

ENCLOSURE 1

NOTICE OF VIOLATION

General Electric Company
Nuclear Fuel Manufacturing Department

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

The following violation was identified during an inspection conducted on November 13 through 16 and December 3 through 7, 1984. The Severity Levels were assigned in accordance with the NRC Enforcement Policy (10 CFR Part 2, Appendix C).

License Condition 9 requires that licensed material be used in accordance with the statements, representations, and conditions of Part 1 of the licensee's application. Part 1, Section 2.2.1.1 of the licensee's application requires that the Area Manager establish and approve written operating procedures incorporating radiation safety controls.

Contrary to the above, the requirements of the license condition were not met, in that on December 3, 1984, visible uranium contamination was observed in the LEA measurement room which had not been cleaned up immediately as required by plant procedure Nuclear Safety Release 6.1.0.

This is a Severity Level IV violation (Supplement IV).

Pursuant to 10 CFR 2.201, you are required to submit to this office within 30 days of the date of this Notice, a written statement or explanation in reply, including: (1) admission or denial of the alleged violations; (2) the reasons for the violations if admitted; (3) the corrective steps which have been taken and the results achieved; (4) corrective steps which will be taken to avoid further violations; and (5) the date when full compliance will be achieved.

Security or safeguards information should be submitted as an enclosure to facilitate withholding it from public disclosure as required by 10 CFR 2.790(d) or 10 CFR 73.21.

Date: FEB 07 1985

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Each measurement device is comprised of an Aston Company Analyzer, NaI Tl detector and an automated sample changer that is supported by a computer system which analyzes the measurement data and reports the results. At the time of this inspection, three LEA systems were performing enrichment analyses. Approximately 40,000 samples per year are analyzed by these LEA systems.

The efforts of this inspection were focused upon measurement performance evaluations of the Chemet Laboratory's LEA measurements systems.

a. Standards Fabrication, Traceability, Analytical Evaluations and Controls

The licensee LEA standards techniques utilized for fabrication, traceability and analytical evaluations of standard SNM were performed in accordance with approved operating procedures. The licensee periodically changes calibration and verification standards and may or may not change the isotopic content of these standards. A listing of the isotopic values of standards currently used for calibration and verification purposes is shown in Table I.

The licensee is using and maintaining LEA standards under controlled conditions and in accordance with the facility FNMC plan and approved standard operating procedures SOP. Calibration and Operating Instructions COI indicate that after a standard is removed from a sealed container it is designated as a "standard in use" and must be assigned to an individual responsible for the work area in which the standard is located. The licensee is preparing a revision to these operating instructions that will expand on the use and control of LEA NDA standards. These revised instructions will be in the status of review for approval by December 31, 1984.

No violation or deviations were observed in this area.

b. System Calibrations

Utilizing the five LEA NDA standards shown in Table-I, recalibrations of each LEA were performed at the required frequencies and in accordance with approved procedures. The recalibrations for each LEA system was performed by an on-line computer HP-9825 programmed to measure specified standards and to perform standards recalibration calculations. Recalibrations were performed from the data obtained from two simultaneous measurements of the U-235 and U-238 isotope contained in each standard.

The inspector verified the computer calculated values for the calibration curve currently used by Unit 1, and found no significant difference between the licensee's currently used calibration curve measurements and the RII verification measurements.

No violation or deviations were observed in this area.

c. Measurement Techniques

Isotopic enrichment measurements performed by the licensee's LEA measurements systems were being performed in accordance with currently approved operating procedures and instructions. Each LEA system utilizes analyzer hardware noted in paragraph 4 above, to provide measurements data for each sample analyzed and is supported by three computer systems to analyze the measurements data and to report the measurement results. The following computer systems are utilized for isotopic measurements by the LEAs in the Chemet Laboratory.

- (1) The HP-9825 computer system is programmed to control the measurements of each LEA system and calculate an apparent isotopic value that is uncorrected for known measurement bias. One HP-9825 computer handles the analytical output from two LEA systems and automatically transmits measurement results to the facility HP-87 computer system.
- (2) The HP-87 computer system is comprised of several strategically located terminals which control sample identification and corrects LEA measurement data for bias in weighing errors associated with sample preparations. The bias corrected data is transmitted to the facility Laboratory Measurement Computer System LMCS via menu instructions. The measurement technician selects the proper menu and the bias corrected measurement data is automatically transmitted to the LMCS computer system.
- (3) The LMCS is the primary computer system for controlling all measurement data flow throughout the Chemet Laboratory. The LMCS performs bias corrections for sampling errors associated with LEA measurement data, reports the final corrected isotopic results and assures that:
a measurement technicians are properly qualified;
b calibration and control standards have been analyzed in proper sequence; and
c the analyzer system is operating within acceptable control limits, before issuing a final analytical report.

Access to these computer systems is controlled by individual payroll numbers and a unique password for each qualified measurement technician. Individual passwords are changed, at the discretion of the individual technician, by a single employee who is not associated with the wet chemistry laboratory analytical measurements. Each individual measurement technician has been instructed to protect his password from unauthorized users and the passwords used by qualified Chemet Laboratory technicians are not documented.

