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

JUN 12 1985

Report No. 70-1113/85-06

Docket No. 70-1113 License No. SNM-1097 Safeguards Group No. III

Licensee: General Electric Co.
Wilmington, NC 28402

Date of Inspection: April 22 - 25, 1985

Type of Inspection: Unannounced Material Control and Accountability

Inspector: _____ 5/22/85
G. A. Todd, Safeguards Auditor — Date Signed

Approved by: _____ 5/23/85
E. J. McAlpine, Chief, Material Control and Accountability Section, Nuclear Materials Safety and Safeguards Branch, Division of Radiation Safety and Safeguards — Date Signed

SUMMARY

Scope: This routine, unannounced inspection entailed 36 inspector hours by one NRC inspector in the areas of technical review of allegations and records and reports.

Results: No violations or deviations were identified.

REPORT DETAILS

Report No. 70-1113/85-06

1. Key Persons Contacted

*W. W. McMahon, Manager, Quality Assurance
*C. M. Vaughan, Manager, Regulatory Compliance
*L. A. Sheely, Manager, Fuel Quality
*C. W. Doyle, Manager, Quality Audits and Customer Service
*R. H. Foleck, Senior Specialist, Licensing Engineering

The inspector also interviewed several other licensee employees.

*Denotes those present at the exit interview

2. Exit Interview

The inspection scope and findings were summarized on April 25, 1985, with those persons indicated in Paragraph 1 above.

3. Licensee Action on Previous Enforcement Matters

This subject was not addressed during this inspection.

4. Technical Review of Employee Concerns

It was alleged by a former General Electric Nuclear Fuels Manufacturing Department employee that coded computer passwords used by laboratory technicians were accessible by passers-by.

a. Allegation

Specifically, it was alleged that coded passwords and employee pay numbers illuminated on the computer screen of the densification measurement system in the Chemet Laboratory at the General Electric nuclear fuel facility. The illumination of these technicians' computer passwords allowed access to those passwords by casual observation of the screen by other plant employees.

b. Discussion

To determine the validity of the stated allegation and the extent of concern among laboratory technicians the inspector interviewed the laboratory manager, two laboratory supervisors and four laboratory technicians on the normal and off shifts. The interviews were

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conducted in private with each individual with one exception. One laboratory supervisor was interviewed in the presence of a Licensing and Nuclear Materials Management staff member. The inspector also witnessed a requested demonstration of the densitometer and its associated computer interface.

The results of the interviews and equipment demonstration confirmed the alleged illumination of technician passwords and employee pay numbers on the densitometer computer screen.

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The inspector's interview with the laboratory manager disclosed that he was not aware of the described condition nor was he aware of any concerns associated with password control and access.

The inspector's interview with two laboratory shift supervisors disclosed that they had been apprised of the described condition by a laboratory technician on or about April 10, 1985. Their perception of the stated concern was that as a result of password control issues in the past the technicians in the laboratory wanted a more stringent password control system such that at no time would their passwords be visible to co-workers or other individuals with access to the laboratory. As a result of this concern one of the supervisors investigated the condition and reported it at that time to LMCS computer maintenance personnel of the licensee's Automation Technology organization for evaluation and resolution. Within the same general time frame the supervisor of the concerned technician stated that he informed the technician of the actions he had taken to resolve the concern.

The inspector determined through additional management interviews that in fact this concern has been communicated to the Automation Technology group during this time frame and the evaluation and resolution was earmarked on an action tracking system. It was determined by this group that the software for this system was vendor (INTEL) designed which warranted an evaluation prior to a recommendation for modification. This evaluation was in progress at the time of the inspection.

The inspector's interview with the laboratory technicians confirmed the events and time frame of communications that were described by the laboratory supervisor. Each technician expressed a generic concern regarding password control but

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This one technician reported his concern to his supervisors. The technician who reported his concerns regarding password controls to his supervisor stated that his concerns were based on knowledge of other password control issues in the laboratory and felt that illumination of his password on the screen presented the possibility of it being obtained by an unauthorized individual. He stated that he did not feel that any passwords had been compromised nor did he have any information related to the potential to utilize another technicians password to falsify data or make unauthorized changes to data.

c. Inspector Findings and Conclusions

The inspector discussed the findings of the inspection with licensee management on April 25, 1985.

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The inspector further indicated that the described weakness was not a violation or deviation from regulatory requirements. The licensee acknowledged the inspectors findings and further explained that the internal communications and evaluations of this condition at the laboratory supervisor level was responsive to the technicians concern and the normal method of conducting business to resolve problems when they are identified. The licensee management committed to further research to correct the condition within a benchmark schedule of completion.

