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NUCLEAR REGULATORY COMMISSION
REGION II
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ATLANTA, GEORGIA 30303-8931

August 22, 2003

NMED Nos. 030573, 030585

Westinghouse Electric Company
ATTN: Mr. M. Fecteau, Manager
Columbia Plant
Commercial Nuclear Fuel Division
Drawer R
Columbia, SC 29250

SUBJECT: NRC INSPECTION REPORT NO. 70-1151/2003-008

Dear Mr. Fecteau:

This refers to the inspection conducted on July 21 - 25, 2003, at the Columbia Nuclear Fuel Plant. The purpose of this inspection was to determine whether activities authorized by the licensee were conducted safely and in accordance with NRC requirements. At the conclusion of the inspection, the findings were discussed with those members of your staff identified in the enclosed 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.

Based on the results of the inspection, no violations or deviations were identified.

In accordance with 10 CFR 2.790 of NRC's "Rules of Practice," a copy of this letter and its enclosures will be available electronically for public inspection in NRC's Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

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

Sincerely,

/RA BY WILLIAM B. GLOERSEN ACTING FOR/

David Ayres, Chief
Fuel Facilities Branch
Division of Nuclear Materials and Safety

Docket No. 70-1151
License No. SNM-1107

Enclosure: (See Page 2)

Enclosure: NRC Inspection Report

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.:	70-1151
License No.:	SNM-1107
Report No.:	70-1151/2003-008
Licensee:	Westinghouse Electric Corporation
Facility:	Commercial Nuclear Fuel Plant
Location:	Columbia, South Carolina
Dates:	July 21 - 25, 2003
Inspector:	N. Rivera Feliciano, Fuel Facility Inspector
Accompanying Personnel:	D. Collins, Director, Division of Nuclear Materials and Safety
Approved By:	D. Ayres, Chief Fuel Facilities Branch Division of Nuclear Materials and Safety

Enclosure

EXECUTIVE SUMMARY

Commercial Nuclear Fuel Division
NRC Inspection Report 70-1151/2003-008

This routine unannounced inspection included aspects of the licensee's programs for Plant Operations, Environmental Protection, Radioactive Waste Management, Low-Level Radioactive Waste Storage, and Waste Generator Requirements. The inspection identified the following aspects of the licensee's programs as outlined below:

Plant Operations

- An unresolved item was identified regarding the transfer of a batch of uranyl nitrate to a non-favorable geometry tank prior to the receipt of sample results (Paragraph 2.a).

Environmental Protection

- The licensee's internal procedure for chain of custody control program concerning the collection of the environmental samples enhanced the effectiveness of the environmental monitoring program (Paragraph 3.a).

- The licensee maintained an adequate quality control program on their analytical measurements, and the audits performed were sufficient to ensure the quality of the environmental program (Paragraph 3.b).

- The licensee's environmental monitoring program was implemented in accordance with the requirements of License SNM-1107. No significant radiological contamination was observed in onsite environmental media (Paragraph 3.c).

- The licensee's response to the cleanup of a spill on a plant road surface and adjacent area was prompt (Paragraph 3.d).

Radioactive Waste Management

- The licensee met the performance and release criteria requirements for liquid effluents in 10 CFR Part 20 and SNM-1107. Calculated offsite dose from radioactivity in liquid effluents was significantly below 10 CFR Part 20 criteria (Paragraph 4.a).

- The licensee had a slight decrease in the airborne effluents activities and met the release criteria specified in the license SNM-1107. The calculated offsite dose from radioactivity in airborne radiological emissions was significantly below 10 CFR Part 20 criteria (Paragraph 4.b).

- Records and reports of the air and liquid effluents were in compliance, and no trends were observed in the effluent sample results (Paragraph 4.c).

- No significant problems were identified with the effluent monitoring equipment, and no deviations from the procedures were observed (Paragraph 4.d).

- The identification labels and records of the waste containers in the storage area were adequate and met 10 CFR Part 20 requirements (Paragraph 4.e).

