



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
101 MARIETTA STREET, N.W.  
ATLANTA, GEORGIA 30303

October 6, 1982

Report No. 70-1113/82-20

Licensee: General Electric Company  
Wilmington, NC 28402

Facility Name: Wilmington Manufacturing Department

Docket No. 70-1113

License No. SNM-1097

Inspection at Wilmington, North Carolina

Inspector: C. M. Hosey  
C. M. Hosey

10/4/82  
Date Signed

Approved by: John P. Barr  
K. P. Barr, Section Chief  
Technical Inspection Branch  
Division of Engineering and Technical Programs

10/6/82  
Date Signed

SUMMARY

Inspection on September 13-17, 1982

Areas Inspected

This routine, unannounced inspection involved 33 inspector-hours on site in the areas of Radiation Protection, Radioactive Waste Management, Transportation of Radioactive Material, and Followup on Inspector Identified Items.

Results

In the areas inspected, no violations or deviations were identified.

## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*W. B. Smalley, Manager, Environmental Protection
- \*M. E. McLain, Manager, Nuclear Safety Engineering
- \*C. M. Vaughan, Manager, Licensing and Nuclear Material Management
- \*R. C. Pace, Manager, Fuel Support Operation
- H. Stern, Consultant
- \*R. G. Lewis, Acting Radiation Protection Supervisor
- R. Foleck, Senior Licensing Engineering Specialist
- D. Barbour, Radiation Protection Shift Supervisor
- E. L. Jeffords, Nuclear Safety Engineer
- G. R. Mallett, Senior Engineer
- \*P. S. Stansbury, Senior Nuclear Safety Engineer

Other licensee employees contacted included three technicians, two operators, and two office personnel.

\*Attended exit interview

### 2. Exit Interview

The inspection scope and findings were summarized on September 17, 1982, with those persons indicated in paragraph 1 above.

### 3. Licensee Action on Previous Enforcement Matters

Not inspected.

### 4. Unresolved Items

Unresolved items were not identified during this inspection.

### 5. Licensee Action on Previous Inspector Followup Items

(Closed) IFI 82-16-01, Water Run-off from Box Storage Pads. The licensee has performed radiation surveys in the drainage ditches around the box storage pads and has found no areas where the radiation levels exceeded natural background levels. In addition, the site is contoured so that the flow of shallow ground water is toward the canal through which all waste water is released from the site. Samples removed from shallow wells between the box storage pads and the canal indicate that radioactivity levels in ground water are not greater than natural background levels. The inspector had no further questions.

## 6. Radioactive Waste Management

10 CFR 70.59 requires that a licensee authorized to possess special nuclear material for processing and fuel fabrication, or conversions of uranium hexafluoride submit a semiannual effluent monitoring report to the NRC, specifying the quantity of each specific radionuclide released to the unrestricted area in liquid and gaseous effluents.

The inspector reviewed the effluent monitoring reports for the period of July 1, 1981 through June 30, 1982. During the review of the data used to prepare the reports, the inspector noted that the quantity of material released from the plant stacks for fiscal week nine (February 22-26, 1982) was not included in the report submitted to the NRC on August 25, 1982. In discussions with the inspector, a licensee representative stated that the computer printout used to generate the report did not show any stack release data for fiscal week nine at the time the report was generated. The inspector stated that the licensee should review the system for collecting the data and take appropriate measures to ensure that reports sent to the NRC are accurate. In addition, the inspector stated that the licensee should submit a corrected effluent monitoring report for the period of January 1, 1982 through June 30, 1982 (82-20-01).

The inspector compared the amount of uranium released to the atmosphere from the plant stacks as reported in the semiannual effluent release report with that reported in the U. S. Nuclear Materials Management and Safeguards System Material Status Report (Report No. M-742). The inspector noted large discrepancies in the two reports. The inspector reviewed the licensee's input to the M-742 Report and found that this data was in agreement with the effluent release report. The inspector stated that the regional office would follow-up on the discrepancies and determine why the M-742 Report was in error.

Amendment 26 to SNM License 109 authorized the licensee to dispose of uranium-bearing zirconium sludge subject to conditions in the amendment. The inspector discussed the licensee's plans for disposal of the sludge with licensee representatives and observed an actual dewatering operation which is still being evaluated by the licensee. The sludge will be disposed of by transfer to a hazardous waste disposal facility. The licensee has performed extensive sampling of the sludge and has determined that the uranium concentration is approximately 99 picocuries per gram of solids. The commercially available absorbent which will be used to absorb all free standing water prior to disposal at the disposal facility has natural uranium concentration of approximately four picocuries per gram. Once the evaluation period is completed, the disposal operations will be transferred from engineering control to operations and will be conducted in accordance with written procedures. The inspector had no further questions.

The inspector selectively reviewed sample analysis records of nitrate-bearing liquids transferred to an off-site liquid treatment system during the period of February through April, 1982. Transfer of this material is authorized by License Condition 16. The inspector reviewed the

calibration data for the liquid uranium monitor used for determining the uranium content in the nitrate-bearing liquids.

No violations or deviations were identified.