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The licensee's response to this concern was determined by the inspector to be prompt and effective. It should be noted, however, that the licensee's exercise of control of passwords for the identified equipment was solely for the protection of information and processes that are company proprietary in nature. The described equipment and its associated password control system is not an NRC required system to establish current knowledge requirements for special nuclear material (SNM) nor is it used to generate data for physical inventory which is periodically tested to detect diversion of SNM. Accordingly, the inspector concluded that no violations or deviations from regulatory requirements had occurred.

This matter is closed.

5. Records and Reports (85215)

Examination of the licensee's accounting procedures disclosed a system of records had been established and was sufficient to close the material balance. An independent reconciliation of the licensee's reported inventory for the period ending December 31, 1984, was performed by Martin Marietta Energy Systems, Inc., an NRC contractor. This reconciliation dated March 1, 1985, indicated that the licensee's SNM reported inventories reconciled with the nuclear material transaction report balance generated by the Nuclear Materials Management and Safeguards System.

The licensee's Material Balance Report and Physical Inventory Listing was submitted for the October 1 through December 31, 1984, in accordance with the Protocol of the US/IAEA Safeguards Agreement.

No violations or deviations were identified.

Region II file

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CONTAINS 2.790 INFORMATION

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

JUL 12 1985

General Electric Company
ATTN: Mr. Eugene A. Lees, General Manager
Nuclear Fuel Manufacturing Department
P. O. Box 780
Wilmington, NC 28402

Gentlemen:

SUBJECT: REPORT NO. 70-1113/85-08

On June 10 - 14, 1985, NRC inspected activities authorized by NRC License No. SNM-1097 for your Wilmington Manufacturing Department facility. At the conclusion of the inspection, the findings were discussed with those members of your staff identified in the enclosed inspection report.

Areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observation of activities in progress.

Within the scope of the inspection, no violations or deviations were identified.

Your attention is invited to one unresolved item in the report. This matter will be pursued during a future inspection.

In accordance with 10 CFR 2.790(d) and 10 CFR 73.21, safeguards activities and security measures are exempt from public disclosure; therefore, the enclosures to this letter, with the exception of the report cover page which presents a nonexempt summary, will not be placed in NRC's Public Document Room.

Should you have any questions concerning this letter, please contact us.

Sincerely,

Kenneth P. Barr, Chief
Nuclear Materials Safety and
Safeguards Branch
Division of Radiation Safety
and Safeguards

Enclosure:
Inspection Report No. 70-1113/85-08

cc w/encl:
C. M. Vaughan, Manager
Regulatory Compliance

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FOIA 85-595

NMSS Review

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JUL 12 1985

Report No. 70-1113/85-08

Docket No. 70-1113 License No. SNM-1097 Safeguards Group No. III

Licensee: General Electric Company
P. O. Box 780
Wilmington, NC 28401

Date of Inspection: June 10 - 14, 1985

Inspector: E M'Alpine for 7/12/85
E. L. Clay Date Signed

Approved by: E M'Alpine 7/12/85
E. J. McAlpine, Chief, Material Control and Accountability Section, Nuclear Materials Safety and Safeguards Branch, Division of Radiation Safety and Safeguards Date Signed

SUMMARY

Scope: This routine inspection entailed 41 inspector-hours in the areas of measurement systems, inspector followup items and facility organization and management controls.

Results: No violations or deviations were identified.

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MATERIAL TRANSMITTED HEREWITH
CONTAINS 2.790 INFORMATION

REPORT DETAILS

Report No. 70-1113/85-08

1. Key Persons Contacted

*W. W. McMahan, Manager, Quality Assurance
*C. M. Vaughan, Manager, Regulatory Compliance
*A. F. Schillmoller, Manager, Production Planning and Control
*B. F. Bentley, Manager, Fuel Chemical Operations
*A. G. Dada, Manager, Chemical and Ceramic Engineering
*R. A. Petelinkar, Manager, Site Operations and Material Systems
*W. C. Peters, Manager, Nuclear Safety Engineering
*R. L. Torres, Manager, Radiation Protection
*G. W. McKensie, Acting Manager, Manufacturing Technology and Engineering Operations
*R. G. Patterson, Acting Manager, Manufacturing
*R. J. Keenan, Nuclear Safety Engineer
*G. R. Mallett, Senior Engineer, Measurements and Statistics
*R. D. Foleck, Senior Specialist, Licensing Engineering
R. E. Strine, Fuels Quality Control Engineer
R. P. Armstrong, Quality Control Engineer
R. L. Bruce, Analyst, Licensing and Nuclear Materials Control

The inspectors also interviewed several other licensee employees.

