

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

REGION III

Report No. 70-1308/80-04

Docket No. 70-1308

License No. SNM-1265

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

Facility Name: Morris Operation

Inspection At: Morris Operation, Morris, IL

Inspection Conducted: July 29 - August 1, 1980

Inspector: *W.L. Fisher*
C. C. Peck

8/15/80

Approved By: *W.L. Fisher*
W. L. Fisher, Chief
Fuel Facility Projects and
Radiation Support Section

8/15/80

Inspection Summary

Inspection on July 29 - August 1, 1980 (Report No. 70-1308/80-04)

Areas Inspected: Routine unannounced health and safety inspection, including: organization, fuel receipt and storage, external exposure control, respiratory protection, bioassay program, notifications and reports, modifications and changes to facility, training, internal audits, surveillance tests, and posting and labeling. The inspection required 29 hours onsite by one NRC inspector.

Results: No items of noncompliance were identified in the eleven areas inspected.

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DETAILS

1. Persons Contacted

E. E. Voiland, Plant Manager
*T. E. Ingels, Quality Assurance and Safeguards Manager
*K. J. Eger, Senior Engineer, Licensing and Radiological Safety
*H. R. Strickler, Operations Manager
*J. P. Kesman, Plant Engineering and Maintenance Manager
J. E. McGrath, Plant Safety Supervisor
N. P. Shaikh, Operations Engineer

In addition to the inspector, Dr. A. T. Clark of the NRC Office of Nuclear Material Safety and Safeguards, was at the site on July 31, for discussion of licensing matters with licensee representatives.

*Denotes those present at the exit interview.

2. General

The inspection began at 9:30 a.m. on July 28, 1980 with a tour of the principal operating areas. The facility was functioning normally.

3. Organization

There have been no changes in Morris Operation management. Since the previous inspection in March 1980, three employees have left Morris Operation and one former employee has been rehired.

4. Fuel Receipt and Storage

There have been no fuel receipts since March 1980. At the time of this inspection, the basin contained 1117 assemblies and was slightly less than half full in terms of occupied spaces. The series of fuel shipments from San Onofre, which was interrupted by a reactor outage in March, is expected to be resumed in August.

5. External Exposure Control

TLD badges continue to be required for all employees. These are changed monthly. The highest dose to any employee for all of 1979 was 1910 mrem to the whole body and skin. Exposure for the first six months of 1980 were generally less than in 1979. The highest dose through June 1980 was 410 mrem to whole body and skin. The lower exposures are attributed to the reduced amount of fuel handling in 1980.

The inspector examined summaries of TLD badge data maintained by the licensee. Total man-rems for all employees in recent years are tabulated below:

| Year | Total Man-ReMs |
|------|----------------|
| 1979 | 12.4 |
| 1978 | 21.4 |
| 1977 | 31.7 |
| 1976 | 25.2 |

No items of noncompliance were identified.

6. Respiratory Protection

There are no areas in the plant where air activity normally exceeds 10 CFR Part 20 limits according to air sample results. Full face respirators are required as a precaution for work in areas that have a potential for airborne radioactivity. A licensee procedure (MOI-908) requires that respirator users be qualified on the basis of a physical examination, training, and successful completion of a fit test. Records of training and fitting are maintained. A current list of those qualified to use respirators is maintained.

No items of noncompliance were identified.

7. Bioassay Program

Quarterly samples for urinalysis are analyzed by an outside laboratory. Sample results for the first two quarters of 1980 were all less than the detectable limit of 1E-07 microcuries/milliliter of gamma emitting radionuclides.

Annual whole body counting by an outside service is provided for employees, including all operations and maintenance people as well as many administrative people. Nanocuries of mixed fission products are determined. The inspector examined results of counts measured in November 1979. These indicated no significant internal doses. A number of counts showed the presence of small amounts of one or more radionuclides as indicated in the following tabulation:

| Radionuclide | % of Individuals | Highest Amount Found (nanocuries) | % of Maximum Permissible Burden |
|--------------|---------------------|---|---------------------------------------|
| Cesium-134 | 2.4 | 1.0 | 5.0 E-03 |
| Cesium-137 | 64.3 | 18.0 | 6.0 E-02 |
| Cobalt-59 | 2.4 | 1.0 | 5.0 E-02 |
| Cobalt-60 | 45.2 | 17.0 | 1.5 |
| Barium- | | | |
| Lanthanum | 7.1 | 1.0 | 1.7 E-01 |

The inspector inquired why large percentages of the counts indicate the presence of some radioactivity, because routine air sample normally indicate airborne concentrations in all work areas to be not significantly above background. Count profiles provided to the licensee by the counting service at the conclusion of previous annual counts were examined. These indicated that maximum counts for some individuals had been found in parts of the body where internal activity would not be expected, such as the head, hands, and feet. The licensee representative expressed the belief that the curves were indicative of small amounts of external contamination, and that external contamination was also the reason for many of the positive findings in the November 1979 counts. The inspector calculated that 18 nanocuries of cesium-137, the largest amount of any of the radionuclides found in any individual, would be equal to 2.2 E-10 grams.

