UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

FEB 07 1990

Report No.: 70-1113/SNM-1097

Licensee: General Electric Company
Wilmington, NC 28401

Docket No.: 70-1113 License No.: SNM-1097

Facility Name: General Electric Company

Inspection Conducted: January 16-19, 1990

Inspectors: _____ 2/2/90
C. A. Hughey Date Signed

_____ 2/2/90
D. A. Seymour Date Signed

Accompanying Personnel: T. R. Decker

Approved by: _____ 2/6/90
T. R. Decker, Chief Date Signed
Radiological Effluents and Chemistry Section
Emergency Preparedness and Radiological
Protection Branch
Division of Radiation Safety and Safeguards

SUMMARY

Scope:

This routine, unannounced inspection was conducted in the areas of Radioactive Waste Management and Radiological Environmental Monitoring.

Results:

In the areas inspected, violations or deviations were not identified.

A Non-cited Violation (NCV) concerning the analytical sensitivity of ambient air samples was closed (Paragraph 2).

A review of selected environmental monitoring analyses records indicated that the results were within limits specified in the License Application (Paragraph 3).

A review of sludge samples analyses results from the onsite sanitary waste treatment facility were within the limits specified by the License Application (Paragraph 4).

The licensee committed to replace short radius bends in the gaseous effluent stack sample lines with probe lines having 12 to 18 inch radius bends by August 31, 1990 (Paragraph 5).

Stack Emission Report results for 1989 were below the limits specified in the License Application (Paragraph 5).

The inspectors observed a large number of five gallon buckets stored outside in degraded outer plastic bags (Paragraph 4).

The computer-based status monitoring and operational control system for the HVAC system was being evaluated for use for records purposes (Paragraph 6).

REPORT DETAILS

1. Persons Contacted

   Licensee Employees

   *B. Beane, Manager, Fuel Manufacturing Maintenance
   *W. Cameron, Supervisor, Fuel Support
   *T. Crawford, Sr. Environmental Engineer
   *R. Foleck, Sr. Specialist, Licensing and Nuclear
   *D. Hassler, Supervisor, HVAC
   P. Jasinski, Supervisor, Chemet Laboratory
   P. Stansbury, Sr. Nuclear Safety Engineer
   *H. Strickler, Sr. Program Manager, Environmental Protection and Industrial Safety
   *C. Vaughn, Manager, Regulatory Compliance
   *T. Winslow, Manager, Licensing and Nuclear Materials Management

   *Attended exit interview

2. Licensee Action on Previous Inspection Findings (92701)

   (Closed) NCV 70-1113/89-04-01: Review corrective measures to assure that isotopic uranium analyses of air samples meet the sensitivity requirement of E-16 uCi/ml as required by the license.

   A previous inspection report (89-04) identified that monthly isotopic uranium analyses of off-site ambient air sample filters were not meeting the analytical sensitivity of E-16 uCi/ml as required by Section 5.2.1.2 of the License Application. The inspector had noted that the reported values for June 1988 through December 1988 were highly erratic. Further review noted three problem areas. First, the 2-sigma values and "less than" values were of such magnitude as to show that more than half of the analyses did not meet the specified analytical sensitivity of E-16 uCi/ml. Second, the numerical values of radioactivity ascribed to the 3 nuclides reported were highly erratic. Third, since the licensee's process feed material had an average U-235 enrichment of approximately 2.5 percent, the ratio of U-234 alpha activity to that of U-238 should have been approximately 6.5:1; calculated ratios varied from 0.3:1 to 21:1, with only one of 15 calculated ratios coming within 20 percent of the expected value. Subsequent to this inspection (May 89), a licensee representative stated that discussions had been opened with the vendor to fully ascertain the reasons for the poor chemical dissolution yield and high background counts, which the vendor acknowledged were the apparent cause of the erratic results and high statistical errors, and the reasons why appropriate remedial action had not been taken through the vendors's quality assurance program. A licensee representative also stated that the licensee had initiated procedural and quality assurance measures to prevent a future recurrence.

During Inspection No. 89-14, a licensee representative stated that the problem was still being discussed with the vendor and an internal commitment was made by General Electric to formally document a position on this issue by the end of October 1989.