*Denotes those present at the exit interview

2. Exit Interview (30703)

The inspection scope and findings were summarized on June 14, 1985, with those persons indicated in paragraph 1 above. The following issue was discussed in detail: unresolved** item associated with reporting details of biannual management audits of the measurements control program (para. 6).

The licensee acknowledged the inspection findings and took no exceptions.

3. Licensee Action On Previous Enforcement Matters (92702)

No previous enforcement matters, in the area of nondestructive analyses, were pending at the time of this inspection.

4. Unresolved Items

One new unresolved item identified during this inspection is discussed in paragraph 6.

**An Unresolved Item is a matter about which more information is required to determine whether it is acceptable or may involve a violation or deviation.

5. Measurement Systems - Fat Albert UO2 Rod Scanning (85207)

The General Electric Company, Wilmington Manufacturing Department (WMD), Wilmington, North Carolina uses two NDA measurement systems to perform physical and accountability measurements of UO2 fuel rods. A [ ] measurement system is used to perform measurements on [ ] fuel rods. A delayed gamma detection measurement system (Fat Albert) is used to perform measurements on [ ] UO2 fuel rods.

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This inspection was devoted to evaluating the accountability measurements performed by the Fat Albert NDA measurement system.

a. System Description

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[ ] Additional descriptive information on the Fat Albert NDA measurement system is contained in Inspection Report Nos. 70-1113/83-10, 70-1113/82-08 and 70-1113/80-02.

b. Standard Calibrations, Fabrications and Traceability

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At the time of this inspection, the licensee was using [ ] These calibration and verification techniques were reported in Inspection Report No. 70-1113/83-10. The inspectors examination of current operating data indicated that calibration and verification measurements were performed in accordance with approved procedures.

The inspector determined that, all standard rods were fabricated from UO2 powder characterized through multiple sample analysis, over a long period of time, by the facility Chemet, Teledyne and Ledoux laboratories. Traceability to a National Measurement System was achieved through analytical techniques employed by the analyzing laboratories. Support data for establishing analytical values of each standard fuel rod used by the Fat Albert measurement system was documented.

c. Measurement Techniques

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d. System Requalification

The inspector's examination of an approved test plan, resulting test plan data and observations of Fat Albert operations indicated that the system had been requalified in accordance with approved procedures. Techniques employed to requalify the system was reported in Inspection Report Nos. 70-1113/83-10 and 70-1113/82-08. The latest system requalification was performed in February 1984 following a system source change. The results of this requalification indicated that the system met all qualification criteria and was declared qualified to measure all types of UO2 fuel rods. The results of this requalification test was documented and were reported to plant management as required.

e. Measurement Bias

In 1979, the licensee determined that Fat Albert measurements of UO2 fuel rods were biased. In 1980, the licensee began testing the system to identify the root cause and to resolve the bias. The results of previous bias tests were reported in Inspection Report Nos. 70-1113/83-10 and 70-1113/82-08.

As part of their continuing program to identify the source of this bias, and to reduce it to a manageable level, the licensee is fabricating and testing two new fuel rods from each of the four basic enrichments measured. Along with eight previously fabricated fuel rods, [redacted] to identify the level of bias at the time the tests are performed. Following each test, the resulting value of the bias is applied to Fat Albert measurements during the succeeding evaluation period. The inspector's examination of historical test data indicated that this measurement bias is fluctuating in magnitude and is presently considerably smaller than when the tests were begun.

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f. FNMC Plan Review

A review of the facility FNMC Plan applicable to NDA measurements by the /NDA measurement system was conducted during this inspection.

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Sections 1.0 Organization, 3.0 Measurements, 4.0 Measurement Control Program, 8.0 Management and Appendix C-3, Specifically Accepted Safeguards Systems, provide descriptions and methods used to determine the U-235 content of SNM measured by NDA techniques at the facility. To the extent examined, this review indicated that the licensee was following his current FNMC Plan for performing accountability measurements by the Fat Albert NDA measurement system.

g. License Conditions Review

Docket 70-1113 Licensed Conditions to Materials and Plant Protection Amendment MPP-3 revised and amended May 31, 1985 for License No. SNM-1097 were reviewed during this inspection. The licensee was determined to be following the three license conditions applicable to SNM measurements by the Fat Albert NDA measurement system.

h. Standard Operating Procedures (SOP) Review

The licensee uses a variety of approved procedures to perform routine Fat Albert measurement and control functions. A review of several SOPs associated with Fat Albert measurements was conducted during this inspection. To the extent of these reviews, the licensee was judged to be following the requirements of the following procedures.

