

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 70-734/87-11

Docket No. 70-734

License No. SNM-696

Safeguards Group 1

Licensee: G.A. Technologies, Inc.
P. O. Box 85608
San Diego, California 92138

Facility Name: Same

Inspection at: Same

Inspection Conducted: August 18, 1987

Inspectors:

David A. Nov (for)
R. D. Thomas, Chief
Nuclear Materials Safety Section

10-1-87
Date Signed

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

9-30-87
Date Signed

Approved by:

J. L. Montgomery
J. L. Montgomery, Chief
Nuclear Materials Safety and Safeguards Branch

10/1/87
Date Signed

Summary:

Inspection on August 18, 1987 (Report No. 70-734/87-11)

A decontamination confirmatory survey was conducted by NRC inspectors of the portions of the Experimental Building (E Building) in which NRC licensed activities (TRIGA fuel fabrication) had been conducted. The survey results indicate that the NRC licensed portions have been satisfactorily decontaminated by the licensee. The area is acceptable for release to unrestricted use.

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C PDR

DETAILS

1. Persons Contacted

Ben Kapel, Material License Reviewer, State of California
L. R. Quintana, Supervisor, Health Physics
K. Wong, Senior Health Physicist, State of California

2. Introduction

A final report by GA-Technologies, Inc. dated July 28, 1987 on the decontamination of the Experimental Building indicated that the building had been decontaminated to levels below the release limits and was acceptable for release to unrestricted use. Activities conducted within the building were authorized by State and NRC licenses. This report covers only the areas under the NRC license for TRIGA fuel fabrication.

A decontamination confirmatory survey of the portions of the Experimental Building where NRC licensed materials had been used was conducted on August 18, 1987. On the same day, State of California inspectors were conducting decontamination confirmatory surveys of portions of the building where state licensed materials had been used. The area in the northwest corner of the building, which was a section of the old fuel fabrication, was not included in this confirmatory survey. This area now contains office spaces and the telecommunications group. This area will be surveyed at some future date.

Based upon the results of the combined confirmatory surveys, the State of California will release the entire area if the results indicate that the areas can be released for unrestricted use.

3. Procedure

Radiation surveys were conducted in those portions of the Experimental Building where the TRIGA fuel fabrication had been done. The areas surveyed included the floor areas of the second and third floor mezzanines and appropriate floor area sections of the main floor (Figure 1). It was noted that the licensee had scabbled much of the floor areas on the main floor and had dug trenches to effect the removal of drain pipes. The ditches were also surveyed if they were located within the areas where work with NRC licensed materials had been conducted. A 100% gamma survey was conducted on the floor areas with Eberline PRM-7's Serial Numbers 247 and 510 calibrated on 7-21-87 and 7-27-87 respectively. The instruments were held approximately one to two inches from the floor surfaces.

Selected areas of the walls, pipings and conduits located in the areas where work with NRC licensed materials had been conducted were also included in the survey. Contamination surveys were conducted of selected areas within the same above mentioned locations using Eberline E-520's, Serial Numbers 1747 and 2776 calibrated on 6-11-87 and 7-10-87 respectively. The E-520s were equipped with Model HP-260 pancake GM

detectors. Also, 14 wipe samples were collected and analyzed (Table 1). The instrument used to analyze the wipes is the NRC Region V Tennelec Model LB5100 low background system.

Three soil samples were collected from selected areas of the ditches which had been dug in the floor areas. A drain pipe located above the floor along the north wall in the area was cut open and the scrapings from the pipe interior were collected. These samples were analyzed at the Radiological and Environmental Sciences Laboratory of the U.S. Department of Energy Idaho Operations Office (see Tables 2 to 5).

4. Discussion and Findings

Radiation surveys conducted indicated the presence of background levels ranging from 15-30 μ R/hr. The range is attributed to natural background contributions from the varying amounts of concrete present.

