



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
SAM NUNN ATLANTA FEDERAL CENTER  
61 FORSYTH STREET SW SUITE 23T85  
ATLANTA, GEORGIA 30303-8931**

July 24, 2003

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

SUBJECT: NRC INSPECTION REPORT NO. 70-1151/2003-07

Dear Mr. Fecteau:

This letter refers to the inspection conducted on June 23-26, 2003 at the Columbia Plant. The purpose of the inspection was to determine whether activities authorized by the license 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, violations or deviations were not identified.

In accordance with 10 CFR 2.790 of NRC's "Rules of Practice," a copy of this letter and its enclosure 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/

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

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

Enclosure: (See Page 2)

Enclosure: NRC Inspection Report

cc w/encl:

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 70-1151

License No.: SNM-1107

Report No.: 70-1151/2003-07

Licensee: Westinghouse Electric Company

Facility: Columbia Fuel Fabrication Facility  
Columbia, SC 29250

Date: June 23-26, 2003

Inspectors: W. B. Gloersen, Senior Fuel Facilities Inspector  
D. W. Rich, Senior Resident Inspector (Nuclear Fuel Services, Inc.)

Accompanying  
Personnel: C. A. Noelke, Student Engineer  
C. A. Acosta, Nuclear Safety Intern  
D. A. Ayres, Branch Chief

Approved by: D. A. Ayres, Chief  
Fuel Facilities Branch  
Division of Nuclear Materials Safety

Enclosure

## EXECUTIVE SUMMARY

### Commercial Nuclear Fuel Division NRC Inspection Report 70-1151/2003-07

The focus of this routine, unannounced inspection was the observation and evaluation of the licensee's programs for transportation of radioactive materials and management organization and controls. The inspection included a review of selected records, observation of plant operations, and interviews with plant personnel. The inspection results disclosed the following aspects of the licensee's program: The inspection included a review of selected records, observation of plant operations, and interviews with plant personnel. The inspection results disclosed the following aspects of the licensee's program:

#### Transportation

- The hazmat training program was acceptable. Shipping function-specific training was provided to the appropriate individuals in accordance with the requirements specified in 49 CFR 172.704 (Paragraph 2.a).
- The periodic audit of transportation QA was limited in scope, but was adequately focused on transport function procedures (Paragraph 2.b).
- The licensee had acceptable management approved procedures to ensure that the fuel shipping packages would be safely loaded and were in accordance with the NRC CoC (Paragraph 2.c).
- Shipping package maintenance activities were conducted safely in a work area that was clean and orderly. In addition, the procedures associated with the refurbishment of the fuel assembly shipping containers were acceptable (Paragraph 2.d).
- CoCs for the NRC approved shipping containers used to ship radioactive materials were maintained in a well-organized manner. Records for the receipt of radioactive material shipments were complete and the information supplied on the receipt forms was accurate. Sufficient quality assurance records were available that furnished documented evidence to support selected purchasing activities affecting the quality assurance of the MCC fuel assembly transport packages (Paragraph 2.e).

#### Management Organization and Controls

- The licensee's ownership and management structure met license requirements. Organizational changes to the shipping and transportation function had occurred during the second quarter of 2003, which basically shifted the management of the program away from the Columbia facility (Paragraph 3.a).
- The licensee adequately controlled changes and revisions to procedures, ensured revisions were reviewed and approved by required personnel, and ensured the current revision was available to plant users (Paragraph 3.b).

- The audit and assessment program met regulatory requirements and a program to improve the system further was in progress. Corrective action programs were being effectively used except in the areas of minor leaks and general plant condition. Residue from leakage of various processing chemicals was not always promptly addressed (Paragraph 3.c).
- Safety Committee meetings and actions met regulatory requirements (Paragraph 3.d).

Attachment:

Persons Contacted

Lists of Items Opened, Closed, and Discussed

List of Acronyms

## REPORT DETAILS

### **1. Summary of Plant Status**

This report covered a four-day period. The conversion lines were operating at normal capacity. Pellet and fuel assembly production remained at capacity during the week.

