

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 72-001/89002(DRSS)

Docket No. 72-001

License No. SNM-2500

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

Facility Name: Morris Operation

Inspection At: Morris Operation, Morris, Illinois

Inspection Conducted: August 14-17, 1989

Inspector: G. M. France, III *W.J. Slavut for*

10-20-89
Date

Reviewed By: *W.J. Slavut for*
D. J. Sreniawski, Chief
Nuclear Materials Safety
Section 1

10-20-89
Date

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10-24-89
Date

Inspection Summary

Inspection on August 14-17, 1989 (Report No. 72-001/89002(DRSS))

Areas Inspected: Routine, unannounced safety inspection to review NRC-licensed activities, including: management and organization controls (IP 88005); radiation protection program (IP 83822); operations review (IP 88020); criticality safety (IP 88015); maintenance and surveillance testing (IP 88025); training (IP 88010); transportation activities (IP 86740); and environmental protection (IP 88045).

Results: The NRC licensed program generally appears to be properly developed, implemented and managed; no violations, deviations or significant concerns were identified.

DETAILS

1. Persons Contacted (IP 30703)

- *I. L. Denio, Manager, Plant Services
- *J. W. Doman, Manager, Operations Program
- *T. E. Ingels, Morris Operation Manager
- *J. D. Kesman, Manager, Plant Operations and Maintenance
- *J. McGrath, Safety and Security Engineer
- *R. T. Smith, Maintenance Engineer
- R. Wright, Service Technician (part-time employee)

*Denotes those present at the exit meeting on August 17, 1989.

2. General

This inspection was conducted to examine licensee activities under Special Nuclear Materials License No. SNM-2500, and included a review of the radiation protection program with emphasis on exposure levels in the spent fuel storage basin area. The licensee's performance in the areas of operations, maintenance surveillance, and radiation protection is adequate and satisfies applicable regulatory requirements.

3. Management Organization and Controls (IP 88005)

The inspector reviewed the licensee's management organization and controls for radiation protection and operations, including changes in the organizational structure and staffing. A review of safety committee activities was also conducted.

a. Organization

The Senior Specialist responsible for licensing and safeguards activities has resigned and this position abolished. The transportation and security functions of this position were assigned to the Safety Supervisor and the licensing duties assumed by licensee management. Subsequently, the Safety Supervisor position was also abolished and a new position of Safety and Security Engineer was created and filled by the former Safety Supervisor. These changes satisfy the technical specification staffing requirements of the Safety Committee.

b. Safety Committee

Safety meetings were conducted as required by Appendix A, Technical Specifications for Safety, License No. SNM-2500. The committee reviewed the radiological health and safety aspects of the following matter:

Basin Coolers: A routine weekly compliance survey of the basin coolers involves 18 different smear sites with results generally showing less than 200 dpm/100 cm²; however, in a recent survey, one smear exhibited contamination levels of approximately 5000 dpm/100 cm².

Licensee investigation failed to reveal the source of the apparent elevated contamination and the safety committee concluded that a possible mix up in smear samples occurred and that no further action was required. The licensee's actions are appropriate because the contamination is below the licensee's 20,000 dpm/100 cm² action level and the coolers are located in a controlled restricted (fenced in) area.

c. Radiation Work Permit (RWP)

The licensee indicated that work conducted under the following RWP's was completed without exposure problems:

No. 89-101-1: Clean and inspect shipping cask "head seal surface." Safety requirements included use of a radiation detection instrument, air monitoring equipment and TLD finger ring(s).

No. 89-108-1: Replace the filtering media and clean basin filter strainer.

No. 89-136: Dispose of IF-300 cask shielding support stand. The inspector noted that the support stand's radiological conditions were described on the RWP and that appropriate instructions for handling the stand were also included.

A records review and discussion with licensee personnel indicated that no individuals working under the above noted RWP's received exposures approaching 10 CFR 20 limits.

No violations or deviations were identified.

4. Radiation Protection (IP 83822)

The inspector reviewed the licensee's internal and external exposure control programs including required records, reports, and notifications.

a. Internal Exposure Control

Records of air sampling data were reviewed for the March through July 1989 operating period. The concentration of airborne radioactivity measured in the fuel basin area continues to be less than the MPC value of 1E-08 uCi/ml for cesium-137. The highest concentration was reported to be 8E-12 uCi/ml.

Whole body count results were reviewed for operations and maintenance personnel for the 1988 operating period. Results indicated that the highest reported observation (9.2 nanocuries, cesium-137) is equivalent to .03 percent of the maximum permissible body burden (MPBB).

Results of gamma spectroscopy analysis of 24 worker urine samples collected for the January through May 1989 operating period showed four samples with cesium-137 concentrations of 26-33 picocuries/liter and one sample exhibiting a cobalt-60 concentration of 32 picocuries/liter. These concentrations are significantly less than one percent of MPBBs; no significant problems were noted.

The inspector advised the licensee of the desirability to investigate the use of spiked urine samples as a control for future urinalysis. The licensee agreed to explore this matter and to evaluate in greater detail any bioassay result that exceeds one percent MPBB.

b. External Exposure Control

Workers assigned to the basin area and the cask receiving area are issued TLDs and self-reader dosimeters (SRDs). SRD doses are recorded daily and TLDs analyzed by a vendor on a monthly basis. Area radiological conditions are also determined from 31 TLD's located in the basin area. During the second quarter (1989), operations and maintenance personnel averaged whole body exposures less than 100 mR while the highest exposure assigned to an individual was 160 mR. Equipment located in the basin pump room is routinely surveyed and marked with exposure rate information which is used in conjunction with area postings to notify workers of radiological conditions.

No violations or deviations were identified.