Contamination surveys conducted indicated the presence of two contaminated spots of approximately 15 cm² each. One spot located next to a wall support on the west wall in the solvent extraction area had a beta-gamma contamination level of approximately 6000 dpm. Another spot located adjacent to a drain pipe on the north west wall of the building had a beta-gamma contamination level of approximately 3000 dpm. The contamination in each location was removed by the licensee. A resurvey by the NRC inspector indicated that the contamination had been removed.

Wipes collected from 14 locations did not indicate the presence of any significant removable contamination. See Table 1 for the results.

Soil samples collected from three trench locations indicated the presence of less than 1 pCi U-235/g soil in two of the samples and nothing detectable in the third sample (Table 2, 3, 4). These results are well within the NRC guidelines criteria of 30 pCi U-235/g soil for the most insoluble form of U-235. Analyses of the scrapings from the drain pipe also indicated less than 1 pCi U-235/g (Table 5).

5. Conclusions

The portion of the Experimental Building which was examined during the confirmatory survey had been satisfactorily decontaminated by the licensee and is acceptable for release to unrestricted use in accordance with NRC guidelines.

TABLE 1

U. S. Nuclear Regulatory Commission

Region V

Independent Survey Data

Licensee: G.A. Technologies

Date: 8-18-87

By: J. Frank Pang and R. D. Thomas

<u>Sample Number</u>	<u>Location</u>	<u>Contamination Wipes</u> (Alpha) (Beta/Gamma)	
		<u>dpm</u>	<u>dpm</u>
1	On top of switch box	6.6	7.7
2	Behind pipe near floor	7.1	17
3	Drain pipe	94	261
4	Behind wall bracket	2.0	4.3
5	Inside channel bracket	10	9.8
5	Inside channel bracket-head level	13	23
7	Inside breaker box	15	21
8	On top of light fixture	14	14
9	Top of switch box	3.2	8.7
10	Ledge of overhead beam	38	42
11	Top of light fixture	41	74
12	On top of sprinkler pipe	13	16
13	Overhead beam	24	34
14	Light switch in small room	1.8	1.2

TABLE 2

UNITED STATES DEPARTMENT OF ENERGY
IDAHO OPERATIONS OFFICE
RADIOLOGICAL AND ENVIRONMENTAL SCIENCES LABORATORY
SAMPLE RECORD SHEET

SERIAL NO. 14285A

NRCS

REC MOD NO. X77777
INPLANT

URGENT
DATE NEEDED 08/28/87
NONROUTINE

SAMPLE DATE 08/18/87
SAMPLE HOUR 0200 MST
ORGANIZATION NRCS
SAMPLE SENT 08/18/87
SAMPLE RECEIVED 08/21/87
HARDCOPY PRINTOUT 08/28/87
ANALYZED BY: J.S.MORTON, S.GIMPEL
ORIGINAL SIGNED BY: D.B. MARTIN

COMMENTS:
G.A. TECHNOLOGIES SOIL SAMPLE #1.

COLLECTION DATE: 08/18/87 ANALYSIS DATE: 08/25/87 DECAY TIME 7.4 DAYS*
COUNT TIME 963 MIN. DETECTOR NUMBER 1 SAMPLE SIZE 4.74E+02 g

TOTAL COUNT	GROSS COUNT C/M	BKGD COUNT C/M	MINOR COUNT C/M	NET COUNT C/M	ISOTOPE	RESULTS +/- IS:O**	
						uCi/gram	
2455	2.55	0.12		2.43	Ac 228	(1.49 +/- 0.05;0.09)	E -6
243	0.25			0.25	CsD137	(4.1 +/- 1.0;1.0)	E -8
9443	9.81	0.60		9.21	K 40	(2.17 +/- 0.04;0.09)	E -5
146	0.15	0.06		0.09	Pm234	(2.1 +/- 1.1;1.1)	E -6
12444	12.92	0.30		12.62	Pb 212	(1.72 +/- 0.04;0.09)	E -6
3786	3.93	0.18		3.75	Pb 214	(8.6 +/- 0.3;0.4)	E -7
2151	2.23	0.30	0.60	1.33	U 235	(1.4 +/- 0.2;0.2)	E -7