7. Overflow of Nitrate Waste Tank (V103)

On August 24, 1982, a nitrate-bearing waste collection tank (V103) overflowed releasing nitrate-bearing liquids to the process drain systems. The process drain system empties into a waste lagoon. The licensee identified the overflow almost simultaneously by two separate means; elevated nitrate levels in the waste lagoon and detection of water flowing very slowly out of the overflow pipe for the tank. The process drain system is designed to collect and control overflows from tanks in addition to serving other functions. The licensee closed the dam on the drainage ditch taking the outfall from the waste lagoons off-site to prevent releases prior to evaluation of the consequences. Analyses performed by the licensee confirm that the releases off-site were well below the limits established for radioactivity and nitrates. It is estimated that 5175 gallons were released to the lagoon. The licensee is continuing to investigate the cause of the overflow. The tank is equipped with a high level alarm and two separate level indication systems. On August 17, 1982, V103 tank was emptied and the level instrumentation checked. At that time, it was found that a level gage was reading 10% high. The gage was recalibrated. The inspector stated that the results of the licensee's investigations would be reviewed during a subsequent inspection (82-20-02).

8. Surveys

The inspector selectively reviewed the records of radiation, contamination and airborne radioactivity surveys performed during August 1982, and discussed the survey results with licensee representative.

The inspector performed an independent radiation survey in the area where clean trash is sorted and compacted.

No violations or deviations were identified.

9. Posting, Labeling and Control

The inspector reviewed the licensee's posting and control of radiation areas, airborne radioactivity areas, contamination areas, and radioactive material areas and the labeling of radioactive material during tours of the plant.

No violations or deviations were identified.

10. External Exposure Control

During tours of the plant, the inspector observed workers wearing appropriate TLD badges. The inspector discussed the dose monitoring program

with licensee representatives. The inspector also reviewed the monthly and quarterly exposure printouts received from the TLD processor since March 1982, and verified that the radiation doses recorded for plant personnel were well within the NRC limits.

No violations or deviations were identified.

#### 11. Notification and Reports

The inspector reviewed the licensee's records (letters issued in June and July 1982) to determine if exposure data had been provided to terminated employees as required by 10 CFR 19.13(d) and discussed the records with licensee representatives.

No violations or deviations were identified.

#### 12. Transportation Activities

The inspector selectively examined loaded BU-7 containers that were being prepared for shipment and observed a radiation protection technician performing radiation and contamination surveys.

No violations or deviation were identified.

#### 13. Instruments and Equipment

The inspector observed a variety of radiological survey instruments in use, checked calibration stickers and performed battery and source checks for selected portable instruments available for use. The inspector selectively reviewed survey instrument calibration records for instruments in use.

While performing source checks of instruments the inspector noted that the posted acceptance criteria used by the licensee consisted of a single radiation level or count rate. All the instruments checked failed to come up to the posted value. A licensee representative informed the inspector that a check of the data indicated that the response criteria was over two years old and that the criteria should have been periodically updated to reflect radioactive decay of the source (cobalt-60). He also indicated that all the instruments previously checked by the inspector responded properly after the new acceptance criteria was established. The inspector stated that the acceptance criteria should be a range rather than a single number and that the probe configuration (open/closed window) should be specified. The licensee representative made the necessary changes to strengthen the procedure for response checks of portable instruments. The inspector had no further questions.

The inspector discussed the instrument calibration program with licensee representatives and observed the actual calibration of a portable alpha survey instrument and a high volume air sampler. The inspector noted that the licensee representative calibrating the instruments used vendor procedures. However, the procedures did not contain acceptance criteria.

Although the procedures did not contain written acceptance criteria the technician utilized criteria which was satisfactory. The inspector also noted that the technician did not record such information as range checked, acceptable response and actual instrument response. The inspector stated that recording this type of information would be necessary for the radiation protection staff to verify that the instrument was responding properly. This type of information is routinely supplied by the vendor who calibrates the licensee's portable beta-gamma radiation survey instruments. The inspector stated that ANSI Standard N323 could be used by the licensee as a guide for establishing an improved instrument calibration program.

The inspector reviewed the calibration of the TASC-12 laboratory instruments used by the licensee for counting air samples (effluent releases and in-plant). The inspector noted several mathematical errors in the data recorded on the calibration reports which lead to unrealistic counting efficiencies. The instruments were calibrated by the vendor. The licensee counts a uranium standard before each batch of air samples and this count is used to determine the counting efficiency. The calibration performed by the vendor was, in fact, a procedure for determining the threshold and upper value of the windows used to discriminate for alpha, beta and gamma radiations. A licensee representative also stated that the vendor had returned to the plant in December, 1981 and adjusted the windows, however, the calibration record could not be found. During a previous inspection (70-1113/82-16) the inspector had the licensee remove several air filter patches from station in-plant air samples and analyze the samples. These samples were returned to the Region II office and reanalyzed in the regional laboratory. The results of both analyses were in good agreement. A licensee representative stated that the vendor would return to the plant on September 20, 1982, and recalibrate the instruments. A licensee representative stated that the plant was considering performing their own calibration of the TASC-12 instruments and had obtained the necessary radioactive sources. The inspector noted that source information for a strontium-90 source (9.4 nanocuries) recorded in the plant's computerized source records was not in agreement with the certifications received with the source. The date of manufacture was listed on the certification as 11/81 and in the plant's source records as 11/71. The source strength on September 15, 1982 was listed as 7.2 manocuries. The inspector stated that instrument calibration and source data should be reviewed very carefully and its accuracy assured. The inspector stated that the licensee's instrument calibrations program would be reviewed during a subsequent inspections (82-20-03).