During this inspection, a review was made of this documented position dated October 26, 1989. In this document the licensee defined the expression "Analytical Sensitivity" as probable error, which is numerically equivalent to 0.6745 sigma. The vendor who performed the uranium isotopic analysis reported a 3 sigma error for results. This would mean that the "Analytical Sensitivity" (probable error) would exceed the required 1.0 E-16 uCi/ml if the vendor's 3 sigma error was greater than 4.4 E-16 uCi/ml.

An agreement was reached with the vendor whereby they would report to GE immediately any results of the ambient air sample analyses that were greater than 4.4 E-16 uCi/ml so immediate corrective actions (re-analysis, increased count time, etc.) could be taken to prevent exceeding the license requirements. Since implementing this policy, all ambient air sample results have met the analytical sensitivity requirements as established by this policy.

This item is considered closed.

3. Environmental Monitoring (88045)

   a. Section 5.2.1.2 of the License Application requires ambient air sampling stations to be located in the prevailing wind directions (SE, S, SW, NE) and air samples to be continuously collected. An examination of all of these stations by the inspectors indicated they were properly operating, appeared well maintained, and air samplers' integrated flow meters were within current calibration.

      A review of licensee records indicted that between January 1989 and September 1989, weekly ambient air samples were collected, composited and analyzed as required by Section 5.2.1.2, although some analyses performed early in the period did not meet analytical sensitivity requirements (see Paragraph 2).

      The inspectors also verified that the quarterly average airborne uranium concentration never exceeded 3.45 E-15 uCi/ml, which would require a particle size distribution analysis.

   b. Section 5.2.2.1 of the License Application requires soil samples to be collected quarterly and analyzed for uranium concentration to monitor for the long-term build up of uranium concentration attributable to plant operations.

      Quarterly soil samples for 1989 were properly collected from 21 locations. Nos. 1 through 18 never exceeded the internal action guidelines of 0.7 ppm; however, sites 1A, 20, and 21 were higher than

0.7 ppm (3-4 ppm). These locations were within the site boundary and inside a protected area where a backlog of wooden waste storage boxes had been stored awaiting incineration (see Paragraph 4).

c. Section 5.1.2.3 of the License Application defines action levels for uranium concentrations in the discharge of the treated process wastes from the final process lagoons. A review of sample analyses results for 1989 indicated that the action levels were never exceeded.

d. Section 5.2.2.3 of the License Application requires vegetable/forage samples from specific areas to be collected twice a year and analyzed for fluoride. The samples for 1989 were collected by the licensee and analyzed as required by a vendor laboratory. It should be noted, however, that the fluoride detection limit as stated in the license was 1.0 parts per million (ppm), but the detection limit reported by the lab was 10 ppm. Although there were no action limits associated with vegetation/forage fluoride levels, the inspectors noted that, to be consistent, the detection limit for the fluoride analysis should be lowered to 1.0 ppm until such time as a higher fluoride detection limit could be justified and revised in a new License Application.

e. Section 5.2.3.2 of the License Application defines the sampling and analysis requirements for gross alpha, gross beta and uranium concentration of samples taken from ammonium nitrate tank trucks shipped to the Federal Paper Board Company for use in their waste treatment facility; and specifies liquid and sludge samples to be collected at the Federal Paper Company. A review of the analyses results for 1989 indicated that no action levels were exceeded.

f. Section 5.2.4 of the License Application describes the Groundwater monitoring program for gross alpha, gross beta and uranium on and around the plant site. The inspector briefly reviewed the well samples analyses results for the 1st and 2nd quarter of 1989. Some results indicated gross alpha activities exceeding the 15 picocuries/liters action level; however, subsequent alpha isotopic analyses indicated uranium isotope concentrations well below the action levels.

g. The licensee indicted that by-product hydrofluoric acid produced onsite, as discussed in section 5.2.3 of the License Application was no longer being offered for sale.

h. Section 5.1.2.5.1 of the License Application specifies that the lower limit of detection for chemical uranium analyses of environmental samples is approximately 0.02 ppm. These analyses were being performed using a laser based fluorometric method. The inspectors briefly discussed this analytical methodology with cognizant chemet laboratory personnel and verified that the 0.02 ppm detection limit was being met for environmental samples.

No violations or deviations were identified.