The following techniques were used to control, prepare, analyze and report the isotopic analysis of each sample measured by the LEAs in the Chemet Laboratory.

- (1) Samples are received from the production areas accompanied by an analytical request form containing a preprinted sample number. Sample numbers are manually input to the three LEA computer systems.
- (2) Samples are manually transported to a work station where the samples are queued in groups of twelve on a tray and the sample numbers and tray numbers are input to the HP-87 computer system.
- (3) Each of the samples is prepared for analysis by weighing, oxidation and dissolution of appropriate sample quantities. Approximately 8.5 ml of dissolution liquor is placed in prenumbered counting tubes. The counting tubes are stoppered and the tube numbers entered into the HP-87 computer system.
- (4) The counting tube numbers is entered into the HP-9825 computer system and the tubes are inserted into proper sample changer locations. After assuring that measurement parameters are correctly input to the LEA, the technician starts the automatic analytical sequence that is performed in the following manner:
 - (a) Measures calibration verification standards if it has been more than four hours since the last verification was performed.
 - (b) Measures the twelve prepared process samples for gamma counts emitted from the U-235 and U-238 isotopic.
 - (c) Measures verification standards to assure the system is still in control after measuring process samples.
 - (d) Analyzes data and prints results on paper tape. Automatically transmit calculation values to the HP-87 for each of the 12 process samples measured.
- (5) The HP-87 automatically generates an isotopic measurement report. This report contains the HP-9825 calculated isotopic values that have been corrected for bias generated during sample preparation.
- (6) A qualified analytical technician transmits the HP-87 data for process samples and standards, to the LMCS system via a menu selection technique. The corrected data from the HP-87 are automatically transferred to the LMCS computer system by this procedure and generates a transmission report of all pertinent measurements data.
- (7) The LMCS corrects the HP-87 data for sampling bias and issues a final corrected isotopic report for each process sample analyzed.

- (8) A qualified LEA measurement technician checks the LMCS report data and transmits the data to the requestor of the sample results.

No violations or deviations were observed in this area.

d. Standard Operating Procedures SOP

The licensee uses the following types of approved procedures to perform routine laboratory measurement and control functions.

- (1) The Chemical, Metallurgical and Spectrochemical CM&S procedures are detailed operating instructions for each type of measurement performed in the Chemet Laboratory.
- (2) Calibration and Operating Instructions COI contain information and instructions relative to system calibrations, data analysis and reporting criteria.
- (3) Station Control Plans SCP provide operating instructions and additional performance steps for the technician.

A review of several SOPs associated with the Chemet Laboratory LEA measurements was conducted during this inspection. The licensee was judged to be following the requirements of the following procedures.

- (1) CM&S - 5.2.9.5, Revision 10 T, Determination of Weight Percent U-235 in An Acid Media by Gamma Spectrometry dated August 6, 1982.
- (2) SCP-400, Revision 4, Isotopic and O/U Gravimetric Techniques, dated June 14, 1984.
- (3) COI-010, Revision 1, Standard Preparation, Certification, Storage and Usage, dated September 30, 1982.
- (4) Quality Notice QN No. F-Q-1075, Revision D, Certification of Standards RIP 001 - RIP 007, dated October 3, 1979.
- (5) CM&S - 5.2.9.6. Revision 3, Determination of U-235 in Solution of Variable Uranium Concentrate dated August 24, 1982.

No violations or deviations were observed in this area.

e. Replicate Measurements and Control Charts

The licensee is meeting the requirements of 10 CFR 70.57(b)(11), for the LEA systems, by maintaining a computer based control chart system. Data from weekly measurements of standards are placed in the computer

data bank for use in calculating measurement bias associated with each NDA enrichment analyzer system. These computer calculations of control limits are based upon minimum of two measurements per week and at least thirty measurements of each standard on each measurement system. Normally these calculations encompass two to three hundred measurements of each standard on each NDA system.

The inspectors review of 1,197 control chart data measurements of control standards indicated that 104 (9%) items exceeded the 0.05 alarm control limits and only one measurement exceeded the 0.001 control limits. All measurements exceeding the 0.05 and 0.001 control limits were investigated as required. Documented results of these investigation are being maintained.

No violations or deviation were noted in this area.

f. Training

Training of operators for LEA operations is based upon criteria specified in ANSI/ASME 45.2.6-1978 Qualification of Inspection, Examination, and Testing Personnel for Nuclear Power Plants. In addition, the Laboratory Enrichment Analyzer operators are trained by specific isotopic procedures, including CM&S - 5.2.9.5, Revision 10, Determination Of Weight Percent U-235 In An Acid by Gamma Media by Gamma Spectrometry. Each analyzer operator is required to analyze standards to within specified tolerances. The results of test data is evaluated by a computer system for certification. Each operator is certified for three years, but must rerun the test standards every six months. Four operators are now certified to perform all operations of enrichment analysis by LEA technique in the facility Chemet Laboratory. Training tests, results and operator certifications are documented as required.

No violations or deviations were observed in this area.