### **2. Transportation (IP 86740)**

The inspectors reviewed the licensee's program for the shipment of radioactive materials, to determine whether the licensee had established and was maintaining an effective management-controlled program, to ensure radiological and nuclear safety in the receipt, packaging, delivery to a carrier of licensed radioactive materials, and to determine whether transportation activities were in compliance with the applicable NRC and Department of Transportation (DOT) transport regulations noted below. During the inspection, transportation and radiation protection activities associated with fissile material shipments, including procedural guidance, quality control activities, record completeness, and radiation surveys conducted in accordance with 10 CFR Parts 20 and 71, and 49 CFR Parts 171-178, were reviewed.

#### **a. Training**

##### **(1) Inspection Scope**

The inspectors reviewed the hazardous material (HAZMAT) training program provided to hazmat employees involved with the handling of hazardous materials. The requirements for training hazmat employees were specified in 49 CFR 172 subpart H.

##### **(2) Observations and Findings**

The inspectors reviewed the training records of selected Nuclear Materials Supply (NMS) staff who were designated as hazmat employees. The hazmat training included general awareness/familiarization training, function-specific training, and safety training. The licensee's training program was set up to provide hazmat training once per three years in accordance with the requirements of 49 CFR 172.704(c)(2). The inspectors reviewed selected training records and verified that selected NMS staff had received the required training in November 2002. In addition, the inspectors reviewed the hazardous materials course material and determined that the hazmat training was acceptable and satisfied the requirements specified 49 CFR 172.704.

##### **(3) Conclusion**

The hazmat training program was acceptable. Shipping function-specific training was provided to the appropriate individuals in accordance with the requirements specified in 49 CFR 172.704.

b. Internal Reviews, Audits, and Self Assessments

(1) Inspection Scope

The inspectors examined the periodic programmatic audits established by the licensee to ensure that they were meeting the requirements of 10 CFR 71.137.

(2) Observations and Findings

The inspectors reviewed an audit performed on November 11-12, 2002, by a contractor that was intended to determine the effectiveness and ensure compliance with the quality assurance program. This particular audit focused on one aspect of the quality assurance program, specifically, a review of 24 transport function procedures. The audit findings primarily consisted of procedural enhancements. The licensee reviewed the audit findings and appropriately revised the transport procedures.

(3) Conclusion

The periodic audit of transportation QA was limited in scope, but was adequately focused on transport function procedures.

c. Preparation and Delivery of Completed Packages for Shipment

(1) Inspection Scope

The inspectors examined the licensee's written procedures and observed activities related to the preparation and delivery of completed packages for shipment of licensed material.

(2) Observations and Findings

The inspectors verified that the licensee had procedures for the preparation of shipping packages and delivery of the 927-A1, 927-C1, and MCC-model packages to the carrier for the shipment of unirradiated fuel assemblies. The procedures incorporated check off lists to ensure certain loading operations were performed in the appropriate sequence and in accordance with the NRC Certificate of Compliance (CoC) of each package. The inspectors observed various aspects of the shipping container loading activities. No problems were noted with regard to the loading of fuel assemblies into the shipping containers.

The inspectors also observed safety-related crane operations that moved the shipping containers with the loaded fuel assemblies onto the transport trailer. The inspectors verified that the rating of the crane was able to lift the various types of fully loaded fuel shipping containers within the safe load limit. The inspectors reviewed the preventative maintenance test (PMT) records associated with the safety-related crane equipment (overhead bridge crane, girder runways, monorail beams, hoist and trolley, and bottom block hook). The inspectors also verified that the annual load test was conducted within the required frequency and that the test was conducted in accordance with ANSI B30.16-2.2.2, including lifting a load at 125 percent of the maximum capacity of the crane.

