

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 999-90003/94009(DRSS)

Docket No. 070-00055 (Terminated)

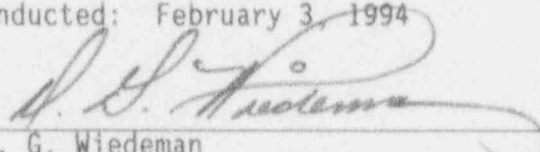
License No. SNM-0059 (Terminated)

Licensee: General Electric
Metallurgical Products Department
11177 E. Eight Mile Road
Warren, MI 48089

Inspection At: Carboloy Company
(a former General Electric facility)
11177 E. Eight Mile Road
Warren, MI 48089

Inspection Conducted: February 3, 1994

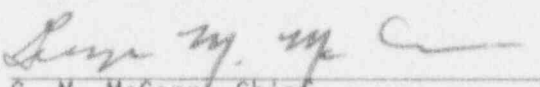
Inspector:


D. G. Wiedeman
Senior Health Physicist

Date

3-9-94

Approved by:


G. M. McCann, Chief
Fuel Facilities and
Decommissioning Section

Date

3/9/94

Inspection Summary

Inspection on February 3, 1994 (Report No. 999-90003/94009(DRSS))

Areas Inspected: This was a special inspection to review the former licensee's activities and to determine if the facilities were adequately decontaminated prior to terminating the license. The inspector conducted independent radiation surveys in the areas where former licensed materials were used and processed. This inspection was part of an NRC project which evaluated approximately 17,000 retired licenses. An NRC contractor, Oak Ridge National Laboratories (ORNL) performed the evaluation.

On the basis of the information in the retired license file, such as type and quantity of authorized materials and lack of adequate decontamination documentation, ORNL concluded that these facilities have a potential for residual radioactive contamination.

Results: The NRC inspector identified one area on a floor in the former licensee's Nuclear Fuel Area (furnace room) that exceeds the NRC release criteria for fixed surface contamination. Based upon the inspection findings, it was concluded that one building which was formerly used for licensed activities did not meet the current NRC release criteria for release of a facility for unrestricted use.

DETAILS

1. Persons Contacted

- * Jerry Schneider, Procurement Specialist, Carboly Company
- @ Barry Moser, Manager, Plant and Facilities, Carboly Company
- @ Tom Corneil, General Electric (G.E.), Albany, New York
- * Eric Bramlett, LAW Environmental (G.E. Contractor)
- * Robin Stephens, LAW Environmental (G.E. Contractor)
- * Kenneth W. Coble, Health Physicist, Michigan Department of Public Health
- @ Ken Waller, LAW Environmental (G.E. Contractor)
- @ Sam Nalluswami, Low Level Waste Management (LLWM) NRC Headquarters

* Attended the exit meeting conducted on February 3, 1994.

Telephone conversation on February 4, 1994, regarding the results of the inspection.

@ Telephone conversation on March 8, 1994, regarding the results of the laboratory analyses of samples collected during the inspection and issues regarding the submittal of a timely site characterization and remediation plan.

2. Background

AEC License No. SNM-0059 was issued to General Electric on November 20, 1956, for possession and use of uranium dioxide (UO₂) enriched up to 3% for use in the fabrication of nuclear fuel, Attachment A. Documents in the license file indicate that G.E. purchased 18,000 lbs. of slightly enriched uranium dioxide as pellets from Mallinckrodt Chemical Company for hot pressing into different solid shapes of fuel elements. The fuel elements were then shipped to the G.E. Atomic Power Equipment Department in San Jose, California, for research and use in a G.E. boiling water reactor program in Vallecitos, California.

Production of the UO₂ fuel elements were limited to a pilot plant scale operation located in the furnace and press rooms in Building 1 of the G.E. plant facilities in Warren, Michigan. Records in the license file indicate that all equipment used for the nuclear development work were disposed of and shipped to a G.E. facility in San Jose, California prior to the termination of the license on March 19, 1958. This was confirmed during a June 1982 inspection by NRC, Region III.

3. Facility Status

Carboloy Company is now a manufacturer of tungsten-carbide cutting tools which was purchased from G.E. in 1987 and is now a separate company. The former press rooms are now used as a boiler room storage area and work area. The former furnace room is now used for storage and occasionally used for spray painting. On the day of the inspection, the inspector was informed that a representative from G.E. and their contractor (LAW Environmental) had been on site the day before this inspection and found some radioactive materials. An inquiry was made regarding this matter and the inspector was informed that some laboratory reagents containing small quantities of source material and other consumer products containing trace quantities of natural radioactive material were located in various laboratories. These materials were collected and placed into a five gallon steel can, sealed with tape, labeled, then placed into Building 8 for safe storage until arrangements could be made for disposal.

