\text{UO}_2$  conversion area and the remaining area was located in the closet of the former men's change room. All of the contaminated areas found were below the NRC limit of 15000 dpm/100  $\text{cm}^2$  for discrete sources. The areas ranged from 300  $\text{cm}^2$  to less than 100  $\text{cm}^2$  in size. The alpha contamination levels found ranged from 2300 dpm/100  $\text{cm}^2$  to 11400 dpm/100  $\text{cm}^2$ . However, the licensee's policy

was to decontaminate to as low a level as possible. Consequently, all of the contaminated spots found were subsequently decontaminated by the licensee to a maximum of 450 dpm/100 cm<sup>2</sup> or less by chiseling out the contaminated concrete from the floor.

#### B. Roof Survey

A total of 11 areas of contamination were found on the roof area and associated equipment (Figure 2, Table 3) such as vent covers. Six of the 11 contaminated areas were on the roof itself and were clustered around the vent duct exhausting the UF<sub>6</sub>-UO<sub>2</sub> conversion area. Because the roof covering is of tar and gravel composition which is inherently uneven, alpha surveys could not be used as an accurate indicator of contamination. The licensee decontaminated the contaminated areas found during this survey, using the micro R meters, by removing the tar and gravel roofing down to the bare wood. The level of alpha contamination remaining ranged from 6800 dpm/100 cm<sup>2</sup> for about an area of 200 cm<sup>2</sup> on the bare wood to about 110 dpm/100 cm<sup>2</sup>.

The remaining five contaminated areas were found while using alpha survey meters on the equipment on the roof. The range of alpha contamination levels found ranged from 110 dpm/100 cm<sup>2</sup> to 570 dpm/100 cm<sup>2</sup>.

#### C. Girders Survey

A preliminary survey was conducted at several girder locations in the northern and southern sections of the UF<sub>6</sub>-UO<sub>2</sub> conversion area. Two girder areas in the northern section contained significant contamination levels. The first area was associated with a girder enclosing wall which had been removed by the licensee during the decontamination operation. The second girder area was associated with the ventilation duct work to the roof of the building. These isolated areas of contamination collectively comprised only a very small fraction of the total girder area surveyed. The survey results of the southern girder area indicated no significant contamination levels.

Based upon the results of the preliminary survey, nineteen girder locations were selected for further survey (Figure 3). Ten of these girder locations were in the UF<sub>6</sub>-UO<sub>2</sub> conversion area. The remaining nine locations were selected at random in the uncontrolled area. Small areas of contamination of about 6800 dpm/100 cm<sup>2</sup> ranging in size from less than 100 cm<sup>2</sup> to 200 cm<sup>2</sup> were found at eight locations in UF<sub>6</sub>-UO<sub>2</sub> conversion area. These areas were decontaminated to approximately 340 dpm/100 cm<sup>2</sup>.

One location in the uncontrolled area measured approximately 3400 dpm/100 cm<sup>2</sup> for an estimated area of 100 cm<sup>2</sup>. This area was decontaminated to approximately 350 dpm/100 cm<sup>2</sup>.

The remaining ten areas measured approximately 340 dpm/100 cm<sup>2</sup>. These areas were also decontaminated although they were well below

the NRC limits. The measured alpha contamination levels after decontamination were background.

D. Soil Survey

Eight soil samples including one background sample were collected for analyses on March 17, 1983. Two of the eight samples collected indicated soil contamination concentrations greater than the NRC release limit of 30 pCi/g for enriched uranium. Two decontamination efforts were subsequently made by the licensee to reduce the soil concentrations of enriched uranium to acceptable levels. As a result, five additional soil samples were collected for a total 13 samples.

Of the eight locations sampled, two locations had concentrations of 20 and 22 pCi/g of enriched uranium respectively. The remaining locations had concentrations of less than 1 pCi/g of enriched uranium.

E. Wipe Survey

The NRC limit for removable alpha (U-238, U-235) contamination is 1000 dpm/100 cm<sup>2</sup>. A total of 29 wipes were collected. Twenty-two wipes were collected from areas where contamination had been indicated by the gamma and alpha surveys (Table 4). The highest wipe level was 293 dpm/100 cm<sup>2</sup>. The remaining wipes were well below this level.

6. Conclusion

The concentrations of uranium in the soil from under the concrete floor in the UF<sub>6</sub>-UO<sub>2</sub> conversion area has been decontaminated to below the NRC limit of 30 pCi/g for enriched uranium. The survey of Building J indicate that all areas of contamination found have been decontaminated and are well within the NRC limits. As a result of this survey, it is concluded that Building J may be released for unrestricted use.



Table 1

Results of Analyses of Soil Samples Collected from the  
 $\text{UF}_6$ - $\text{UO}_2$  Conversion Area in Building J

<u>Sample No.</u>	<u>Location</u> (see Fig. 4)	<u>Concentration of Uranium in pCi/g</u>		
		<u>3-17-83</u>	<u>5-12-83</u>	<u>5-18-83</u>
1.	Northern end of the eastern north-south trench in the southern half of the area.	$20 \pm 1.0$		
2.	Southern end of the western north-south trench.	$22 \pm 1.0$		
3.	West end of southernmost east-west trench.	$*43 \pm 2.0$	$*203 \pm 7$ $*189 \pm 7$	$<1$ $<1$
4.	Northern end of north-south trench in southeastern corner of the building.	$0.4 \pm 0.9$		
5.	Girder foundation in south-eastern area of the building.	$*2300 \pm 100$	$7. \pm 1$	
6.	Northern end of the north-south trench in the northern half of the area.	$0.4 \pm 0.9$		
7.	Background sample (collected by Building L).	$0.2 \pm 0.9$		
8.	Liquid waste treatment facility.	$0.4 \pm 0.9$		

\*Exceeds the NRC limit of 30 pCi/g for enriched uranium.

Table 2

## Alpha and Gamma Survey Results of Floor Area in Building J

<u>Location No.</u>	<u>Before Decontamination</u>		<u>After Decontamination</u>	
	<u>alpha</u> dpm/100 cm <sup>2</sup>	<u>gamma</u> ur/hr	<u>alpha</u> dpm/100 cm <sup>2</sup>	<u>gamma</u> ur/hr
1	3400	8-10	350	3-5(background)
2	4500	10-13	350	"
3	6800	12-15		"
4	3400	8-10	350	"
5	11400	30-35	50	"
6	6800	12-15	350	"
7	5700	12-15	250	"
8	2700	5-8	450	"
9	2300	5-8	150	"
10	9100	20-25	350	"

(1) Efficiency = 0.44

Table 3  
Survey of Building J Roof Area

Location No.	Before Decontamination		After Decontamination
	alpha (1) dpm/100 cm <sup>2</sup>	gamma ur/hr	alpha (1) dpm/100 cm <sup>2</sup>
1		8-10	350
2		15	6800(2)
3		8-10	300
4		8-10	570
5		8-10	570
6		8-10	900
7	160	Bkgnd	160
8	230	"	230
9	110	"	110
10		"	570
11	80	"	80