4. Solid Radioactive Waste Management (88035)

The inspectors reviewed the results of monthly samples of sludge from the licensee's onsite sanitary waste treatment facility for the period July through December 1989. Results were significantly lower than observed in previous inspections (see Report No. 70-1113/88-06). All wet sludge samples were below the detection limit of 0.02 ppm uranium while the highest concentration in dried material was 3.57 ppm uranium. (At an average enrichment of 2.5 percent U-235, 1 ppm of uranium equates to about 1.57 picouries/gram.) Sanitary sewage sludge, as authorized by the license, was being spread on a former sanitary waste lagoon.

The inspectors discussed the disposal of radioactively contaminated wastes with licensee representatives, and toured controlled access queuing areas used for storing five gallon buckets, and cardboard, metal, and plywood waste boxes. These drums and boxes contained solid wastes generated in the fuel manufacturing process.

The buckets primarily contained material waiting to be reprocessed. The contents of the buckets were enclosed in plastic bags inside the buckets. The sealed buckets were individually stored in another outer plastic bag. This outer plastic bag is exposed to the environment and is susceptible to degradation. The inspectors toured one bucket queueing area (PAD No. 1, MICS Station 428) and noted that a large number of the buckets had degraded outer bags, and in some cases rusting of the buckets.

Discussions with the licensee revealed that audits of set proportions of the buckets were performed on a weekly basis, and that degraded outer bags were replaced as needed. Inclement weather and the holiday season had reduced the number of audits being performed.

As of January 15, 1990, there were 242 waste boxes waiting incineration in the onsite incinerator, and 72 waste boxes were scheduled for shipment to a licensed recipient for burial.

No violations or deviations were identified.

5. Gaseous Radioactive Waste Management (88035)

A previous inspection report (89-11) noted that there were two near right angle bends in each gaseous effluent stack sample line between the sample points and the filter, and that heat tracing was not used on the sample lines. The inspectors discussed this issue with licensee representatives during this inspection. A commitment was made by the licensee to remove all short radius bends out of the stack probe lines and to replace these probe lines with lines having 12 to 18 inch radius bends. A completion date of August 31, 1990 was given. The licensee also agreed to evaluate the necessity of installing heat tracing on these stack sample lines, although no specific commitment was made.

The inspectors also reviewed Stack Emission Reports for 1989. In 1989, total site airborne emissions were 120 uCi. This was equivalent to 1988 (118 uCi), and less than 1987 (290 uCi). This figure is less than the 1,250 uCi/quarter limit specified by Section 5.2.1.1 of the License Application.

No violations or deviations were identified.

6. Heating, Ventilation, and Air Conditioning System (HVAC) (88035)

The inspectors received updated information on the status of the computer-based status monitoring and operational control system for the HVAC system. This system was discussed in detail in previous inspection reports (89-04, 89-11). During this inspection, the inspector determined that this system was not being used for records purposes, but was being run in parallel with the existing system. The data was being collected and was being used in an ongoing evaluation of the computerized system to verify that this system met all applicable license and procedural conditions prior to its use for record purposes. This study was expected to be completed by the end of 1990.

The inspectors also discussed the Preventative Maintenance (PM) program for the HVAC system with licensee representatives. This program involved dividing the total HVAC load into quarters and assigning each quarter to two technicians. These technicians were required to "walk-down" their quarter daily checking for problems including excess bearing vibrations, loose or broken belts, and degraded boots. Work orders would be written for any problems discovered.

No violations or deviations were identified.

7. Exit Interview

The inspection scope and results were summarized on January 19, 1990, with those persons indicated in Paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection results listed below. Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

One NCV concerning the analytical sensitivity of ambient air samples was closed.

A review of selected environmental monitoring analyses records indicated that the results were within limits specified in the License Application.

A review of sludge samples analyses results from the onsite sanitary waste treatment facility were within the limits specified by the License Application.

The licensee committed to replace short radius bends in the gaseous effluent stack sample lines with probe lines having 12 to 18 inch radius bends by August 31, 1990.

Stack Emission Report results for 1989 were below the limits specified in the License Application.

The inspectors observed a large number of five gallon buckets stored outside in degraded outer plastic bags.

The computer-based status monitoring and operational control system for the HVAC system was being evaluated for use for records purposes.