Low-Level Radioactive Waste Storage

- Efforts had been made by the licensee to process the low level radioactive waste (LLRW) that had been stored for a long period of time. The licensee was maintaining control of the LLRW generated and consumed with weekly audits and the red book system (Paragraph 5.a).

- The licensee was making progress in processing the contaminated material stored in corroded drums. Good housekeeping and labeling integrity were observed throughout the LLRW storage areas (Paragraph 5.b).

- An unresolved item was identified regarding the approval and use of a temporary instruction without a safety analysis being performed (Paragraph 5.c).

Waste Generator Requirements

- The waste shipping manifests were complete and provided an acceptable level of information in the shipping papers to determine the quantities of individual radionuclides shipped. The licensee's waste shipping tracking records provided the information needed to ensure safe shipment and disposal of the waste (Paragraph 6).

REPORT DETAILS

1. Summary of Plant Status

This report covered the period of July 21 - 25, 2003. No unusual plant operational events occurred during the onsite inspection. On July 24 and 25, Douglas Collins, Director of the Division of Nuclear Materials and Safety, Region II, met with senior site management and toured the facility.

2. Plant Operations (Inspection Procedure (IP) 88020) (O3.12)

a. Review of Event

(1) Inspection Scope

Corrective actions for the following event was reviewed to determine the adequacy of the licensee's response:

- NRC Event No. 40004 (Nuclear Materials Event Database (NMED) Number 030585), Pump out of a Batch of Uranyl Nitrate (UN).

(2) Observations and Findings

On July 17, 2003, a licensee employee transferred a batch of uranyl nitrate solution (UN) from a favorable geometry vessel to the nonfavorable geometry (NFG) UN bulk storage vessel prior to receiving sample results for Uranium-235 (U-235) concentration, percent free acid, and pH (NMED Event No. 030585). The inspector reviewed the licensee's immediate corrective actions which included stopping the transfer. The licensee's short term corrective actions for the area included procedural changes and the installation of locks on the favorable geometry vessel outlet valves. Once the sample results were verified to be within specifications, the supervisor completed transferring the solution to the UN bulk storage vessel and locked the favorable geometry vessel outlet valves in the closed position. At the time of this inspection, the licensee was still investigating the extent and causes of the transfer to the NFG vessel and developing long-term corrective actions. Therefore, additional information was needed to understand the scope of the problem and to ascertain whether or not this issue involved violation(s) of regulatory requirements. This issue is identified as Unresolved Item (URI) 70-1151/03-08-01: Transfer of a Batch of UN Prior to Receipt of Sample Results.

(3) Conclusions

An unresolved item was identified regarding the transfer of a batch of UN to an NFG tank prior to the receipt of sample results.

b. Follow up on Previously Identified Issues

(Closed) Violation (VIO) 70-1151/2003-01-01: Failure to Follow a Criticality Safety Posting.

On January 7, 2003, the inspector observed the improper storage of a 5-gallon can during a tour in the Integrated Fuel Burnable Absorber (IFBA) area. The criticality safety posting for this storage rack stated that the maximum net weight of 5-gallon cans shall not exceed 18.0 kilograms (kg). The inspector reviewed the modification of the computer software program for generating can labels. The program was unable to print out a label with a weight at or over 18.0 kg. The inspector performed a walkdown of the area with the environmental, health and safety technician and noted no new issues. Therefore, this item is closed.

3. Environmental Protection (IP 88045) R2

a. Program and Procedure Changes and Quality Control (QC) of Analytical Measurements (R2.01, R2.03)

(1) Inspection Scope

The inspector reviewed changes in procedures and personnel to ensure they did not reduce the effectiveness of the environmental monitoring program.

(2) Observations and Findings

The inspector reviewed the addition of the internal procedure for the chain of custody concerning the collection of routine weekly and monthly environmental samples. The inspector verified that this addition improved the control of the samples to be sent to the vendor for analysis. Also, the inspector interviewed and verified that the new responsibilities given to a technician did not reduce the effectiveness for the collection of the environmental samples.