(1) Efficiency = 0.44

(2) 100 cm<sup>2</sup> total area

Table 4  
Results of Wipe Survey

<u>Sample No.</u>	<u>Date Collected</u>	<u>Location</u>	<u>Dpm/100 cm<sup>2</sup></u>
1	5-16-83	N.E. side of Bldg. J (Drip marks from wall).	1
2	"	East side of Bldg. J, center of wall, drip marks on wall.	3
3	"	Intersecting girders - 2nd intersection near S.W. wall of UF <sub>6</sub> -UO <sub>2</sub> conversion room.	5
4	5-17-83	UF <sub>6</sub> -UO <sub>2</sub> conversion area.	54
5	"	" " "	13
6	"	" " "	4
7	"	" " "	17
8	"	" " "	1
9	"	" " "	5
10	"	" " "	8
11	"	" " "	43
12	"	" " "	21
13	"	Old furnace room girder 20' west of pit.	212
14	"	Inside of large roof vent by Col. C-9.	8
15	"	Vent south of Col. C-9.	293
16	"	Girder by vent south of Column C-9.	245
17	"	Fluorescent light by large exhaust roof vent near column C-9.	29
18	"	Girder by large exhaust vent near column C-9.	69
19	"	Intersection of cross beam in uncontrolled area in middle of building.	14
20	5-18-83	1st girder crosspiece North wall by corner UF <sub>6</sub> -UO <sub>2</sub> conversion area.	6
21	"	" " "	22
22	"	1st girder crosspiece on east wall for UF <sub>6</sub> -UO <sub>2</sub> conversion area, south sample.	32
23	"	1st girder crosspiece on east wall for UF <sub>6</sub> -UO <sub>2</sub> conversion area, north sample.	20
24	"	Wall junction-east wall on north end UF <sub>6</sub> -UO <sub>2</sub> conversion area.	9
25	"	Wall junction - east wall on north end UF <sub>6</sub> -UO <sub>2</sub> conversion area.	52

<u>Sample No.</u>	<u>Date Collected</u>	<u>Location</u>	<u>Dpm/100 cm<sup>2</sup></u>
26	"	East wall - 2nd junction from north end to wall.	26
27	"	East wall - 2nd junction from north end to wall.	61
28	"	East wall - 4th junction from north wall-underside.	113
29	"	East wall - 4th junction from north wall.	67



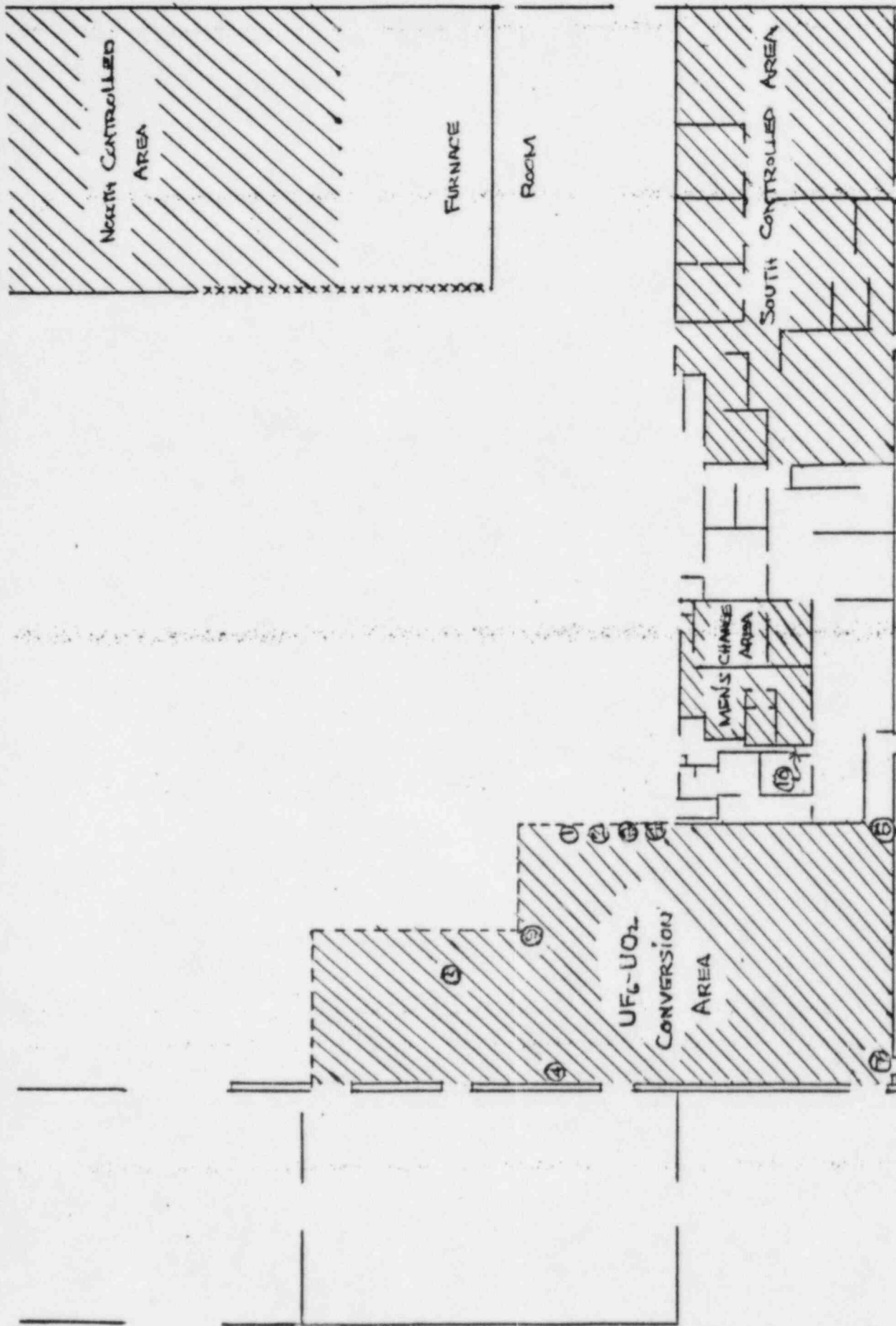


FIGURE 1 OLD SURVEY OF FLOOR AREA IN BLDG. J

LEGEND

----- OUTLINE OF WALL OF UF<sub>6</sub>-UO<sub>2</sub> CONVERSION AREA WHICH HAS BEEN REMOVED.