4. Independent Measurements

Surveys were conducted using a Victoreen Model 190 survey meter, Serial No. 535, last calibrated July 28, 1993. The survey meter was coupled to a 15 cm² pancake detector to determine beta/gamma activity. Background was determined to be 45-55 counts per minute (cpm) with an efficiency for uranium of 32 percent. Efficiency was determined using a traceable strontium-90/yttrium-90 electroplated source. Direct gamma measurements were made with a Ludlum Model 19 microR meter, last calibrated on July 28, 1993. This survey was supplemented with an Eberline ESP alpha scintillation counter, calibrated on June 27, 1993; however, during the survey no significant direct alpha activity was detected.

Direct radiation surveys were conducted on 100 percent of the floors in the press and furnace rooms along with 50 percent of the adjacent laboratories and offices. All survey results were indistinguishable from background except for several areas in the furnace room. Further investigation of these areas showed one area on the north side floor/wall joint which measured 187,000 disintegrations per minute per 100 square centimeters (dpm/100 cm²) (3314 Becquerels(Bq)/100 cm²). This area exceeds the NRC maximum limit for fixed contamination of 15,000 dpm/100 cm² (250 Bq/100 cm²). The remaining floor area to the east portion of the furnace room ranged from 2,000 to 8,000 dpm/100 cm² (33-140 Bq/100 cm²). Smear tests for removable activity were taken at locations with direct readings in excess of background measurements. A sample of the radioactive material was collected at the time of the inspection and analyzed in the Region III laboratory.

The smear tests were analyzed for gross alpha and beta activity and the radioactive sample was analyzed for isotopic identification. Results of the laboratory analysis for the smear tests and sample are listed below:

Smear No.	Location	Direct Radiation Measurements		
		disintegrations per minute * dpm/100 cm ²	Removable Activity dpm/100cm ²	
			alpha	beta
1	North Wall/Floor area	187,000	34.4 ± 3.8	112.1 ± 6.2
2	East floor area	2,000-4,000	<10.0	<10.0
3	North Floor	2,000	38.9 ± 4.3	185.8 ± 7.8

*NRC limit is 15,000 dpm/100 cm² (maximum). Readings were converted from counts/minute (cpm) to disintegrations/minute (dpm) using a conversion factor of 5,000 cpm = ≈15,000 dpm then correcting for counting efficiency (32%) and probe size (15 cm²).

Removable Activity (RA) limit is 1,000 dpm (alpha)/100 cm² and 1,000 dpm (beta)/100 cm²

Laboratory analysis of ≈1 gram of scraped concrete taken from the floor of the furnace room indicated uranium. Attachment B shows the areas surveyed and the survey results.

5. Exit Meeting

The NRC inspector met with the individuals identified in Section 1 of this report and summarized the findings of the inspection. The inspector informed the current and former property owner representatives that the survey results indicated that the facility (Building 1) did not meet the current NRC release criteria for release of facilities for unrestricted use. The inspector informed all individuals that the NRC release criteria is described in a document titled "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material," dated August 1987. During the exit meetings with the current property owner and former licensee, none of the participants indicated to the inspector that any of the inspection findings or documents provided to the inspector were considered proprietary.

Attachments:

- A. AEC license dtd 11-20-56
- B. Survey locations and results

UNITED STATES
ATOMIC ENERGY COMMISSION

SPECIAL NUCLEAR MATERIAL LICENSE

Pursuant to the Atomic Energy Act of 1954 and Title 10, Code of Federal Regulations, Chapter I, Part 70, "Special Nuclear Material Regulations," a license is hereby issued authorizing the licensee to receive and possess the special nuclear material designated below; to use such special nuclear material for the purpose(s) and at the place(s) designated below; and to transfer such material to persons authorized to receive it in accordance with the regulations in said Part. This license shall be deemed to contain the conditions specified in Section 70.32(a) of said regulations, and is subject to all applicable rules, regulations, and orders of the Atomic Energy Commission now or hereafter in effect and to any conditions specified below.

Licensee		3. License No.
1. Name	General Electric Company Metallurgical Products Department	SNM-59
2. Address	Box 237, Roosevelt Park Annex Detroit 32, Michigan	4. Expiration Date December 1, 1961
		5. Docket No. N-55
6. Special Nuclear Material	7. Maximum quantity of special nuclear material which licensee may possess at any one time under this license	
UO ₂ containing uranium enriched in the U-235 isotope	is limited to that which may be used in accordance with procedures outlined in licensee's application of September 18, 1956, with supplement of September 27, 1956.	
8. Authorized use		
For use in fabrication as described in aforesaid application and supplement.		
9. Quantity of special nuclear material allocated to licensee pursuant to Section 70.31(b) of said part		
None		