(3) Conclusion

The licensee had acceptable management approved procedures to ensure that the fuel shipping packages would be safely loaded and were in accordance with the NRC CoC.

d. Periodic Maintenance of Packages

(1) Inspection Scope

The inspectors reviewed selected portions of the licensee's program for periodic maintenance and refurbishment of fuel assembly shipping packages.

(2) Observations and Findings

Chapter 8 of the license application for the MCC model shipping container specified the acceptance tests, maintenance program, and re-certification program. In addition to the requirements specified in the NRC CoC No. 9239 for fuel shipping containers, the requirements for routine determinations specified in 10 CFR 71.87 and 49 CFR 173.475 were applicable.

The inspectors verified that the licensee had procedures for the periodic maintenance of the model MCC shipping packages. The inspectors reviewed selected portions of the following procedure:

- MOP-755707, Refurbishing Shipping Container, Revision 45

For reusable NRC-certified packaging for fuel assemblies, the inspectors examined the licensee's procedures and records for refurbishment and maintenance and verified that before re-use, all of the periodic maintenance required by the CoC (and Chapter 8 of the application) had been incorporated into the procedures and had been performed. During the inspection, the inspectors observed maintenance and refurbishment activities on five Model MCC fuel shipping containers, including the gasket inspection. The operators used the checklist in form CF-75B-002, Fuel Assembly Shipping Container Inspection Checklist to ensure that the required maintenance was performed. The inspectors observed that the package refurbishment area was clean, orderly, and the operators were knowledgeable of their procedures and craft. The inspectors also verified that the appropriate procedure revision was available in the refurbishment area.

(3) Conclusion

The maintenance activities were conducted safely in a work area that was clean and orderly. In addition, the procedures associated with the refurbishment of the fuel assembly shipping containers were acceptable.



e. Records

(1) Inspection Scope

The inspector reviewed NRC Certificate of Compliance records and records for the receipt of selected radioactive materials shipments. In addition, the inspector selectively reviewed quality assurance records for shipping package related components and services.

(2) Observations and Findings

The inspectors verified that the licensee had current copies of the following NRC CoCs for packages used by the licensee to ship licensed material:

1. NRC CoC 6078, Revision 29, USA/6078/AF, Model Nos. 927A1 and 927C1
2. NRC CoC 9196, Revision 18, USA/9196/AF, Model No. UX-30
3. NRC CoC 9239, Revision 12, USA/9239/AF, Model Nos. MCC-3, MCC-4, and MCC-5

The inspectors also verified that the licensee had registered with the NRC as a user of the NRC certified packages noted above.

The inspectors also briefly discussed the licensee's progress regarding the request for authorization to use a new fuel assembly shipping container. At the time of this inspection, the licensee was in the process of evaluating the package testing results and preparing the safety analysis report.

The inspectors observed activities and reviewed records regarding receipts of shipments of radioactive materials. Specifically, the inspectors observed selected activities regarding the receipt of uranyl nitrate (UNH) crystals. The inspectors verified that the licensee performed the required surveys for the receipt of the material and that the surveys were performed in accordance with the appropriate chemical operating procedures and within the time frame specified by 10 CFR 20.1906. The inspectors verified that the licensee accurately recorded the receipt and surveys of the UNH crystals received and maintained the records as required. The inspectors also reviewed the selected receipt records for uranium hexafluoride (UF<sub>6</sub>) shipments and verified that the receipt surveys were performed within the time frame specified by 10 CFR 20.1906.

The inspectors reviewed selected quality assurance records pertaining to the purchase of components and services for the MCC fuel shipping packages. The inspectors verified that sufficient quality assurance records that furnished documented evidence of the quality of selected packaging components, specifically for "A" safety related parts, were maintained as required.

(3) Conclusion

The licensee maintained the CoCs for the NRC approved shipping containers used to ship radioactive materials in a well-organized manner. Records for the receipt of radioactive material shipments were complete and the information supplied on the

receipt forms was accurate. Sufficient quality assurance records were available that furnished documented evidence to support selected purchasing activities affecting the quality assurance of the MCC fuel assembly transport packages.