XXXXXXX CHAIN LINK FENCE

CONTROLLED AREA 6 5 10 15 25 35

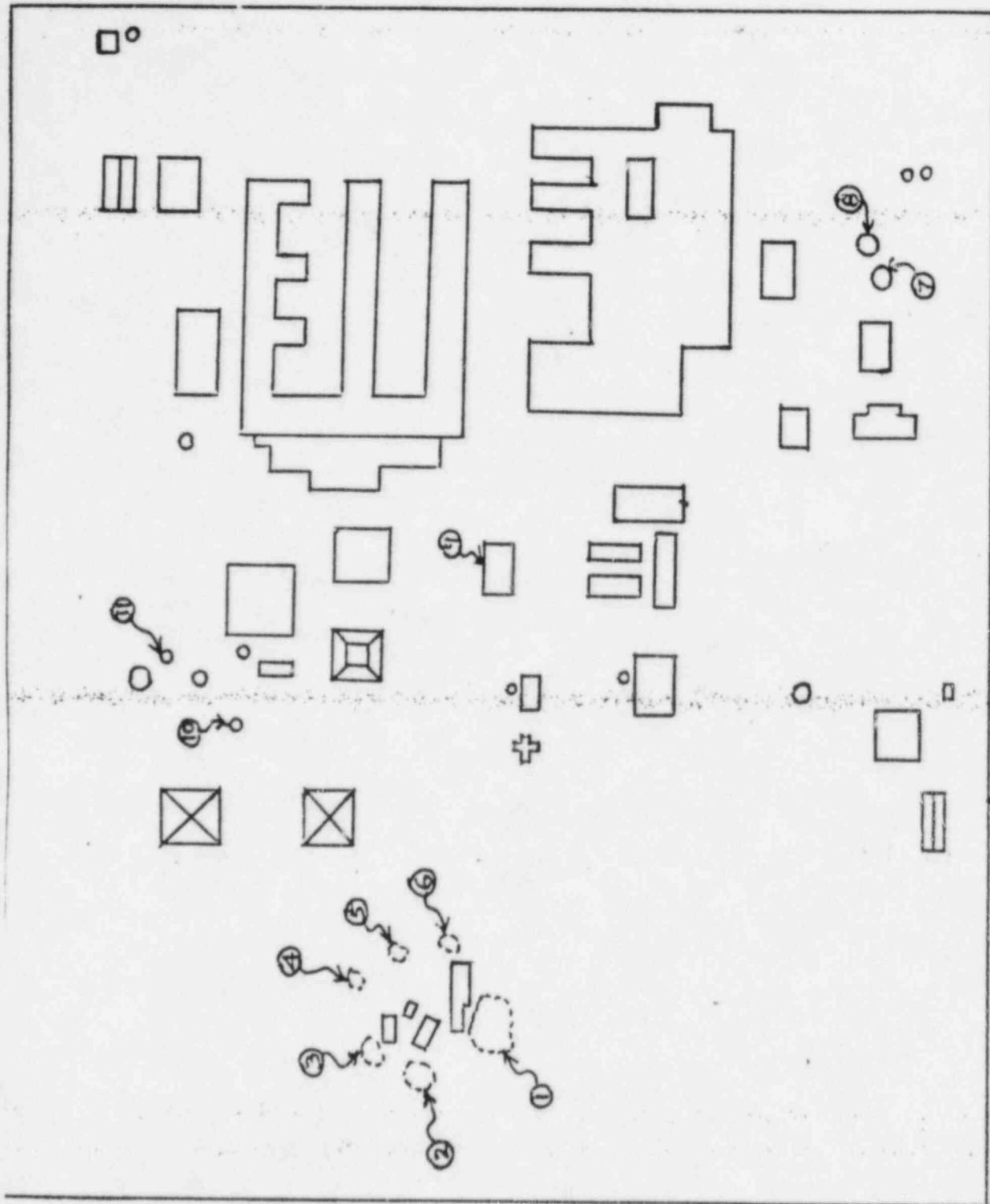


FIGURE 2 X & Y SURVEY OF BUILDING J ROOF AREA

LEGEND

--- AREA WHERE FIRE GRAVEL ROOFING HAS BEEN REMOVED DOWN TO WOOD.