A DECAY CORRECTION OF NATURAL CHAIN DAUGHTERS PER LONGEST LIVED PARENT
AA ESTIMATED RANDOM UNCERTAINTY REPORTED IS ONE STANDARD DEVIATION, IS. SMALL NEGATIVE AND OTHER
RESULTS LESS THAN OR EQUAL TO 2S ARE INTERPRETED BY RESL AS INCLUDING "ZERO" OR AS NOT DETECTED.
FOR RESULTS GREATER THAN 2S BUT LESS THAN OR EQUAL TO 3S, DETECTION IS QUESTIONABLE. RESULTS
GREATER THAN 3S INDICATE DETECTION. 0 IS THE ESTIMATED OVERALL UNCERTAINTY.

TABLE 3

UNITED STATES DEPARTMENT OF ENERGY
 IDAHO OPERATIONS OFFICE
 RADIOLOGICAL AND ENVIRONMENTAL SCIENCES LABORATORY
 SAMPLE RECORD SHEET

SERIAL NO. 14285B

NRC5

 * NRC MOD NO. X7777 *
 * IMPLANT *

URGENT
 DATE NEEDED 08/28/87
 NONROUTINE

SAMPLE DATE 08/18/87
 SAMPLE HOUR 0200 MGT
 ORGANIZATION NRC5

SAMPLE SENT 08/18/87
 SAMPLE RECEIVED 08/21/87
 HARDCOPY PRINTOUT 08/28/87

ANALYZED BY: J.S.MORTON, S.GIMPEL

ORIGINAL SIGNED BY: D.B. MARTIN

COMMENTS:

G.A. TECHNOLOGIES SOIL SAMPLE #2.

COLLECTION DATE: 08/18/87 ANALYSIS DATE: 08/25/87 DECAY TIME 7.4 DAYS*
 COUNT TIME 963 MIN. DETECTOR NUMBER 3 SAMPLE SIZE 4.99E+02 g

TOTAL COUNT	GROSS COUNT C/M	BKGD COUNT C/M	MINOR COUNT C/M	NET COUNT C/M	ISOTOPE	RESULTS +/- 1S:0A*	uCi/gram
3278	3.40	0.06		3.34	Ac 228	(3.28 +/- 0.09;0.18)E -6	
41	0.04			0.04	CsD137	(1.1 +/- 1.5;1.5)E -8	
5830	6.06	0.30		5.75	K 40	(2.35 +/- 0.05;0.10)E -5	
20244	21.02	0.30		20.72	Pb 212	(3.79 +/- 0.07;0.19)E -6	
3756	3.90	0.18		3.72	Pb 214	(1.25 +/- 0.04;0.06)E -6	
3020	2.10	0.16	0.72	1.20	U 235	(1.6 +/- 0.2;0.2)E -7	

* DECAY CORRECTION OF NATURAL CHAIN DAUGHTERS PER LONGEST LIVED PARENT
 ** ESTIMATED RANDOM UNCERTAINTY REPORTED IS ONE STANDARD DEVIATION, 1S. SMALL NEGATIVE AND OTHER
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 FOR RESULTS GREATER THAN 2S BUT LESS THAN OR EQUAL TO 3S, DETECTION IS QUESTIONABLE. RESULTS
 GREATER THAN 3S INDICATE DETECTION. 0 IS THE ESTIMATED OVERALL UNCERTAINTY.