(3) Conclusions

The licensee's internal procedure for chain of custody control program concerning the collection of the environmental samples enhanced the effectiveness of the environmental monitoring program.

b. Internal Audits and QC Records (R2.02, R2.04)

(1) Inspection Scope

The inspector reviewed the licensee's internal audit of the environmental program and the audits of the analytical laboratory vendor. The inspector also reviewed the frequency of the analytical measurements.

(2) Observations and Findings

The inspector observed that the internal audit of the environmental program identified issues and adequately addressed them. In addition, the inspector reviewed the licensee's audits of the analytical laboratory vendor and observed that these audits were thorough, well documented, and that appropriate technical and quality assurance (QA) issues were addressed. The inspector reviewed several records for 2002 and observed no problems in the QC program for the analytical measurements.

(3) Conclusions

The licensee maintained an adequate QC program on their analytical measurements, and the audits performed were sufficient to ensure the quality of the environmental program.

c. Monitoring Stations and Monitoring Program Reports (R2.05, R2.06)

(1) Inspection Scope

The licensee's environmental program was reviewed to verify that environmental monitoring was implemented in accordance with the requirements of License SNM-1107 and to determine the extent of environmental radiological contamination as a result of plant operations.

(2) Observations and Findings

The inspector reviewed selected environmental sampling results for 2002. The inspector observed that semiannual soil, vegetation, fish, and Congaree River sediment and surface water sample analyses had either gross alpha or isotopic uranium concentrations that were consistently well below the licensee's action levels specified in the site's environmental operating procedures. In addition, ambient environmental air sampling data consistently showed that weekly activity concentrations were less than the licensee's action level of 5.00E-15 microcurie per milliliter (µCi/ml).

The inspector reviewed the licensee's 2002 quarterly groundwater sampling results and observed that the average gross beta activity levels for three monitoring wells exceeded the licensee's action level. Previous NRC inspection reports (see reports 70-1151/98-01, 99-01, 00-01, 01-02, and 02-06) identified that elevated activity in two of these wells was due to a technetium source term originating from the vicinity of the cylinder recertification building (CRB) and the other due to leakages from the water treatment processing area. The results from 2002 showed that the activity had stabilized, indicating that the licensee's corrective actions (i.e. sealing of cracks in CRB floor trenches and eliminating the sump in the CRB) had effectively contained the technetium source term. In addition, the inspector reviewed gross alpha results for the ten NRC groundwater sampling locations specified in the SNM-1107 license. The licensee performed isotopic uranium analyses as required by the license. The total uranium concentration was below the licensee's total uranium concentration action limit.

The inspector observed the acquisition of surface water and environmental air samples and noted that the licensee was obtaining representative samples. In addition to the collection of these samples, the inspector observed the operating condition of the air monitoring stations and determined that they were operating as intended. No significant safety findings were noted.

(3) Conclusions

The licensee's environmental monitoring program was implemented in accordance with the requirements of License SNM-1107. No significant radiological contamination was observed in onsite environmental media.

d. Environmental Event Review (R2.07)

(1) Inspection Scope

The inspector reviewed the licensee's environmental event records, found in the facility's red book system, for the last twelve months.

(2) Observations and Findings

The inspector reviewed the licensee's events for the past twelve months from the Unusual Occurrence Reports ("Red Book" items). On June 18, 2003, a tank overfilled with city water due to a leakage of a manual valve. Approximately three gallons of solution spilled onto the road surface. The licensee corrective actions included decontamination efforts on the cleanup of the road surface and the removal of an adjacent small soil area. At the time of this inspection, the licensee had completed the post decontamination of the area but had not completed the event documentation. The licensee indicated that after the event documentation was complete, the records would be placed into the facility's decommissioning file. The licensee's prompt response to the cleanup of the spill was acceptable. The inspector did not note any additional issues regarding this event.

