

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 072-00001/94001(DRSS)

Docket No. 072-00001

License No. SNM-2500

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

Facility Name: G. E. Morris Operation

Inspection At: Morris, Illinois

Inspection Conducted: January 31, 1994, and in-office review of soil sample analysis results on February 14, 1994

Inspection By: Kenneth J. Lambert 3/14/94
Kenneth J. Lambert Date
Radiation Specialist

Reviewed By: George M. McCann 3/14/94
George M. McCann, Chief Date
Fuel Facilities and
Decommissioning Section

Inspection Summary

Inspection on January 31, 1994, and in office review of soil sample analysis results (Report No. 072-00001/94001(DRSS))

Areas Inspected: This was a special inspection to review the progress to date on repairing the Leak Detection System, identification of the pool liner leak, and the cooler tube leak and subsequent decontamination of soil.

Results: Of the areas inspected, no violations of NRC requirements were identified. The licensee has identified leaks in the spent fuel basin liner. It is performing tests to determine the cause of these leaks. The licensee plans to install a temporary patch over the leaks until a permanent resolution is determined.

DETAILS

1. Persons Contacted

- *L. L. Denio, Manager, Plant Services
- *J. E. Ellis, Manager, Morris Operations
- *J. D. Kesman, Manager, Plant Operations and Maintenance

*Denotes those present at the exit meeting on January 31, 1994.

2. Licensee Program

The General Electric Morris Operation (GE:MO) provides a storage and service facility for nuclear reactor spent fuel. The GE:MO fuel storage facility includes three interconnected water-filled basins with cranes, water treatment systems, and other facilities required to receive irradiated fuel and store it underwater for an indefinite period. The storage facility reached capacity in January 1989. Consequently, the shipping casks were sold and the facility no longer receives shipments of spent fuel. Currently, the licensee's major activity is to maintain the basin and basin water quality. The basins were constructed below ground with stainless steel lined, reinforced concrete walls about 2 feet thick poured in contact with the sides of a bedrock excavation. A leak detection system and pump-out facilities are provided for the space between the concrete walls and floor, and the stainless steel liner. Currently the licensee is remediating the low activity waste vault. The license has installed a resin filter system for future radwaste water from cleaning operations. This system is independent of the basin water filter system.

3. Inspection Findings

a. Basin Liner Leak Detection System Failure and Liner Leakage.

During the April 1993 cleaning of the Equipment Transfer Area (ETA) pit in preparation for installation of cleaning operations radwaste water filtering system, water was observed leaking into the pit. This pit is adjacent to the storage basins. This was presumed to be ground water, as the basin liner Leak Detection System (LDS) had not indicated a leak. To demonstrate that leakage was from groundwater and not from the basin, water was added to the basin Leak Collection System (LCS). This initial addition of water did not activate the LDS. Additional water was added to the LCS, with no response from the LDS. Water was added directly to LDS sump with response from the LDS indicating water in the sump, confirming the operability of the system. Water was added to the leak collection system at various access points with no response from LDS. Water continued to leak into the ETA pit. A miniature camera was obtained, in June 1993, and lowered into the LDS sump to view the one inch diameter pipe connecting the basin leak collection system to the sump. A blockage in the one

inch pipe was identified, and after numerous attempts of acid washing and pressure washing the blockage was dissolved. The LDS system was functioning as designed in November 1993.

The LDS continues to respond, indicating leakage of water into the LCS. Analysis of LCS water and basin water identified similar ratios of cesium-134 to cesium-137 and similar concentrations of the nuclides, indicating that water in the LCS is coming from the storage basins and not leakage from ground water. The licensee conducted a visual inspection of the basin liner, and observed no apparent leaks. The licensee then contracted with United Marine Services to conduct visual and sonic inspections of the liners in January 1994.

At the time of the inspection, United Marine Services was onsite conducting inspections of the fuel unloading basin. Three leaks in the unloading basin have been identified, all in close proximity to each other. The first leak is from a crack in the weld between two stainless steel plates, the second leak is a three-eighths inch diameter hole in the stainless steel plate, with the third a smaller "pinhole" in the stainless steel plate. The licensee plans to install a temporary rubber patch over the three holes until a permanent resolution is developed. Based on discussions with licensee representatives, it appears that the licensee was actively attempting to fix the leak detection system and determine the source of the basin leak, once identified. The licensee is reviewing its preventative maintenance program to determine if changes are warranted as a result of the basin leak and inoperability of the leak detection system.

No violations of NRC requirements were identified.

b. Basin Cooler System Leak

The licensee identified a leak in the basin cooler system on January 20, 1994, shortly after bringing the system on line. The system was immediately turned off once the leak was detected. The leak was detected as part of the licensee's routine procedure which requires a visual inspection of the coolers during start-up of the cooler system. The licensee estimated that approximately 100 gallons of water leaked. Due to the cold temperatures the water froze after hitting the ground and was contained in the restricted area surrounding the coolers. The licensee remediated the area of the spill by breaking up the ice and placing it into 55 gallon drums. Additional contaminated soil was excavated, stock piled and covered with a tarp. The licensee is waiting for warmer weather to containerize and dispose of the contaminated soil. The licensee has reviewed its start-up procedure and intends to modify it to require an individual to be present at the coolers during initial start-up. In addition, the licensee plans to construct a catch basin under the coolers.

The progress of remediating the spill area was discussed with licensee representatives. The licensee excavated a trench approximately seven feet (2.1 meters) long by four feet (1.2 meters) deep by four feet (1.2 meters) wide. The licensee's analysis of the soil from the bottom of the excavation indicates an activity of less than 1.8 picocuries per milliliter (pCi/ml) (67 millibecquerels per milliliter (mBq/ml)) of cesium-134 and cobalt-60 and a maximum activity of 15 pCi/ml (555 mBq/ml) of cesium-137. The NRC's unrestricted use criteria is 15 pCi/g (555 mBq/g) of Cs-137 and 8 pCi/g (296 mBq/g) of Co-60. This criteria can be found in "Order Establishing Criteria and Schedule for Decommissioning the Bloomsburg Site," Federal Register, February 20, 1992. Since the licensee has provided soil analysis results in terms of milliliters rather than grams, it is not possible to compare this data to the unrestricted use criteria. Future soil concentration data should be reported in activity per grams. However, the contaminated soil is in a restricted area and is not required to be remediated to less than unrestricted use criteria.

Two samples from the bottom of the excavation, east and west end, and one sample from the contaminated stock pile were collected by the NRC and analyzed in the Region III Laboratory. The analysis results of samples from the excavation are 17 pCi/g (629 mBq/g) of Cs-137 and 0.9 pCi/g (33 mBq/g) of Co-60 for the west end and 46 pCi/g (1702 mBq/g) of Cs-137 and 1.9 pCi/g (70 mBq/g) of Co-60 for the east end. The stock pile sample analysis results are 15.4 pCi/g (570 mBq/g) of Cs-137 and 0.6 pCi/g (22 mBq/g) of Co-60. The stock pile sample was collected from one location and may not be indicative of the actual activity of the pile. The results indicate that the soil concentrations for Cs-137 are in excess of NRC's unrestricted use criteria; however, the contaminated soil is in a restricted area.

No violations of NRC regulations were identified.

4. Exit Meeting

An exit meeting was conducted on January 31, 1994, with the individuals specified in the Persons Contacted section of this report. The status of the licensee's progress in identifying the basin leak and status of the cooler leak contamination remediation were discussed. NRC stated that we will continue to follow-up on these two activities until repairs are completed and issues are resolved. The licensee agreed to keep the NRC appraised of its progress. The licensee did not identify any information discussed as being proprietary.