(1) Product/Process Quality Plan (P/PQP) No. 4.4.13, Revision 18, U02 Rod Scanning with the [redacted] dated September 21, 1984. EX 4

(2) P/PQP No. 4.4.10, Revision 7, Fuel Rod Scanning, dated July 12, 1983.

(3) P/PQP No. 4.4.12, Revision 6, Rod Scanning Records, dated August 22, 1983.

(4) Procedures and Practices (P&P) No. 70-32, Revision 9, Qualification of QC Inspection, Examination and Test Personnel, dated February 9, 1983.

(5) P&P No. 140-09, Revision 3, SNMC Measurement Training and Qualification, dated January 10. 1985.

(6) Quality Notice (QN) F-Q-1539, Revision 0, Test Report - Active Scanner Qualification, dated February 27, 1984.

(7) QN-F-Q-1554, Revision 0, Qualification Test Report - New Gap Model, Active Scanner, dated May 11, 1984.

(8) QN-F-Q-1612, Revision 0, Zone Length Qualification Test - Active Scanner, dated April 16, 1985.

(9) QN-F-Q-1337, Revision 0, Demonstration Test Report for Getter Check - Active Scanner, dated August 30, 1984.

(10) QN-F-Q-1367, Revision 0, Second Half 1984 - Active Scanner Accountability Verification Test Report, dated January 11, 1985.

(11) Quality Control Inspector Instruction (QCII) No. 9.2.2, Revision 17, U02 Fuel Rod Scanning - Active Scanner, dated April 15, 1985.

(12) Process Requirements and Operator Document (PROD) No. 80.56, Elephant Gun, dated December 17, 1985.

(13) Quality Assurance Section Administrative Routine (QASAR) No. 320-170.30, Revision 5, Replicate Scanning Program for Fuel Rods, dated November 2, 1984.

(14) QASAR No. 320-80.1, Revision 4, Certification of Site Inspection Specialist, dated March 29, 1984.

i. Operator Training and Requalifications

The licensee's operator training, qualification and requalification program was implemented as required by paragraph 4.7 of the licensee's FNMC Plan. The inspector's examination of qualifying procedures and data, indicated that the licensee had qualified measurement operators in accordance with approved procedures. Qualifying techniques and required performances criteria were found to be as indicated in Inspection Report No. 70-1113/83-10. At the time of this inspection, seven operators were qualified to perform measurements of U02 fuel rods on the Fat Albert measurement system.

j. Reproducibility Test

A test of the Fat Albert U02 fuel rod measurement system's ability to perform acceptable accountability measurements for SNM content was performed during this inspection. The test consisted of remeasuring fifty U02 fuel rods previously measured by the Fat Albert measurement system. The selected test rods encompassed ten rods of five different enrichments. Calibration of the Fat Albert system was checked and verified before and after the measurement of each set of fuel rods. Each set of these test rods were measured in two different measurement positions.

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[redacted] is considered to be well within the measurement capability of the system, the data indicates that the

Fat Albert measurement system performed acceptable measurements on these UO2 fuel rods.

6. Facility Organization and Management Controls (85203)

The licensee's management organization provides a system of checks and balances for accountability measurements. The facility operations, measurements and accounting groups have different reporting avenues to responsible management. The custody, measurements and accounting functions for SNM control do not report directly through the same supervisory line. The Licensing and Nuclear Materials Management (L&NMM) group coordinates the overall functions for accounting for SNM at the site. At the time of this inspection, the following plant groups were responsible for the operations, maintenance and control of the Fat Albert measurement system.

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The inspector determined that the licensee was meeting the requirements of paragraphs 1.8.1, 4.1.3, and 8.2.1 of their approved FNMC Plan and License Condition 8.1 by conducting management audits of their measurements program on a [redacted] The details and findings of the December 1982 management audit was included in Inspection Report No. 70-1113/83-10.

The latest management audit was completed in December 1984 and included an evaluation of all facility measurement systems. This audit was performed by corporate auditors of the Nuclear Energy Product and Quality Assurance Operation (NEP and QAO) department. This audit assessed the adequacy of compliance with regulations and determined the effectiveness of the program to detect covert diversion of SNM.