(3) Conclusions

The licensee's response to the cleanup of a spill on a plant road surface and adjacent area was prompt.

4. Radioactive Waste Management (IP 88035) R3

a. Radioactive Liquid Effluents (R3.01)

(1) Inspection Scope

The inspector reviewed the licensee's liquid effluents monitoring program to verify that the program was implemented in accordance with License SNM-1107 requirements.

(2) Observations and Findings

The inspector reviewed the total quantities of radioactive materials released in liquid effluents for 2002. The total activity released during 2002 (65 millicuries (mCi)) was approximately 3 percent more than the total activity level observe during 2001 (61 mCi). The inspector noted that the calculated offsite dose attributable to liquid effluents was less than 0.0003 millirem per year (mrem/yr) which was well within the annual dose limit specified in 10 CFR Part 20.

(3) Conclusions

The licensee met the performance and release criteria requirements for liquid effluents in 10 CFR Part 20 and SNM-1107. Calculated offsite dose from radioactivity in liquid effluents was significantly below 10 CFR Part 20 criteria.

b. Radioactive Airborne Effluents (R3.02)

(1) Inspection Scope

The licensee's airborne effluents monitoring program was reviewed to verify that the program was implemented in accordance with License SNM-1107 requirements.

(2) Observations and Findings

The inspector reviewed the total quantities of radioactive materials in airborne effluents released for 2002. The inspector observed that the licensee had experienced a decrease of 0.4 percent in airborne effluent activity for 2002 (556 microcurie (µCi)) in comparison with the values reported for 2001 (558 µCi). Since 1997, the inspector had not noted any cumulative trends. The total effective dose equivalent (TEDE) to an individual at the site boundary due to airborne effluents was approximated to be 0.4 mrem/yr, which was well within the constraint of 10 mrem/yr specified in 10 CFR Part 20 of 10 mrem/yr.

(3) Conclusions

The licensee had a slight decrease in the airborne effluents activities and met the release criteria specified in the license SNM-1107. The calculated offsite dose from radioactivity in airborne radiological emissions was significantly below 10 CFR Part 20 criteria.

c. Records and Reports (R3.03)

(1) Inspection Scope

The inspector reviewed reports and records since the last inspection to identify possible missing data, anomalous measurements, and trends.

(2) Observations and Findings

The inspector reviewed the data analysis results of the air and liquid effluent release records for 2002. No trends, anomalous or missing data in the records were observed. However, the inspector noted that the "Decon Room" exhaust system had a higher gaseous effluent activity. Changes to the high efficiency particulate air (HEPA) filter were performed, which reduced the gaseous effluent activity in that area. The licensee's evaluation reports of the air sample locations for stack numbers 1220, and 1030 A and 1030 B were reviewed. Stacks were monitored continuously and the samples' analysis results for these stacks showed that no radiological activity exceeded the licensee action level. Based on the documents reviewed, the inspector did not note any additional issues.

(3) Conclusions

Records and reports of the air and liquid effluents were in compliance, and no trends were observed in the effluent sample results.

d. Effluent Monitoring Instruments and Procedures (R3.04, R3.05)

(1) Inspection Scope

The inspector verified that the monitoring equipment at the environmental sampling station and in the waste water treatment facility were in a good operating condition and that procedures were followed in the environmental sample collection.

(2) Observations and Findings

Through a tour of the waste water treatment facility and observation of the weekly environmental sample collection, the inspector observed that the monitoring instruments were operating, calibrated, and in good condition. There were no deviations of the procedure during the environmental sample collection. No significant radiological issues were observed.

(3) Conclusions

No significant problems were identified with the effluent monitoring equipment, and no deviations from the procedures were observed.

e. Radioactive Solid Waste (R3.06)

(1) Inspection Scope

The inspector verified that the solid waste storage areas and the waste containers were appropriately labeled.