5. Maintenance Surveillance Tests (IP 88025)

The inspector reviewed the results of surveillance tests required by the technical specifications of Appendix A to License No. SNM-2500. Measurements of basin water quality, criticality monitors, and stack effluent air were made at the required frequencies; no problems were noted.

An off-standard condition was recorded when the diesel generator failed the compliance operability test; however, the problem was corrected when new heaters were installed.

The basin water quality checks were satisfied in both the radiochemical and nonradioactive controlling parameters. Operating procedures and/or SOP's are normally reviewed by the licensee every two years. About 50% of the current SOP's and procedures for performing compliance tests have recently been re-reviewed and approved for service. There are about 24 procedures in the compliance test series.

No violations or deviations were identified.

6. Training

The licensee recently completed the biennial operator recertification program. Operators participating in the 1988 recertifications scored higher than the 1986 average test scores. Four maintenance technicians

and three service technicians completed special training in control room duties for providing control coverage. The licensee indicated that this special training and subsequent coverage was significant and had a positive impact because of previous work force reduction. Staffing reduction concerns were previously reported in Inspection Report No. 72-001/89001(DRSS).

A Senior Instructor from the GE Reactor Simulator Training Services reviewed the licensee's operator recertification program and made the following observations:

- The level of difficulty of the recertification test was adequate.
- The written examination and walk through requirements for each operator was comprehensive and adequate for maintaining operator competency.

Operations covered in the recertification tests included cask receiving and decontamination pad operations, basin pump room, emergency equipment building, control room operations, and radiation protection.

The licensee's training/recertification program appears adequate.

No violations or deviations were identified.

7. Operations Review (IP 88020)

a. Cask Operations

As previously reported in Inspection Report No. 72-001/89001(DRSS), on January 26, 1989, the licensee received the last shipment of spent fuel scheduled for storage at GE:MO. The licensee informed Region III in an April 1989 telecon that the last of the spent fuel bundles were transferred to the basin pool for storage.

Current operations occasionally require the licensee to perform cask maintenance or provide storage for the IF-300 shipping cask. During the inspection, the inspector observed the licensee performing contamination surveys on an IF-300 cask presently stored at GE:MO. The licensee also demonstrated the use of PENTEK 600, a polymer used to decontaminate casks. The material appeared to have the viscosity of honey at ambient temperatures and is applied to the cask with a paint brush and hardens into flakes over a period of 24 hours. After 24 hours, the flakes are peeled from the cask with the contaminant adhered to it.

Samples of the polymer applied to a cask were removed and counted by the licensee for gross beta-gamma activity; about 0.2 uCi of contaminated material was removed for each gram of the polymer removed from the cask. Apparently, levels of contamination can be reduced about 50% for each polymer treatment and reapplication of the polymer assures that cask contamination is less than the licensee's shipping criteria of 500 dpm/100 cm². The licensee indicated that the contamination limit set at 500 dpm/100 cm² is usually averaged from 75 individual smear results.

b. Low Activity Waste Vault (LAW Vault)

The LAW storage system provides on-site storage of low-level radioactive wastes.

The inspector reviewed the licensee's program for performing integrity tests on the low activity waste (LAW) storage vault. The licensee is presently investigating ways to measure the wall thickness of the LAW vault liner (stainless steel) and observe the condition of the liner's protective coating. Compliance and operability tests for the determination of intrusion water in the LAW vault were performed at the required frequencies.

No violations or deviations were identified.

8. Criticality Safety (IP 88015)

The inspector examined the licensee's instrument maintenance and calibration records and toured the spent fuel basin area to assure that criticality monitors were calibrated and appropriately located in the basin area. Instrument set points are fixed at 700 mR/hr. Both the east and west accessory monitors were calibrated according to schedule.

During the second quarter (April 14, 1989), an instrument technician inadvertently triggered the criticality alarm while performing preventive maintenance. Plant personnel responded and cancelled emergency reentry procedures after discovering the alarm was false. Apparently, the technician was making adjustments to the alarm trip recorder (DIGI-STRIP) and inadvertently dropped a tool which shorted the system and triggered the alarm. Criticality safety is assured during monitor maintenance activities because operations that could effect criticality are halted.

No violations or deviations were identified.

9. Transportation Activities

The inspectors reviewed the licensee's program for receipt and/or shipment of radioactive materials.

The last spent fuel shipment was received on January 26, 1989, and transferred to basin pool storage in April 1989. During the March through July 1989 operating period, the licensee prepared a spent fuel basket for packaging and shipping. No shipment of inplant generated radioactive waste was scheduled for this period.

No violations or deviations were identified.

10. Environmental Protection

The inspector reviewed the licensee's environmental monitoring program including offsite dose(s) resulting from gaseous effluents released from the plant stack. The maximum annual 1988 dose to an individual at the site boundary from GE:MO stack effluent was 3.35 E-08 mrem and is significantly below 10 CFR 20 limits.

The inspector observed that the licensee was excavating chemical storage tanks and preparing above ground storage sites in accordance with EPA requirements. The licensee agreed to survey the excavated soil for radioactive contamination.

No violations or deviations were identified.

11. Exit Meeting

The scope and findings of the inspection were discussed with licensee representatives (Section 1) at the close of the onsite inspection on August 17, 1989. The following matters were discussed:

- a. The desirability to analyze excavated soil for radioactive constituents (Section 10).
- b. The desirability to continue polymer cask contamination studies. (Section 7)
- c. The desirability to review the bioassay program and consider spiking urine samples for enhanced quality control on bioassay data. (Section 4)
- d. The licensee's continued investigative efforts to determine the integrity of the LAW waste vault. (Section 7)

During the course of the inspection and the exit meeting, the licensee did not identify any documents or inspector statements and references to specific processes as proprietary.