○ LOCATIONS OF CONTAMINATION FOUND  
EQUIPMENT NOT DRAWN TO SCALE

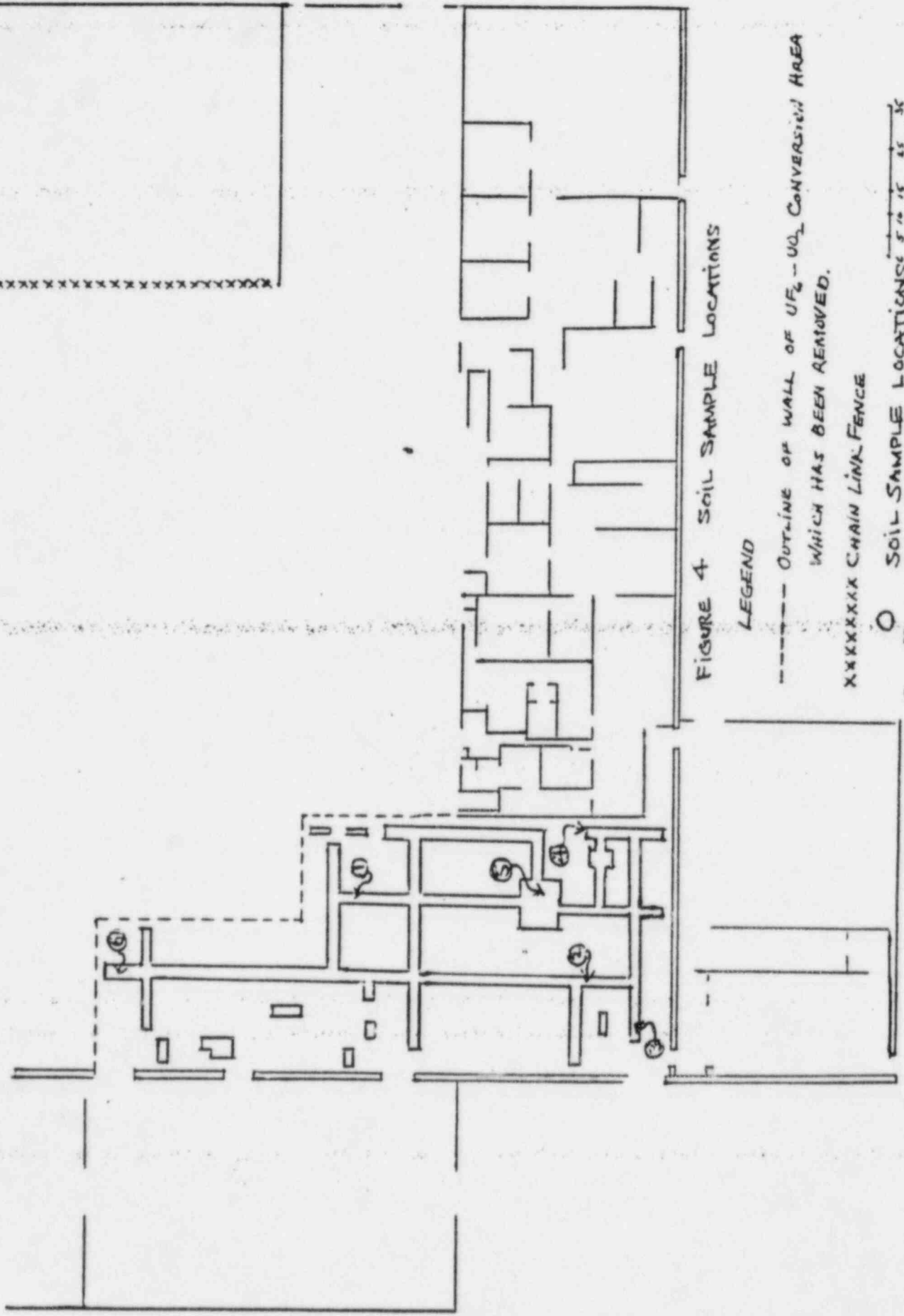


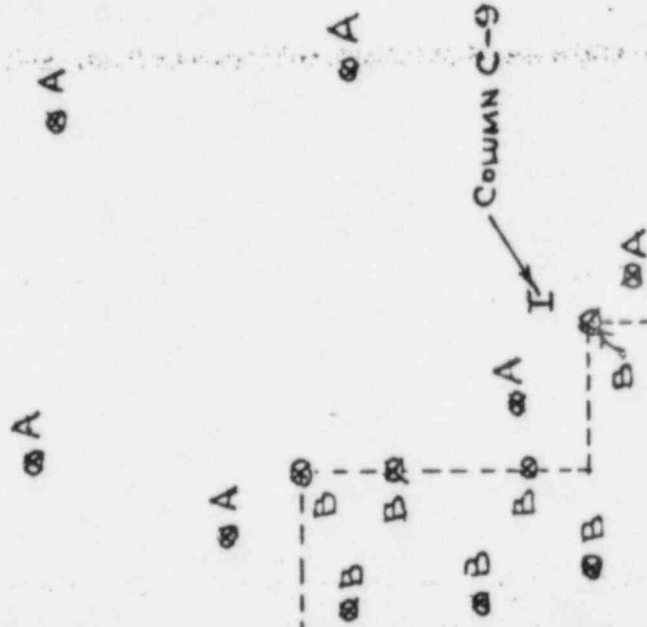
FIGURE 4 SOIL SAMPLE LOCATIONS

LEGEND

----- OUTLINE OF WALL OF  $UF_6$ - $UO_2$  CONVERSION AREA  
WHICH HAS BEEN REMOVED.

XXXXXX CHAIN LINK FENCE

○ SOIL SAMPLE LOCATIONS 1 2 3 4 5 6  
Scale (feet)



$\alpha$ -INITIAL  $\sim 3400$  DPM/100 CM<sup>2</sup>  
 AFTER CLEANING  $\rightarrow$   $\otimes$   
 $\sim 350$  DPM/100 CM<sup>2</sup>  
 $\gamma$ -BACKGROUND  $\sim 3$  HR/Hr

# NOTE

A.  $\alpha$ -INITIAL  $\sim 6800$  DPM/100 CM<sup>2</sup>  
 AFTER CLEANING  $\sim 340$  DPM/100 CM<sup>2</sup>  
 $\gamma$ -BACKGROUND

B.  $\alpha$ -INITIAL  $\sim 6800$  DPM/100 CM<sup>2</sup>  
 AFTER CLEANING  $\sim 340$  DPM/100 CM<sup>2</sup>  
 $\gamma$ -INITIAL  $\sim 15$  HR/Hr  
 AFTER CLEANING  $\sim 5$  HR/Hr

FIGURE 3  $\alpha$  &  $\gamma$  SURVEY OF GIRDERS IN BLDG J

## LEGEND

--- OUTLINE OF WALL OF UF<sub>6</sub>-UO<sub>2</sub> CONVERSION AREA  
 WHICH HAS BEEN REMOVED.  
 XXXXXXXX CHAIN LINK FENCE

$\otimes$  SITE OF SURVEY

0 5 10 15 20 25 30  
 FEET

U. S. NUCLEAR REGULATORY COMMISSION  
REGION V

Report No. 70-1007/84-01

Docket No. 70-1007

License No. SNM-54

Licensee: General Electric Company  
175 Curtner Avenue  
San Jose, California 95125

Facility Name: General Electric Company

Inspection at: San Jose, California 95125

Inspection conducted: February 22-24, July 2, 5 and September 18, 1984

Inspectors: B. L. Brock 12/18/84  
B. L. Brock, Fuel Facilities Inspector Date Signed

P. R. Zurakowski 12/19/84  
P. R. Zurakowski, Radiation Specialist Date Signed

Approved By: R. D. Thomas 12/19/84  
R. D. Thomas, Chief Date Signed  
Nuclear Materials Safety Section

Summary:

Inspections of February 22-24, July 2, 5 and September 18, 1984  
(Report No. 70-1007/84-01)

On April 19, 1983, the licensee requested NRC Region V to conduct a confirmatory survey of the facility to establish that Buildings (J and H) can be released for unrestricted use prior to the transfer of the operations to the state license and the termination of NRC License SNM-54. The Building J survey was completed May 18, 1983 (see Inspection Report 70-1007/83-01). On February 22, 1984, two Region V inspectors began the confirmatory surveys in Building H of the facility. A State of California inspector participated during the first two days of the inspection. The surveys were completed on September 18, 1984.

Results: These confirmatory surveys, conducted with Micro-R portable gamma scintillation survey instruments, air proportional alpha survey instruments, and contamination wipes, found the contamination levels were within the NRC guidelines as shown in attached tables. Based on the results of these surveys, it was determined that Building H can be released for unrestricted use and no additional decontamination will be required. A total of 50 man-hours was expended onsite utilizing two inspectors in conducting these surveys.

This completes the confirmatory surveys inspection of the facilities processing SNM under NRC license SNM-54 at the General Electric Company, site in San Jose, California.

6501100566-177



## DETAILS

### 1. Persons Contacted

A. H. Lane, Radiation Protection Technician  
M. J. Hensley, Construction Engineer, Facilities  
J. Kass, Manager, Plant Materials and Experimental Mechanics  
W. W. Lew, Health Physicist, State of California  
Department of Industrial Relations

### 2. Background

As part of the licensee's efforts to terminate NRC License SNM-54 both Buildings H and J were scheduled for decontamination and NRC overcheck. Building J was completed first and the NRC confirmatory surveys were previously reported (70-1007/82-02 and 70-1007/83-01). Building H activities involved powder and pellet handling and fuel rod fabrication. R and D level work in  $UF_6$  to  $UO_2$  direct conversion and vibratory compaction were also undertaken. The operations stopped about 1977. Decontamination began in October, 1980 and continued through March, 1981. The licensee's San Jose Technological Safety Council (SJTSC) reviewed the status of Building H from March 23 through April 1, 1981 and in its April 16, 1981 report indicated there were no corrective actions identified with regard to meeting California or NRC release limits.

This report presents the results of the NRC confirmatory surveys of Building H on February 22-24, July 2, 5 and September 18, 1984. A State of California Radiation Health Unit inspector was of invaluable assistance during the two days (February 22 and 23) he was available to assist with the initial Building H inspection. The survey criteria were based on NRC requirements established by the "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material, July 1982," and on Policy and Guidance Directive FC-3: "Standard Review Plan for Termination of Special Nuclear Material Licenses of Fuel Cycle Facilities," April 1, 1983.