TABLE 4
UNITED STATES DEPARTMENT OF ENERGY
IDAHO OPERATIONS OFFICE
RADIOLOGICAL AND ENVIRONMENTAL SCIENCES LABORATORY
SAMPLE RECORD SHEET

SERIAL NO. 14285C

NRC5

* NRC MOD NO. X77777 *
* INPLANT *

URGENT
DATE NEEDED 08/28/87
NONROUTINE

SAMPLE DATE 08/18/87
SAMPLE HOUR 0200 MST
ORGANIZATION NRC5

SAMPLE SENT 08/18/87
SAMPLE RECEIVED 08/21/87
HARDCOPY PRINTOUT 08/28/87

ANALYZED BY: J.S.MORTON, S.GIMPEL
ORIGINAL SIGNED BY: D.B. MARTIN

COMMENTS:
G.A. TECHNOLOGIES SOIL SAMPLE #3.

COLLECTION DATE: 08/18/87 ANALYSIS DATE: 08/25/87 DECAY TIME 7.4 DAYS*
COUNT TIME 963 MIN. DETECTOR NUMBER 6 SAMPLE SIZE 5.45E+02 g

TOTAL COUNT	GROSS COUNT C/M	BKGD COUNT C/M	MINOR COUNT C/M	NET COUNT C/M	ISOTOPE	RESULTS +/- 1S;0kA uCi/gram
2486	2.58	0.06		2.52	Ac 228	(2.49 +/- 0.08;0.14) E -6
41	0.04			0.04	CsD137	(1.1 +/- 0.9;0.9) E -8
4757	4.94	0.06		4.88	K 40	(2.04 +/- 0.04;0.09) E -5
15200	15.78	0.24		15.54	Pb 212	(2.73 +/- 0.05;0.14) E -6
3954	4.11	0.12		3.99	Pb 214	(1.33 +/- 0.04;0.06) E -6

* DECAY CORRECTION OF NATURAL CHAIN DAUGHTERS PER LONGEST LIVED PARENT
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Table 5

UNITED STATES DEPARTMENT OF ENERGY
IDAHO OPERATIONS OFFICE
RADIOLOGICAL AND ENVIRONMENTAL SCIENCES LABORATORY
SAMPLE RECORD SHEET