### **3. Management Organization and Controls (IP 88005)**

#### **a. Organizational Structure**

##### **(1) Inspection Scope**

The inspector reviewed the licensee's ownership and management structure and verified that the recent changes met license requirements. In addition, the inspector examined the licensee's organizational structure for the radioactive materials shipment program. Specifically, the inspector reviewed any organizational changes and changes in personnel responsibilities and functions that occurred since the last inspection.

##### **(2) Observations and Findings**

The licensee recently has undergone many organizational changes, including change of ownership. The inspector verified the foreign ownership was in accordance with the license and verified other selected management changes met license requirements.

The inspectors noted that there were changes made to the organizational structure since the last inspection of the shipping and transportation program. The General Manager of Nuclear Materials Supply (United Kingdom) and the Head of Transport (Columbia facility) reported directly to the Vice President of Nuclear Materials Supply located at Westinghouse Electric Company's Energy Center in Monroeville, PA. The Transport Manager of the Columbia Westinghouse facility reported to the General Manager of Nuclear Materials Supply. The Transport Manager was responsible for product shipping, receiving, hazardous materials, existing container engineering support, and package refurbishment. The licensing, regulatory compliance, and logistical functions, which included nuclear criticality safety and new container design management, of the shipping program reported directly to the Head of Transport of British Nuclear Fuels Limited (BNFL).

##### **(3) Conclusions**

The licensee's ownership and management structure met license requirements. Organizational changes to the shipping and transportation function had occurred during the second quarter of 2003, which basically shifted the management of the program away from the Columbia facility. Managers, technical, and engineering staff were not assigned collateral duties in other departments.

b. Procedure Controls

(1) Inspection Scope

The inspector reviewed the procedural control system to verify procedural changes and updates were performed properly.

(2) Observations and Findings

The licensee maintained and changed procedures utilizing their electronic training and procedures system (ETAPS). Current procedures were available plant wide electronically, and various areas maintain paper copies for operator convenience as allowed by the area manager. The inspector selected several procedures and verified they were updated as required, that changes and revisions had been reviewed by the required personnel, and reviews and approval of the procedural changes were correctly documented. The ETAPS system also recorded the reviews of procedural revisions by required personnel and the inspector verified selected personnel had completed required reviews of recently changed procedures. The inspector noted that area supervisors were required to manually verify that personnel had completed reviews of recent changes. However, the licensee had initiated a change to this ETAPS function to automatically track completion of required reviews by operators and other users.

(3) Conclusions

The licensee adequately controlled changes and revisions to procedures, ensured revisions were reviewed and approved by required personnel, and ensured the current revision was available to plant users.

c. Internal Reviews, Audits and Quality Assurance Programs

(1) Inspection Scope

The inspector reviewed the licensee's system of internal reviews, audits, and problem reporting and corrective action. The inspector also observed equipment condition and operation in several areas.

(2) Observations and Findings

The licensee maintained several systems of internal audits and reviews and the inspector focused on programs in the environmental, health, and safety organization. The inspector reviewed audits performed in the past twelve months and found license requirements were met in this area. However, the inspector found the licensee had initiated a new Audits and Assessments program to broaden efforts in this area, which included a more formal audit program and also documented decision making in areas such as adopting or rejecting recommendations from previous assessments. The inspector found such documentation was lacking in taking action on recommendations from an outside (contractor performed) assessment of the emergency preparedness program performed in October, 2001. Although many recommendations were adopted, no record existed to justify not adopting other recommendations.