### 3. Confirmatory Survey of February 22-24, 1984

#### A. Instruments

The field radiation detection instruments selected for this survey were Eberline Model PRM-7 gamma scintillation survey meters, Lawrence Radiation Laboratory (LRL) alpha survey meters, and a Ludlum Model 12 alpha survey meter. The smear samples were counted on a Tennelec Gas Flow Proportional counter. The specific instruments used and their calibration status were:

<u>Instrument</u>	<u>Identification No.</u>	<u>Calibration Due</u>
Eberline PRM-7 Miro-R Meter	NRC 006383	3/23/84
Eberline PRM-7 Micro-R Meter	NRC 008596	3/27/84
Eberline PRM-7 Micro-R Meter	NRC 10839	6/15/84
LRL Alpha Survey Meter	NRC 000374	4/18/84
LRL Alpha Survey Meter	NRC 000375	3/16/84
Ludlum Alpha Survey Meter	NRC 003565	4/20/84
Tenelec Gas Flow Proportional Counter	57514	N.A.

B. Areas Surveyed

(1) General

Building H included about 35,000 sq. ft. of floor and roof space (15,000 sq. ft. on the first floor, 5000 sq. ft. on the second floor and 15,000 sq. ft. of roof). The initial survey was made of all floor and roof areas using the Eberline Micro-R meters. These instruments indicated background gamma levels of 3 to 7 ur/hr. It is estimated that 90 percent of both the floor area (See Figures 1 and 2) and the roof area (See Figure 3) were surveyed through inclusion of accessible areas under and around equipment. This effort to confirm the licensee's surveys resulted in identification of some areas exceeding the 3-7 ur/hr background. Elevated alpha counts were generally associated with elevated gamma counts. The gamma surveys were faster and readily identified areas for tile, carpet or wall footing removal. On the first floor, an area in the Metallurgy Laboratory (beneath the hood and work bench) read about 200 ur/hr. Also, a first floor storage room doorway threshold read about 20 ur/hr. In the old powder preparation area a reading of 30 ur/hr was obtained for the floor area adjacent to a pillar supporting a platform previously used to store containers of  $UO_2$  powder. In the computer room, formerly a part of the pellet pressing and grinding operation, a reading of 10 ur/hr was obtained at the base of one of the pillars. The hallway near the fuel rod storage area read 25 ur/hr at one location. On the second floor an area in the room previously used for the preparation of  $UO_2$  powder, containing a neutron absorber, readings of 30 ur/hr were obtained.

The licensee organized a crew to undertake cleanup of the identified areas exceeding background. Prior to the completion of the confirmatory surveys, the identified areas of elevated readings were cleaned. NRC resurvey of these areas found contamination levels less than NRC release limits of 5000 dpm/100  $cm^2$  average alpha contamination and 15,000 dpm/100  $cm^2$  maximum alpha. Smear samples were taken to determine if the NRC alpha limit for removable contamination (1000 dpm/100  $cm^2$ ) was also met. Subsequent NRC measurement of the smear samples gave results less than the NRC limit for removable alpha contamination (See Table 1).

(2) Environmental Qualification Laboratory (EQL)

(a) Powder Storage Platform

An alpha survey of the elevated platform storage area yielded alpha contamination ranging from 1100 to 2400 dpm/100 cm<sup>2</sup>. The licensee committed to damp mop the area before our return the next day. The inspectors resurveyed and found the area much cleaner but were able to identify three hot spots of alpha contamination at 1200 dpm/100 cm<sup>2</sup>, 5600 dpm/100 cm<sup>2</sup> and 10,000 dpm/100 cm<sup>2</sup>. The licensee recleaned the hot spots reducing them to less than 130 dpm alpha/100 cm<sup>2</sup>. It was noted that some spaces between adjacent floor plates appeared to be contaminated and needed to be opened. The licensee stated that a welder would cut open the identified platform floor plate junction areas for our measurement during the next inspection.

(b) Ceiling and Walls

The survey of the ceiling and walls in the fuel processing area yielded only background readings of gamma and alpha radiation except on a pillar next to the south wall roll up door. An unpainted surface of the pillar yielded 4400 dpm alpha/100 cm<sup>2</sup>. A smear of this area yielded 482 dpm alpha/100 cm<sup>2</sup> as removable contamination which was the highest of the 41 smear samples; however, it was still less than the NRC release limit of 1000 dpm/100 cm<sup>2</sup>. The licensee agreed to clean this hot spot prior to our next inspection.

(a) Ventilation Ducting, Pipes and Girders

The ducting surveys yielded alpha contamination levels ranging up to 5300 dpm/100 cm<sup>2</sup> on top of the ducting with an average of about 1000 dpm/100 cm<sup>2</sup> for forty-nine measurement points. It was apparent, however, that the ducting in the southwest corner of the high bay exhibited higher contamination levels than other portions of this area. The southwest corner high bay ducting yielded an average alpha contamination level of 2200 dpm/100 cm<sup>2</sup> (the range was 900 - 5300 dpm/100 cm<sup>2</sup>). The rest of the high bay area yielded an average alpha contamination level of 650 dpm/100 cm<sup>2</sup> (the range was 20 - 2400 dpm/100 cm<sup>2</sup>). The direct measurements yielded alpha contamination levels less than the NRC limits except for one value of 5300 dpm alpha/100 cm<sup>2</sup>. This level exceeds the NRC release limit of 5000 dpm alpha/100 cm<sup>2</sup>. The licensee indicated they would decontaminate this specific location and the nearby acceptable hot spots. The smears taken of the

ducting in all areas measured less than the NRC release limits.

(3) Roof

The Micro-R meter survey of the roof area yielded no areas contaminated above the 5  $\mu\text{r/hr}$  background. The subsequent alpha survey yielded an average alpha contamination level of 160 dpm/100  $\text{cm}^2$  and ranged from 10 to 1700 dpm/100  $\text{cm}^2$ . Both the direct measurements and the smear samples yielded results less than NRC release limits. The licensee indicated that the metal stand on which alpha contamination was found would be further cleaned before our next inspection. Smears of the most contaminated areas measured only 160 dpm/100  $\text{cm}^2$  removable alpha well below the NRC limit of 1000 dpm/100  $\text{cm}^2$  removable.

4. Confirmation Survey of July 2, 5, 1984

A. Survey Instruments

<u>Instrument</u>	<u>Identification No.</u>	<u>Calibration Due</u>
Eberline PRM-7 Micro-R Meter	NRC-006383	9/13/84
Eberline PRM-7 Micro-R Meter	NRC-008596	9/13/84
LRL AlphaSurvey Meter	NRC-000374	10/25/84
LRL Alpha Survey Meter	NRC-000375	9/15/84

B. Areas Surveyed

(1) General

Resurvey of the recleaned areas yielded measurements within NRC release limits. The area of the Metallurgical Laboratory that previously measured 200  $\mu\text{r/hr}$  now measured background (5  $\mu\text{r/hr}$ ). Similarly, the Storage Room door threshold read background as did the base of the pillar in the computer room and the second floor Powder Preparation (neutron absorber addition) room. These areas did not previously exceed NRC release limits for alpha contamination levels.