SERIAL NO. 14285D

NRCS

NRC MOD NO. X77777
INPLANT

URGENT
DATE NEEDED 08/28/87
NONROUTINE

ANALYZED BY: J.S.MORTON, S.GIMPEL
ORIGINAL SIGNED BY: D.B. MARTIN

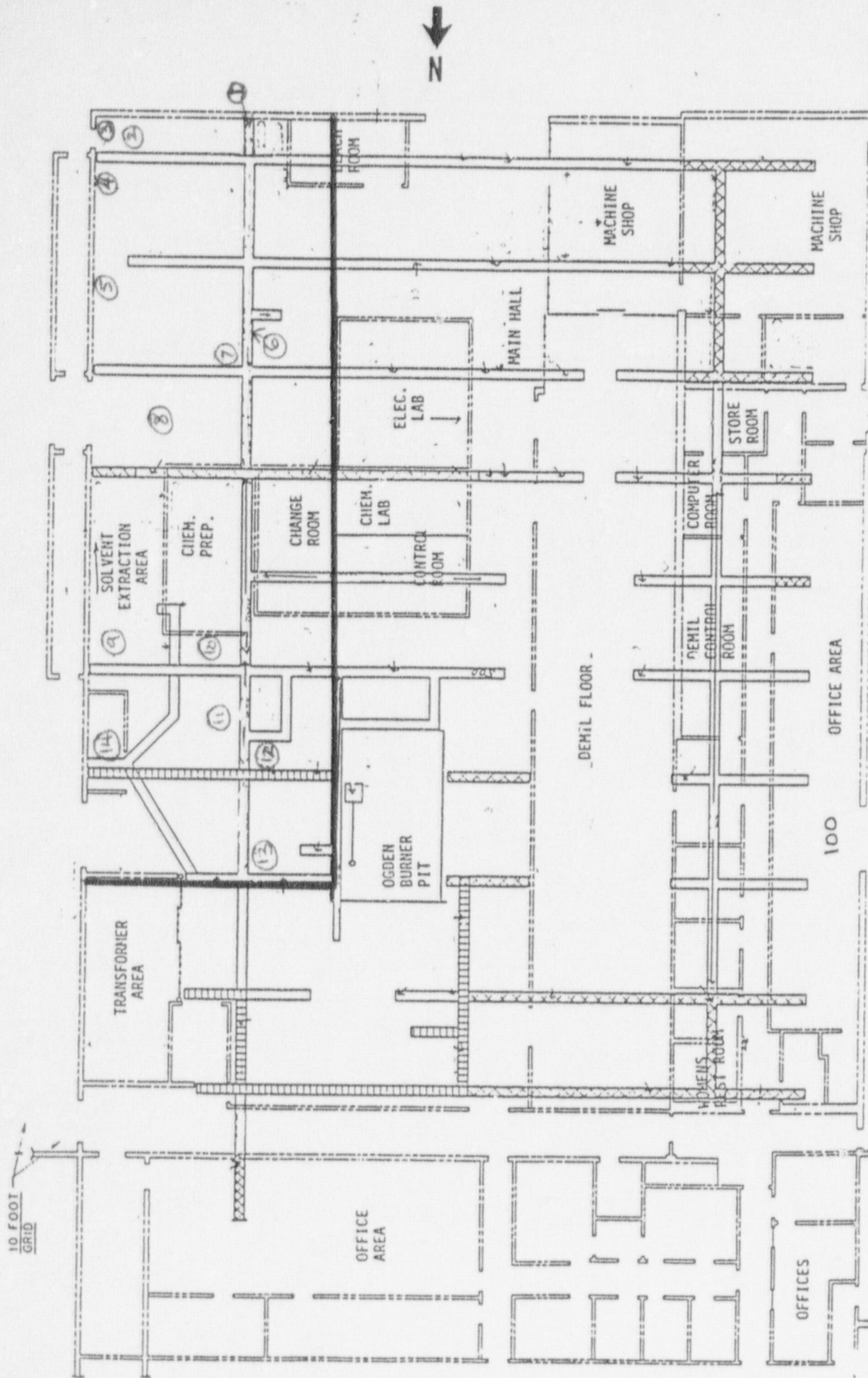
SAMPLE SENT 08/18/87
SAMPLE RECEIVED 08/21/87
HARDCOPY PRINTOUT 08/28/87

COMMENTS:
G.A. TECHNOLOGIES SAMPLE #4. SCRAPINGS FROM DRAIN PIPE.

COLLECTION DATE: 08/18/87 ANALYSIS DATE: 08/26/87 DECAY TIME 8.4 DAYS
COUNT TIME 953 MIN. DETECTOR NUMBER 6 SAMPLE SIZE 2.53E+01 g

TOTAL COUNT	GROSS COUNT C/M	BKGD COUNT C/M	MINOR COUNT C/M	NET COUNT C/M	ISOTOPE	RESULTS +/-	
						IS	DA*
						uCi/gram	
2645	2.78	0.06		2.72	Ac 228	(1.54 +/- 0.04;0.08)	E -5
9	0.01			0.01	CsD137	(1.3 +/- 6.2;6.2)	E -8
156	0.16	0.06		0.10	K 40	(2.7 +/- 0.6;0.6)	E -6
18759	19.68	0.24		19.44	Pb 212	(1.55 +/- 0.03;0.07)	E -5
711	0.75	0.18	0.06	0.51	U 235	(2.8 +/- 0.7;0.7)	E -7

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LOCATION OF WIPE SAMPLES

TRENCH WITH COVER

TRENCH WITH GRATE

FILLED IN TRENCH

FIGURE 1: MAIN FLOOR AREA

CAD L1B - 101ESJABLDG99WOL18
DATA BASE - TRENCHES