(2) Observations and Findings

The storage area containers' labels had the quantity of the radionuclide, the date generated, and the identification number. The licensee had records of the waste in storage, and the inspector randomly verified the location and information of several containers in the Southwest Expansion Area. No deviations were identified in the identification of the containers in this area.

(3) Conclusions

The identification labels and records of the waste containers in the storage area were adequate and met 10 CFR Part 20 requirements.

5. Low-level Radioactive Waste Storage (IP 84900) R5

a. Management Controls and Surveys (R5.01)

(1) Inspection Scope

The licensee's Low Level Radioactive Waste (LLRW) program procedures, inventory list, and storage areas were reviewed.

(2) Observations and Findings

The inspector toured the LLRW processing and storage facilities throughout the facility. With the exception of the dry active waste that could not be incinerated, the remainder of the LLRW was being staged for reprocessing so that the uranium could be recycled. The licensee showed that efforts have been made to process the material that had been stored for a long period of time. Also, the inspector interviewed operators and supervisor in the storage areas about the inspection and repackaging of the LLRW material. No deviations were noted in the waste processing facility.

The licensee had several 'Red Book' items concerning containers in the wrong location, lacking labels, or not reported as generated or consumed. The majority of these items were identified because the licensee had started to input the findings from the weekly audit of their inventory lists into the red book system. Through this mechanism, the licensee had improved oversight over the LLRW. Also, the inspector verified random selections of containers from the inventory list and no discrepancies were identified.

(3) Conclusions

Efforts had been made by the licensee to process the LLRW that had been stored for a long period of time. The licensee was maintaining control of the LLRW generated and consumed with weekly audits and the red book system.

b. Adequacy of Storage Area and Package Integrity and Labeling (R5.02, R5.03)

(1) Inspection Scope

The licensee's LLRW storage program was reviewed to determine if proper storage and inventory techniques were being used.

(2) Observations and Findings

The inspector observed the LLRW stored throughout the plant and noted that drums in the southwestern quadrant of the plant showed corrosion. However, the drums did not show significant loss of package integrity. The inspector interviewed licensee personnel and verified that they have made efforts to process these drums. In addition, the licensee stated that the LLRW was contained in plastic wrapping material. In general, the storage areas maintained good housekeeping and container label integrity was in accordance with 10 CFR Part 20.

(3) Conclusions

The licensee was making progress in processing the contaminated material stored in corroded drums. Good housekeeping and labeling integrity were observed throughout the LLRW storage areas.

c. Review of Event

(1) Inspection Scope

Corrective actions for the following event was reviewed to determine the adequacy of licensee's response:

- NRC Event No. 39998 (NMED Number 030573), Nuclear Criticality Safety (NCS) function for a Temporary Procedure to Compact Air Filter Paper was not Reviewed or Approved.

(2) Observations and Findings

The inspector reviewed the licensee's immediate corrective actions for a reportable event involving the use of a temporary procedure for compacting ventilation filters that was approved and used without an accompanying safety analysis (NMED Event No. 030573). At the time of this inspection, the licensee was still investigating the extent and causes of this event. Therefore additional information was needed to understand the scope of the problem and to ascertain whether or not this issue involved violation(s) of regulatory requirements. This issue is identified as Unresolved Item (URI) 70-1151/03-08-02: Temporary Procedure to Compact Ventilation Filters Approved Without Performing Safety Analysis.

(3) Conclusions

An URI was identified regarding the approval and use of a temporary instruction without a safety analysis being performed.