(2) Environmental Quality Laboratory

(a) Powder Storage Platform

The metal floor sections of the elevated platform for powder storage had been partially cut by a welding torch to provide access to the area beneath several plate junctions (plate junctions were on I beam supports). The survey of the exposed I beam surface areas yielded alpha contamination levels of 2200 to 7800 dpm/100  $\text{cm}^2$ . These results represented minimum values because the cuts made provided limited access to the surface of the I beams. The licensee agreed to provide appropriate access for

proper surveying. Three days later, the fifth of July, an NRC inspector measured the surface of the properly exposed I beams in the identified locations and found alpha contamination levels up to 11900 dpm/100 cm<sup>2</sup>. Cleaning with wet paper readily reduced the alpha contamination level to 3600 dpm/100 cm<sup>2</sup>.

As a result of these measurements the licensee planned to remove the plates and decontaminate both the plates and the I beams. The results of the licensee's efforts would be checked during still another inspection.

(b) Ceiling and Walls

The pillar at the rear roll up door in the EQL had previously met NRC release limits. Remeasurement indicated no change as a result of the licensee's further cleanup effort.

(c) Ventilation Ducting, Pipes and Girders

The previously identified 'hot spots' were remeasured. The appearance of the area indicated cleaning had been undertaken. Measurements however were largely unchanged. These measurements confirm previous smear sample results which indicated the contamination (within NRC release limits) was fixed.

(3) Roof

The licensee's effort to reduce the acceptable level of contamination was successful. The previously identified hot spots of 1700 dpm/100 cm<sup>2</sup> were reduced to less than 250 dpm/100 cm<sup>2</sup> (well beneath the NRC release limits).

5. Confirmatory Survey of September 18, 1984

A. Survey Instruments

<u>Instrument</u>	<u>Identification No.</u>	<u>Calibration Due</u>
Eberline PRM-7 Micro-R Meter	NRC-10839	12/28/84
LRL Alpha Survey Meter	NRC-000375	2/23/85

B. Areas Surveyed

(1) Environmental Quality Laboratory (EQL)

(a) Powder Storage Platform

The metal floor plates had been removed from the girder support structure. The plates had been sand blasted. The



survey of both sides of the nine metal plates yielded background levels (5 dpm/100 cm<sup>2</sup> alpha and 3 ur/hr gamma). The I beams of the supporting structure had been cleaned by grinding. The survey of the I beams ranged from background to 2400 dpm/100 cm<sup>2</sup> alpha with gamma readings of 2 ur/hr. The contamination remaining from the licensee's clean up was less than NRC release limits and the wipe samples indicated the contamination was fixed.

6. Conclusion

The surveys of Building H indicate that all areas of contamination found have been decontaminated and are well within the NRC release limits. As a result of these surveys, it is concluded that Building H may be released for unrestricted use. This completes the confirmatory surveys of the General Electric Company site in San Jose, California that had processed SNM under NRC License SNM-54. Since the areas in Building H, as well as those in Building J have been surveyed and found to meet the NRC guidelines for release as unrestricted use, the NRC License SNM-54 may be terminated.

Table 1

## Results of Wipe Survey

<u>Sample Number</u>	<u>Location</u>	(alpha) <u>dpm/100 cm<sup>2</sup></u>
A	Roof	1
B	Roof	3
C	Roof	6
D	Roof	18
E	Roof	35
F	Roof	160
G	Roof	66
H	Roof	3
I	Pillar - Computer Room	47
J	Yellow duct port on top of elevated powder storage	46
K	Yellow duct port on top of elevated powder storage	41
L	Top of yellow duct	30
M	Top of light fixture	16
N	Top of light fixture	34
O	Top of elevated powder storage (south wall)	6
P	Top of elevated powder storage (red square)	41
Q	Monorail crane (chain pull)	15
R	Inside yellow duct 10' from wall	144
S	Cross support near ceiling	40
T	Outlet supply air duct (outside surface)	16
U	Large yellow duct (open end-inside)	27
V	Top of white duct at edge of conv. area	14
W	Pillar supporting ceiling	4
X	L beam near ceiling (edge of conv. area)	14
Y	Yellow duct north end (3rd side pipe)	158
Z	North end of white duct (top surface)	0
AA	Storage room 1st floor	9
BB	Hot spot that measured 8300 dpm and was cleaned to 830 dpm	13
CC	Top of white duct in instrument shop	18
DD	I Beam near ceiling instrument shop	12
EE	Top 6" pipe in instrument shop	26
FF	Light fixture NW corner of instrument shop	54
GG	White duct (top) NW corner of instrument shop	42
HH	Top of 6" water pipe NW corner of instrument shop	91
II	Pillar south wall of high bay area at roll up door	482
JJ	Met. Lab hot spot	8
KK	N. E. corner of Met Lab hot spot	3
Al	Cleaned I beam platform floor support	BG
B1	Cleaned I beam platform floor support	BG
C1	Cleaned I beam platform floor support	BG
D1	Cleaned I beam platform floor support	BG
E1	Cleaned I beam platform floor support	BG

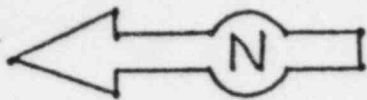
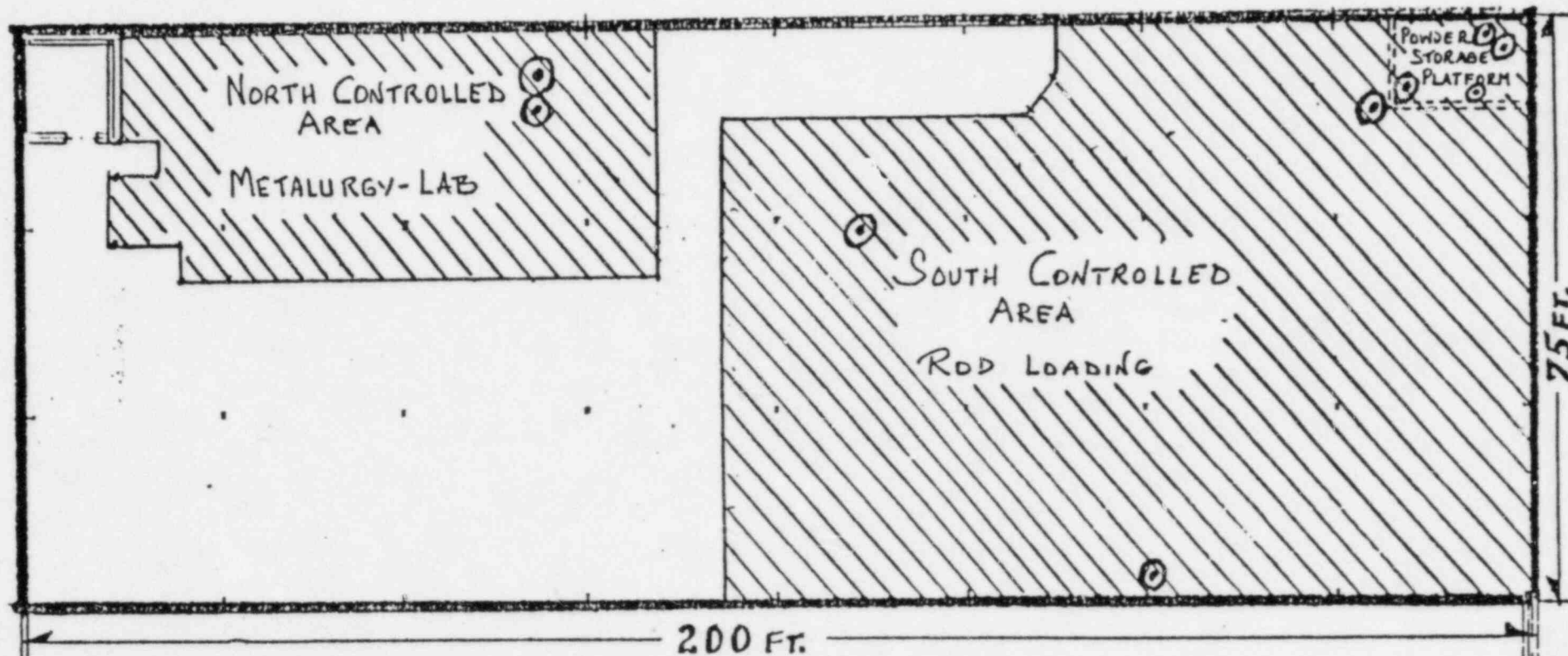