No items of noncompliance were identified.

8. Posting, Labeling, and Control

During the tour of the facility, the inspector observed that radiation and high radiation areas were correctly posted and radioactive material containers labeled as required by 10 CFR 20.203. The basin filter room and basin cooler area remain high radiation areas where levels exceed 100 mR/hr. The filter room is locked and entries are infrequent because filter changes are accomplished remotely. The coolers are enclosed within a fence that has a locked gate.

The inspector independently measured radiation levels along the west walkway of the fuel basin and in the pump room, the only frequently occupied areas where radiation levels significantly above background are encountered. Levels were 2-3 mR/hr along most of the length of the walkway. A level of about 10 mR/hr was found at the southwest corner of the building. There was one spot in a pipe bend that measured 70 mR/hr. A radiation tag indicated the spot. The source of the higher radiation levels is apparently the basin coolers and associated piping which are located outside the building along the west wall. The radiation levels found were in agreement with the information posted at the entrances to the storage basin area and the pump room.

No items of noncompliance were identified.

9. Notifications and Reports

The licensee reports to the NRC exposures of individuals to radiation upon termination of employment as provided by 10 CFR 20.408.

Radiation exposure data as described in 10 CFR 19.13 are provided annually to employees. The regulation requires that the data be provided at the employee's request. However, the information is provided whether requested or not.

No items of noncompliance were identified.

10. Modifications and Changes

An addition to the basin pump room is being constructed. The addition will house permanent equipment for flushing radioactivity from the basin coolers to the LAW vault. A system of heat pumps is also planned which will indirectly use the fuel basin water, whose temperature is normally about 28°C, to heat and cool occupied areas of the plant. The system is expected to reduce the use of the large boiler originally intended to service the unused fuel reprocessing plant as well as present operating areas.

A system for removing fixed contamination from slightly contaminated metal objects and equipment is being installed. The system will use electropolishing principles.

11. Training

New employees receive indoctrination from supervision in accordance with established procedures.

A retraining program for all operations technicians is conducted every two years. Safety technicians and maintenance personnel are included in selected parts of the program applicable to their needs. Retraining was last completed in late 1978. The program consisted of 29 prepared training instructions covering the various systems and equipment used at the plant. Operations technicians were tested after completion of the training with a written quiz containing 128 questions and a walk-through administered by the Operations Manager. Test records were maintained. The retraining program is currently being revised and edited to make more use of audio and audio-visual cassettes. The revised program is scheduled to be administered in late 1980. The retraining program conforms generally with the requalification program described in Appendix A of 10 CFR Part 55.

No items of noncompliance were identified.

12. Internal Audits

The licensee has an established audit program which requires annual audits of various systems and procedures. Audit teams usually consist of the Nuclear Material Safeguards Specialist and an individual independent of the system being audited. Audit findings are documented and management of the department audited is responsible for appropriate actions.

Audits and recorded corrective actions for two recent audits were examined by the inspector. The audits were "Purchasing, Receiving, Shipping, Handling, and Storage" and "Design, Maintenance, Calibration, and Test Control."

No items of noncompliance were identified.

12. Surveillance Tests

Records of compliance and operability tests performed since the inspection of March 1980 were selectively examined. The records indicated that tests were being conducted at the required frequencies and that no test limits were exceeded.

The inspector observed tests of the criticality alarms and the area radiation monitors. The monitors responded satisfactorily, and the criticality instruments alarmed in the 600-800 mR/hr range as required.

The most recent basin water compliance test, dated July 26, 1980, was within limits in all respects. Results are tabulated below:

| | <u>Result</u> | <u>Limits</u> |
|----------------|----------------------|---------------|
| pH | 5.6 | 4.5-9.0 |
| Chloride | 0.1 ppm | 10 |
| Sodium Nitrate | 0.9 ppm | 200 |
| Gross Beta | 3 E-04 μ Ci/ml | 2E-02 |
| Cobalt-60 | 1.4 E-04 μ Ci/ml | - |
| Cesium-134 | 1.6 E-05 μ Ci/ml | - |
| Cesium-137 | 1.3 E-04 μ Ci/ml | - |

The basin leak rate test for the second quarter of 1980 indicated zero leakage. The leak rate for the Low Activity Waste (LAW) vault was 5.25 ml/day, according to the monthly test record. The leakage from the basin and vault is the liquid that leaks through stainless steel inner liners and is collected in sumps where its volume is measured before it is returned to the inner container.

14. Exit Interview

The inspector discussed the inspection with the licensee representatives denoted in Paragraph 1 and stated that no items of noncompliance had been identified.

Plans for future fuel shipments were discussed. Licensee representatives said that procedures for returning eight spent fuel assemblies to Dairyland Power were being prepared.

Licensee representatives said that the Consolidated Safety Analysis Report would be modified as appropriate to reflect the changes described in Paragraph 10.