6. Waste Generator Requirements (IP 84850) R6

QA, Waste Manifests, Waste Classification, Waste Form and Characterization, and Tracking of Waste Shipments (R6.02, R6.03, R6.04, R6.05, R6.07)

a. Inspection Scope

The inspector reviewed the licensee's program for preparing waste shipping manifests as it pertained to the requirements of 10 CFR 20.1001-20.2401, Appendix G to 10 CFR Part 20, and 10 CFR Part 61.55 and 61.56.

b. Observations and Findings

The inspector verified that the licensee provided an acceptable level of information in the shipping papers to determine the quantities of individual radionuclides shipped. In addition, the inspector reviewed six shipping manifests and associated paper work for 2002. The manifests were complete and met the applicable requirements of Appendix G of 10 CFR Part 20. The licensee had a procedure and program in place to track waste shipments. The inspector reviewed the licensee's waste shipment tracking log and verified that the licensee received an acknowledgment of receipt for the waste. The LLRW audit, required by 10 CFR Part 20 Appendix G and 10 CFR 61.55 and 61.56, received appropriate management review, and the corrective actions for issues identified in the audit were adequately addressed. No discrepancies were identified.

c. Conclusions

The waste shipping manifests were complete and provided an acceptable level of information in the shipping papers to determine the quantities of individual radionuclides shipped. The licensee's waste shipping tracking records provided the information needed to ensure safe shipment and disposal of the waste.

7. Exit Meetings

The inspection scope and results were summarized on July 24, 2003, with the licensee. The inspector described the areas inspected and discussed in detail the inspection results. Although proprietary documents and processes were reviewed during this inspection, the proprietary nature of these documents or processes is not included in this report. No dissenting comments were received from the licensee.

ATTACHMENT

1. LIST OF PERSONS CONTACTED

Licensee

C. Aguilar, Senior Engineer, Environment, Health and Safety (EH&S)
D. Allison, QA, EH&S
*M. Connelly, NCS Engineer
*M. Fecteau, Plant Manager
*R. Fischer, Senior Engineer, Regulatory Engineering and Operations
*D. Graham, EH&S Technician
*J. Heath, Integrated Safety Engineering Manager
*R. Likes, EH&S Engineer
J. McCormac, Chemical Process Engineer
*S. McDonald, EH&S Manager
*C. Snyder, NCS Engineer
*D. Williams, NCS Engineer

Other licensee employees contacted included engineers, technicians, production staff, security, and office personnel.

*Denotes those present at the exit meeting on July 24, 2003.

2. INSPECTION PROCEDURES USED

IP 88020	Regional Nuclear Criticality Safety Inspection Program
IP 88045	Environmental Protection
IP 88035	Radioactive Waste Management
IP 84900	Low-Level Radioactive Waste Storage
IP 84850	Radioactive Waste Management - Inspection of Waste Generator Requirement of 10 CFR Part 20 and 10 CFR Part 61

3. LIST OF ITEMS OPENED AND CLOSED

Closed

70-1151/2003-01-01	VIO	Failure to Follow a Criticality Safety Posting (Paragraph 2.b)

Opened

70-1151/2003-08-01	URI	Transfer of a Batch of UN Prior to Receipt of Sample Results (Paragraph 2.a)
70-1151/2003-08-02	URI	Temporary Procedure to Compact Ventilation Filters Approved Without Performing Safety Analysis (Paragraph 5.c)

4. LIST OF ACRONYMS USED

ADAMS	Agency-wide Document Access Management System
ALARA	As Low As Reasonably Achievable
CFR	Code of Federal Regulation
CRB	Cylinder Recertification Building
EH&S	Environmental Health and Safety
HEPA	High Efficiency Purified Air
IFBA	Integrated Fuel Burnable Absorber
IP	Inspection Procedure
kg	kilogram
LLRW	Low-Level Radioactive Waste
µCi	microcurie
µCi/ml	microcurie per milliliter
mCi	millicurie
mrem/yr	millirem per year
NCS	Nuclear Criticality Safety
NFG	Non-Favorable Geometry
NMED	Nuclear Materials Event Database
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records System
PLC	Program Logic Control
QA	Quality Assurance
QC	Quality Control
SNM	Special Nuclear Material
SOI	Standard Operating Instruction
TEDE	Total Effective Dose Equivalent
U-235	Uranium-235
UN	Uranyl Nitrate
URI	Unresolved Item
VIO	Violation