FIGURE 1. BUILDING "H" 1ST. FLOOR CONTROLLED AREAS



⊙ Contamination found and subsequently cleaned to less than NRC release limits.  
Area Surveyed



FIGURE 2. BUILDING "H" 2ND. FLOOR CONTROLLED AREAS

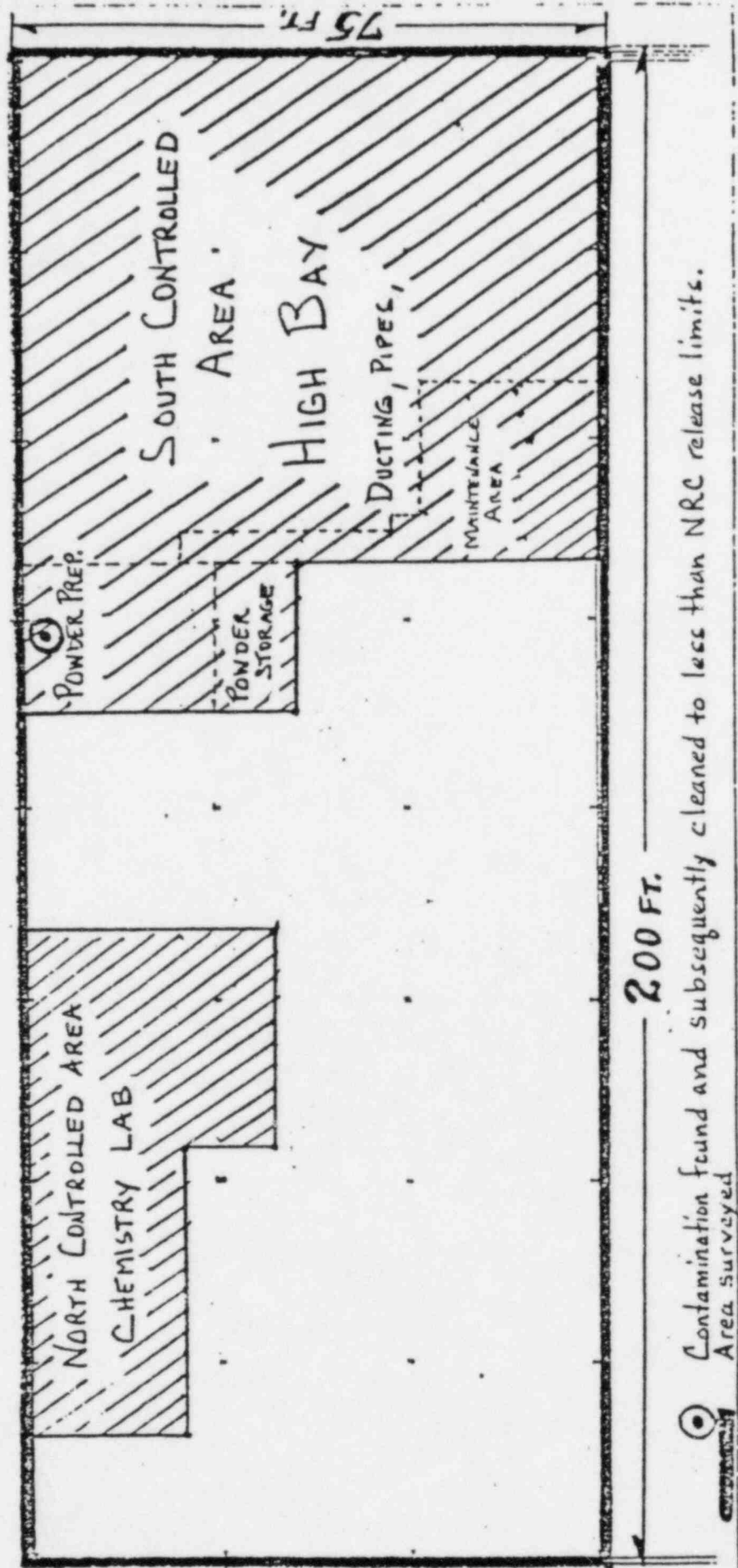
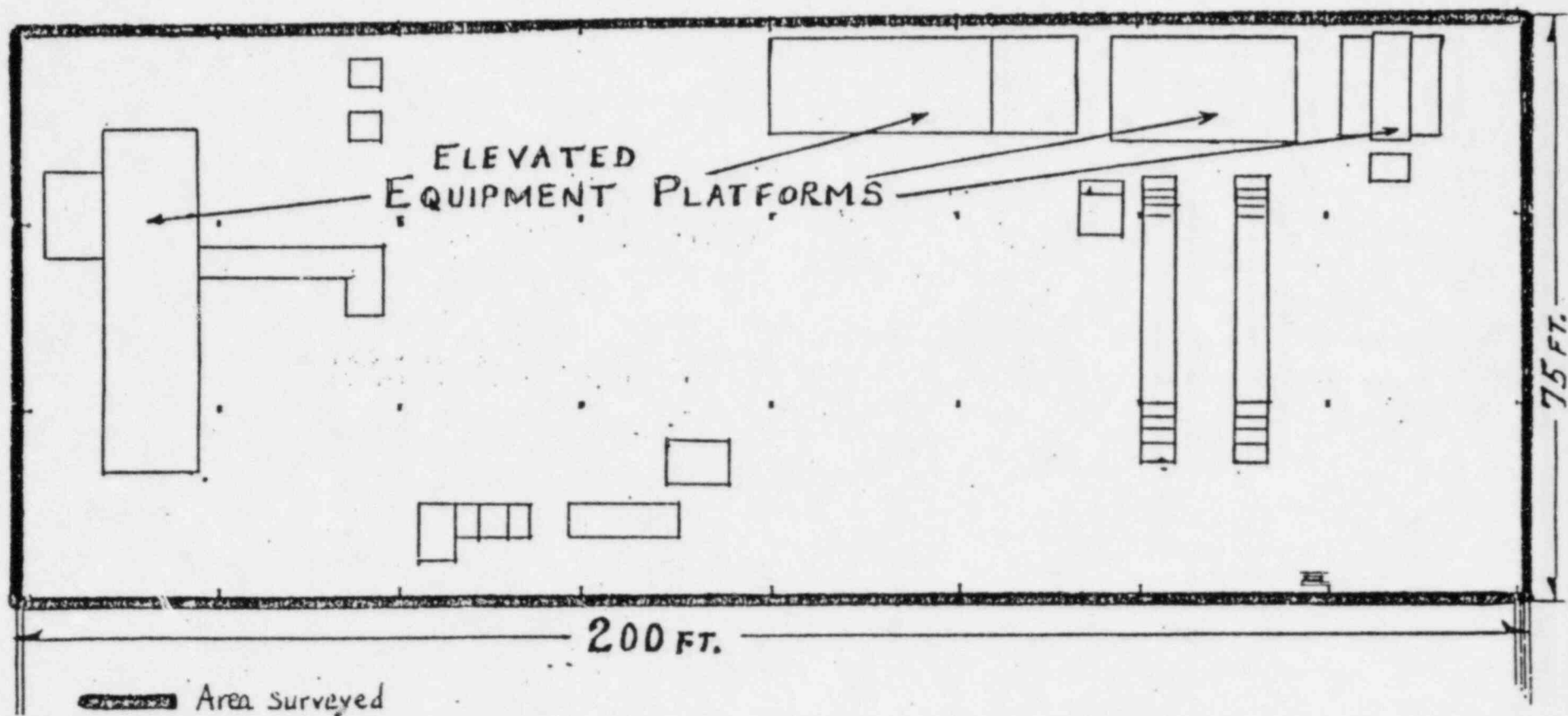