4. Physical Inventory - Independent Measurements 85211

Limited site time expended during this phase of the inspection prevented a thorough analytical evaluation of each LEA system in the facility Chemet Laboratory. A tentative check on the quality of measurement performance was achieved by submitting, four samples of production containers which had previously been measured for isotopic content by the LEA systems for measurement. The results of this data, shown in Table II, indicate no significant deviations between the original isotopic measurement and the remeasurement isotopic values.

No violations or deviations were noted in this area.

5. Worker Concerns Relative to Laboratory LEA Enrichment Measurements 93700

This part of this inspection was conducted during the week of December 3-7, 1984. Worker concerns in the following areas were examined during this inspection.

- a. Concern that the low enrichment analyzer LEA Computer HP-9825 was programmed to accept out-of-parameter data and thereby produce erroneous analytical results of samples analyzed.

This concern was examined by physical examination of required input data to the system, discussions of operational procedures and techniques with laboratory technicians and supervisors, discussions of software program controls with the system programmer and a physical examination of portions of the software program associated with operating parameters that are used by the computer to analyze the raw analytical data. As a result of these examinations the following information, relative to system measurement controls, was revealed.

- (1) Based upon reviews and evaluations of operating criteria, measurement control limits are routinely changed and inserted into the computers data bank for use in routine evaluations of measurement data.
- (2) Control limit data are stored in a data file that is accessible by passwords which are controlled by one individual. Individual passwords are assigned to those who work in the wet chemistry part of the Chemet Laboratory.
- (3) The system is programmed to reinitialize the measurement parameters and requires a recalibration and verification measurement each time a verification standard exceeds its accepted control limit value. Each set of recalibration and verification measurement data performed is automatically documented by printing on paper tape and transferring the measurement data to another laboratory computer system for further processing of the data.
- (4) All changes to the measurement parameters are automatically printed on paper tape and transferred to other computer systems to become archive records.

As a result of these examinations, the inspector determined that the LEA computer software program is not programmed to accept out-of-parameter data. The program is reasonably protected from unauthorized changes and is designed to permit changes of operating parameters, including standards control limits that do influence the values of analytical measurements, to be input to the system.

Worker concerns in this area were not substantiated.

- b. Concern that laboratory personnel were violating procedures by not recording required isotopic data on worksheets and that GE management had misled NRC inspectors by saying the LEA calibration log book was not an official record required by procedure.

This worker concern was examined by discussions and interviews with all levels of laboratory personnel and a physical examination of historical procedures and archive measurement control data.

This examination revealed that Station Control Plan, SCP-401 specified that LEA calibration logs were to be used to record calibration measurement data during the period from April 25, 1979 to September 15, 1983 and that LEA calibration measurement data were not always documented on these calibration log sheets. The inspector's review indicated that the Station Control Plan, SCP-401 was not a procedure which was used to implement NRC requirements. Rather, the log was used to provide GE with a rapid indication of the status of equipment and thus precluded the need to periodically examine the computer tapes. As a result, the inspector concluded that GE management had not provided incorrect information to NRC inspectors concerning whether this record was required during the inspection documented in report 70-1113/84-05 in that the inspector's questions were directed to those procedures required by NRC.

The inspector concluded that statements made by the concerned worker were partially correct in that for a period of time the calibration log was not maintained. However, this was not a violation of NRC requirements, since the Station Control Plan, which specified the maintenance of this log, was not required by NRC.

- c. Concern that the floor of the room in which the LEA measurement system is located is contaminated with SNM and that the contamination is embedded in the floor tile and the cracks between floor tiles.

This concern was examined by physically testing the levels of contamination in the room, reviewing current and historical procedures to determine the level of acceptability of contamination for the site, the facility responsibilities for detecting and responding to levels of contamination, reviewing historical documentation of the contamination levels within the Chemet Laboratory and observing the licensee's actions for coping with contaminated areas determined to exceed Plant Action Limits PAL for SNM contamination. As a result of these examinations the following information was revealed.

- (1) Of the eighteen measurements performed, six measurements exceeded PAL for fixed contamination level and three measurements exceeded PAL for smearable contamination levels.

- (2) The licensee procedures do not provide clear and concise guidelines for prevention of contamination within the LEA measurement room.
- (3) The fact that contamination within the room was visible, indicated that the licensee had failed to follow approved procedures which require: (a) activities which produce contamination that exceeds PAL shall not be undertaken; (b) spills must be cleaned up immediately; and (c) equipment must be wiped clean of visible contamination.
- (4) Weekly radiation monitoring measurements as employed by the facility rad safety program exhibited weakness in the system, in that:
 - (a) A minimum of five rad safety measurements in the Chemet Laboratory are required and the locations of these measurements are left to the discretion of the measuring technician.
 - (b) There is no rad safety program employed for measuring fixed levels of contamination in the Chemet Laboratory.
- (5) In order to reduce the levels of contamination to acceptable PALs, during the inspection the licensee removed and replaced several floor tiles, cleaned equipment and some room walls with caustic cleaner and repainted some wall surfaces and cleaned equipment cabinets.

The failure to follow procedures to cleanup visible contamination is a violation 84-15-01 .