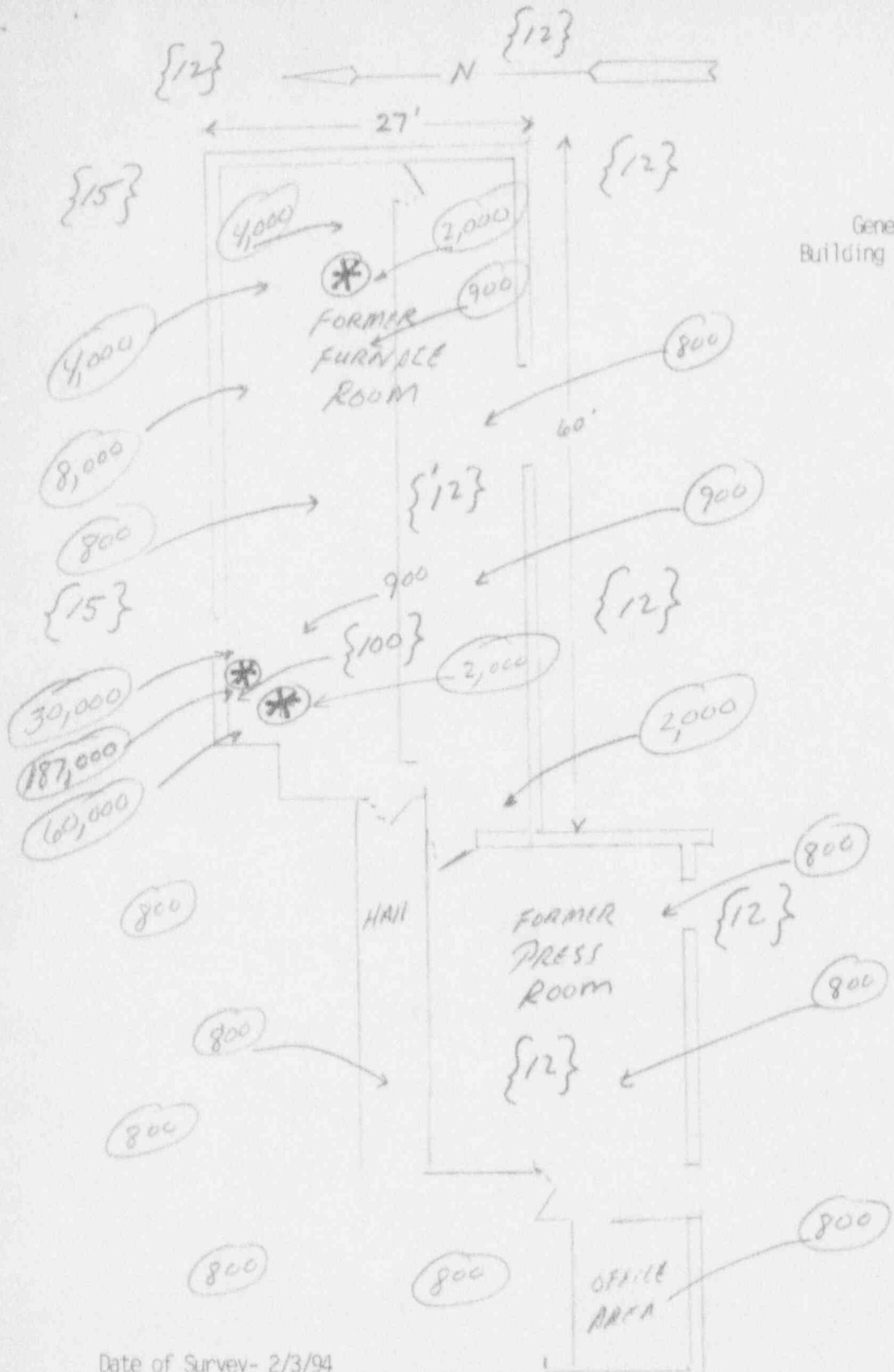
CONDITIONS

- Unless otherwise specified, the authorized place of use is the licensee's address stated in Item 2 above. **Authorized place of use, 11177 East Eight Mile Road, Warren Township, Michigan.**
- Except as hereinafter provided the licensee shall comply with provisions of the Atomic Energy Commission's proposed standards for protection against radiation as published in the Federal Register July 16, 1955 (10 CFR 20), until such time as said proposed regulations or revisions thereof become effective regulations of the Commission. Notwithstanding Section 20.24(f) of said standards, labeling shall not be required for laboratory containers such as beakers, flasks and test tubes, used transiently in laboratory procedures during the term of this license.

Date of issuance Nov 20 1956

Lyall Johnson
Chief, Licensing Branch





General Electric
Building 1 former Nuclear Fuel Area

Date of Survey- 2/3/94

Survey Instruments- Victoreen Model 190
w/15 cm² pancake probe

Ludlum Model 19
microR meter

Note- All beta+gamma readings were converted from counts/minute (cpm) to disintegrations/minute (dpm)/100 cm²
All gamma readings are in units of microrentgens/hour (uR/h) with Ludlum Model 19

⊗ - Indicates the approximate locations that smear tests were taken

§ Survey by: D. G. Wiederan with the assistance of the Michigan Department of Public Health

ATTACHMENT B

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