FIGURE 3. BUILDING "H" ROOF PLAN





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  
Division of Fuel Cycle and Material Safety  
Washington, D.C. 20555

July 1982

~~43082601915~~ PP

The instructions in this guide, in conjunction with Table 1, specify the radionuclides and radiation exposure rate limits which should be used in decontamination and survey of surfaces or premises and equipment prior to abandonment or release for unrestricted use. The limits in Table 1 do not apply to premises, equipment, or scrap containing induced radioactivity for which the radiological considerations pertinent to their use may be different. The release of such facilities or items from regulatory control is considered on a case-by-case basis.

1. The licensee shall make a reasonable effort to eliminate residual contamination.
2. Radioactivity on equipment or surfaces shall not be covered by paint, plating, or other covering material unless contamination levels, as determined by a survey and documented, are below the limits specified in Table 1 prior to the application of the covering. A reasonable effort must be made to minimize the contamination prior to use of any covering.
3. The radioactivity on the interior surfaces of pipes, drain lines, or ductwork shall be determined by making measurements at all traps, and other appropriate access points, provided that 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 shall be presumed to be contaminated in excess of the limits.
4. Upon request, the Commission may authorize a licensee to relinquish possession or control of premises, equipment, or scrap having surfaces contaminated with materials in excess of the limits specified. This may include, but would not be limited to, special circumstances such as razing of buildings, transfer of premises to another organization continuing work with radioactive materials, or conversion of facilities to a long-term storage or standby status. Such requests must:
  - a. Provide detailed, specific information describing the premises, equipment or scrap, radioactive contaminants, and the nature, extent, and degree of residual surface contamination.
  - b. Provide a detailed health and safety analysis which reflects that the residual amounts of materials on surface areas, together with other considerations such as prospective use of the premises, equipment or scrap, are unlikely to result in an unreasonable risk to the health and safety of the public.

5. Prior to release of premises for unrestricted use, the licensee shall make a comprehensive radiation survey which establishes that contamination is within the limits specified in Table 1. A copy of the survey report shall be filed with the Division of Fuel Cycle and Material Safety, USNRC, Washington, D.C. 20555, and also the Administrator of the NRC Regional Office having jurisdiction. The report should be filed at least 30 days prior to the planned date of abandonment. The survey report shall:

- a. Identify the premises.
- b. Show that reasonable effort has been made to eliminate residual contamination.
- c. Describe the scope of the survey and general procedures followed.
- d. State the findings of the survey in units specified in the instruction.

Following review of the report, the NRC will consider visiting the facilities to confirm the survey.

TABLE 1  
ACCEPTABLE SURFACE CONTAMINATION LEVELS

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

<sup>a</sup>Where surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma-emitting nuclides should apply independently.

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

<sup>c</sup>Measurements 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.

<sup>d</sup>The maximum contamination level applies to an area of not more than 100 cm<sup>2</sup>.

<sup>e</sup>The amount of removable radioactive material per 100 cm<sup>2</sup> 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.

<sup>f</sup>The average and maximum radiation levels associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/hr at 1 cm and 1.0 mrad/hr at 1 cm, respectively, measured through not more than 7 milligrams per square centimeter of total absorber.

ATTN: W. T. CROW

State of California Health and Welfare Agency

Department of Health Services

Page 1 of 1 Pages

## RADIOACTIVE MATERIAL LICENSE

License Number 0418-43

Supplementary Sheet

Amendment Number 31

General Electric Company  
Nuclear Energy Division  
175 Curtner Avenue  
San Jose, CA 95125

Attention: Andrew H. Lane  
Radiation Safety Officer

License Number 0418-43 is hereby amended in part as follows:

To add:

6. Nuclide	7. Form	8. Possession limit
J. Plutonium-239; Beryllium or Plutonium-238 equivalent	J. Sealed sources	J. and K. - See Condition 17
K. Uranium 233/235	K. Any	

9. Authorized use:

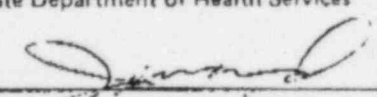
- J. To be used for research and development as defined in Section 30175(j) of California Radiation Control Regulation in materials testing.
- K. To be used for research and development as defined in Section 30175(j) of California Radiation Control Regulation in the manufacture of instrumentation for distribution to authorized recipients.

13. (c) The letter dated May 17, 1982 as modified by the letter dated August 18, 1983 (with attached facility sketch) and the letter dated July 22, 1985 (reference to Building J.), all signed by G. E. Cunningham.
17. The total mass of special nuclear material possessed under this license at any one time and at any one authorized location shall not exceed that stated in the following formula: The number of grams of Uranium-235 divided by 350, plus the number of grams of Uranium-233 divided by 200, plus the number of grams of plutonium (all isotopes) divided by 200, shall not exceed one (i.e. unity).

For the State Department of Health Services

Date July 23, 1985

by

  
Radiologic Health Branch  
714 P Street, Sacramento, CA 95814