The inspector's examination of the December 1984 audit report revealed that the report continues to be brief and presents findings by exception rather than indicating the areas audited and specific findings of each area

audited. Auditing and reporting techniques were reported in Inspection Report No. 70-1113/83-10.

The inspector determined that specific audit details which identify and present conclusions for each measurement system audited were not available at the WMD site. The licensee feels that it is not necessary to maintain detailed audit records on site and do not plan to change their biannual auditing and reporting techniques, since they feel that: (1) their technique for auditing and reporting the results of biannual audits meets all regulatory requirements and is in accordance with their approved FNMC Plan requirements; (2) their technique used in conducting audits and reporting audit results follows corporate policy for all other corporate facility audits; and (3) their presently used audit announcement letter and the resulting audit report have historically been used to meet all approved NRC regulatory requirements.

The inspector determined that the licensee's presently used auditing and reporting techniques follow a literal interpretation of NRC regulatory and their approved FNMC Plan requirements. However, these techniques may not meet the intent of these requirements since the licensee's audit report contained insufficient data to permit the inspector to determine whether all aspects of all measurement systems were included in the audit. The status of this item is considered unresolved pending further evaluation by NRC (85-08-01).

In conclusion, the inspector's review of the licensee's facility organization and management controls determined that: (1) the licensee had implemented an organization structure that is in accordance with their approved FNMC Plan and applicable license conditions, and (2) the licensee's management system includes provisions for the development, revision, implementation, enforcement, and periodic audit and review of the MCA program and for the training of measurement personnel as required.

7. Inspector Followup Items (92701)

a. (Closed) Inspector Followup item 83-10-01: The 1982 annual review and management audit of the facility measurements control program failed to indicate the extent or degree of thoroughness of the subject audits performed. In addition, the audit report was brief and presented audit findings by exception rather that details of the areas audited. The inspector could not determine whether all aspects of the measurement control program had been audited.

Current status of this item is discussed in paragraph 6. Followup Item 83-10-01 is considered administratively closed and is being reopened as an Unresolved Item in this inspection report (85-08-01).

b. (Closed) Inspector Followup Item 83-18-02: On May 23, 1983, Safeguards Amendment MPP-3 was revised to require the licensee to perform management audits of the special nuclear material control and accounting program at two year intervals. The first of these two year audits was required to be completed prior to January 1, 1985.

The licensee conducted a management audit of the special nuclear material control and accounting program during the period of November 26, 1984 to December 2, 1984.

c. (Closed) Inspector Followup Item 81-17-03: At the time of the subject inspection, measurement techniques employed by the Elephant Gun measurement system failed to indicate licensee actions taken for cause and effect of operating changes made after the system's operating parameters had been exceeded. An examination of these measurement techniques during Inspection No. 70-1113/83-18, indicated that a requirements for recording threshold, window and high voltage operating parameters had been omitted from revised operating instructions.

An examination of presently used operating parameters indicated that techniques for establishing threshold, window and high voltage operating parameters are now included in operating instructions. Process Requirements and Operator Document (PROD) No. 80-56, entitled Elephant Gun, was implemented on December 17, 1984. This latest revision to this operating instruction, includes instructions for performing equipment checks and establishing calibration parameters for use in standard and unknown item measurements of 55-gallon drums and waste boxes.

d. (Closed) Inspector Followup Item 83-18-03: At the time of the subject inspection, the Elephant Gun NDA measurement system control limits were being provided to the measurement operator [redacted] for waste box standards and annually, or whenever a major change in the system occurred, for 55-gallon drum standards. By the end of CY-83, the licensee agreed to provide the measurements operator with control limits for 55-gallon drum standards at the same frequency as waste box standards control limits were provided.

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The inspector's examination of present operations indicated that the number of containers measured is now considerably less than when first inspected and that the licensee was campaigning measurements of waste contained in 55-gallon drums.

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[redacted] On the basis of the measurement effort required, the inspector determined that the licensee's [redacted] and submittal of new control limits for 55-gallon waste drum measurements was adequate.

8. In-Office Review

The following item was evaluated by the Radiation Safety and Safeguards regional staff. Based on this review and the results of the latest and region based inspection activities in the affected functional area, the following item was determined to require no additional specific followup and is closed.

83-10-02 Followup to assure continued compliance with requirements for measurement of verification standards on the Fat Albert Rod Scanning System.