The licensee maintained two problem reporting systems. The Redbook program had been long in use, familiar to plant personnel, and was still used for reporting problems, no matter how minor. The inspector observed that the Redbook was a paper system and was easily usable for all plant personnel. Problems reported in the Redbook were reviewed promptly and, if significant, transferred to the licensee's electronic Corrective Action Program system (CAPs). The inspector reviewed the recent Redbook event No. 61, processing of uranium hexafluoride cylinders which were on hold. A formal report of this was filed with the NRC in accordance with NRC bulletin 91-01, immediate action was documented in the Redbook system, and the problems were transferred to CAPs issue No. 03-104-C002 for Root Cause Analysis and long term corrective action. The inspector reviewed the item with licensee management and found corrective actions were recorded and appropriately tracked in the CAPs system. The inspector reviewed several other issues in the CAPs and Redbook system and found the issues and corrective actions were properly recorded and tracked.

The inspector reviewed plant conditions in several areas and found that numerous minor leaks and cleanliness problems were not documented in the corrective action programs. Although no significant safety issues were noted, cleanliness of the plant was lacking in areas such as solvent extraction, chemical conversion, and uranyl nitrate storage. Although leaks identified by the inspector were promptly corrected, the licensee appeared to lack an aggressive effort to identify and correct problems in this area.

(3) Conclusions

The licensee's audit and assessment program met regulatory requirements and a program to improve the system further was in progress. Corrective action programs were being effectively used except in the areas of minor leaks and general plant condition. Residue from leakage of various processing chemicals was not always promptly addressed.

d. Safety Committees

(1) Inspection Scope

The inspector reviewed various safety committee functions.

(2) Observations and Findings

The inspector found the Regulatory Compliance Committee (RCC), the Incident Review Board (IRB), and the Corrective Action Review Board (CARB) filled required functions. The RCC met quarterly and recommendations were entered into the CAPs for action. The IRB and CARB met regularly to fill CAPs requirements. The inspector reviewed CAPs action status for the issue No. 03-104-C002, and found committee actions were appropriately tracked.

(3) Conclusions

Safety Committee meetings and actions met regulatory requirements.

**4. Exit Meeting**

The inspection scope and results were summarized on June 26, 2003, with those persons indicated in the Attachment. The inspectors 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 has been deleted from this report. No dissenting comments were noted during the exit meeting.

## ATTACHMENT

### **1. PARTIAL LIST OF PERSONS CONTACTED**

#### Licensee Personnel

D. Allison, Quality Assurance, Environment, Health and Safety  
\*D. Graham, Environmental Health and Safety (EH&S) Technician  
\*J. Heath, Integrated Safety Engineering Manager  
N. Kent, Licensing and Regulatory Compliance Manager  
J. McCormac, Chemical Process Engineer  
\*S. McDonald, EH&S Manager  
F. Moorer, Transportation Specialist  
S. Palmer, Container Engineer  
N. Parr, EH&S Licensing Engineer  
R. Pollard, Manager, USA Transportation  
\*T. Ross, Transportation Manager  
W. Seibel, Leadership Development and Training  
\*T. Shannon, Operations Manager, Environment, Health and Safety  
W. Stillwell, New Packages Manager

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

\*Denotes those present at the exit meeting on June 26, 2003.

### **2. INSPECTION PROCEDURES USED**

IP 88005      Management Organization and Controls  
IP 86740      Inspection of Transportation Activities

### **3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED**

<u>Item Number</u>	<u>Status</u>	<u>Description</u>
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None

### **4. ACRONYMS AND ABBREVIATIONS**

ADU	Ammonium Diuranate
BNFL	British Nuclear Fuels Limited
CAPs	Corrective Action Program system
CARB	Corrective Action Review Board
CFR	Code of Federal Regulations
CoC	Certificate of Compliance
DOT	Department of Transportation
ETAPS	Electronic Training and Procedures System
HAZMAT	Hazardous Materials
IP	Inspection Procedure

IRB	Incident Review Board
MOP	Maintenance Operating Procedure
NRC	Nuclear Regulatory Commission
RCC	Regulatory Compliance Committee
UF <sub>6</sub>	Uranium Hexafluoride
UNH	Uranyl Nitrate