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REGION II
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ATLANTA, GEORGIA 30303-8931**

December 15, 2000

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

SUBJECT: NRC INSPECTION REPORT NO. 70-1151/2000-06

Dear Mr. Monley:

This refers to the inspection conducted on November 13-17, 2000, at the Columbia Nuclear Fuel 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.

Within the scope of the inspection, violations or deviations were not cited.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC 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/NRC/ADAMS/index.html> (the Public Electronic Reading Room).

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

Sincerely,

/RA/

Edward J. McAlpine, 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

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 70-1151

License No.: SNM-1107

Report No.: 70-1151/2000-06

Licensee: Westinghouse Electric Company

Facility: Commercial Fuel Fabrication Facility
Columbia, SC 29250

Inspection Conducted: November 13-17, 2000

Inspector: D. Ayres, Senior Fuel Facility Inspector, RII

Approved by: E. McAlpine, Chief
Fuel Facilities Branch
Division of Nuclear Materials Safety

Enclosure

EXECUTIVE SUMMARY

The focus of this routine, unannounced inspection was the observation and evaluation of the licensee's programs for operational safety and transportation. The inspection also included evaluations of the licensee's responses to previously identified issues and incidents. The report includes inspection efforts of one regional inspector. The inspection identified the following aspects of the licensee programs as outlined below:

Plant Operations

- Process operations were being conducted safely and in accordance with approved plant procedures. (Section 2.a)
- The Incinerator Ash Screening Hood was in poor condition and susceptible to producing airborne activity problems. (Section 2.a)
- Delays in updating documentation after process modifications was a weakness in the licensee's configuration management system. (Section 2.b)
- Engineered safety controls for the "wet" portion of the Ammonium Diuranate process were available and operable. (Section 2.c)
- Revisions to safety requirements for storage of waste drums were not posted in a timely manner. A potential conflict with the license requirements concerning the processing and storage of unencapsulated material was identified. (Section 2.d)
- Housekeeping was adequate to ensure emergency egress pathways were clear of debris. Process area cleanliness showed improvement. (Section 2.e)
- The licensee's investigation and corrective actions in response to NRC Licensee Event Report No. 37441 adequately addressed immediate and long-term concerns to prevent recurrence. (Section 2.f)
- Corrective actions to Violation 00-02-02 were not completed by the date committed to NRC. (Section 2.g)

Transportation

- Fresh fuel packages for shipment to the Czech Republic were properly labeled. (Section 3.a)

REPORT DETAILS

1. Summary of Plant Status

This report covered a five day period. Powder, pellet, and fuel assembly production proceeded at normal rates. Construction activities were occurring associated with the Burnable Absorber Expansion System (BAES). There were no unusual plant operational occurrences during the onsite inspection.

2. Plant Operations (O3) (IP 88020 / TI 2600-003)

a. Conduct of Operations (O3.01)

(1) Inspection Scope

Operations in the uranium powder production and scrap recovery areas were reviewed to verify adherence to safety requirements and conduct of safe practices.

(2) Observations and Findings

The inspector observed operations in the chemical process areas and the low level waste (LLW) handling areas. The inspector also observed the outdoor activities supporting the fuel manufacturing process. The inspector observed that the southeast expansion area of the facility had been cleared of stored containers and construction activities had begun for the BAES. As a result, storage areas for empty containers were scattered in various areas of the facility. Overall, the inspector observed that process operations were conducted safely and in accordance with approved plant procedures. Discussions with operations personnel revealed an understanding of the procedural requirements.

The inspector observed two areas where proper clearance was not being provided for electrical panels per Occupational Safety and Health Administration standards and posted instructions. In one area, a fork lift was parked too close to scrubber system electrical panels. In another area, a work table had been placed in front of the electrical panel for a power lift mechanism. These items were communicated to the appropriate licensee management for correction.

The inspector observed that the Incinerator Ash Screening Hood was in poor condition, with its plexiglas window being held in place with duct tape. A note had been taped to the hood warning operators to keep the box clean because of past problems with airborne activity associated with that station. Although the airborne activity had recently been lowered due to improvements in ventilation, the licensee's management examined the hood, agreed that repairs were needed to the station, and initiated corrective action.

(3) Conclusions

Process operations were being conducted safely and in accordance with approved plant procedures. The licensee was not always maintaining proper clearance in front of electrical panels. The Incinerator Ash Screening Hood was in poor condition and susceptible to producing airborne activity problems.

b. Facility Modifications and Configuration Controls (O3.02)

(1) Inspection Scope

The licensee's configuration control system was reviewed to verify that facility modifications were in accordance with approved specifications and procedures for ensuring safety.

(2) Observations and Findings

The inspector reviewed several selected files for facility change requests, focusing on projects that involved significant process changes to chemical area process equipment. The inspector noted that appropriate approvals were being obtained for process changes and that records were being adequately kept. The inspector observed that there was considerable variation in the way the change request forms were being filled out. The inspector found that specific documents needing to be updated as a result of the proposed changes were not always listed on the Change Control Form as specified on the form. Other times, certain selections on the form would indicate the initiator to check "yes" or "no", but would be left blank. The inspector also reviewed the close-out of projects that had been authorized for start-up and operation. The inspector found that the actual updating of documentation (particularly as-built drawings) sometimes was delayed over a year after start-up of the changed equipment. The inspector observed that the licensee's configuration control procedure allowed for system start-up before completion of revised documentation and gave no time frame for completing documentation revisions. In the interim, marked-up or red-line drawings could be used for process documentation. The licensee indicated that drafting services were being expedited to reduce the backlog of as-built drawing revisions.

(3) Conclusions

Delays in updating documentation after process modifications was a weakness in the licensee's configuration management system.

c. Implementation of Process Safety Controls (O3.03)

(1) Inspection Scope

The ammonium diuranate (ADU) process was reviewed to verify that the controls documented in the system safety analysis were being properly implemented.

(2) Observations and Findings

The inspector reviewed the engineered process safety controls identified in the licensee's Integrated Safety Assessment (ISA) for the portion of the ADU process where uranium solutions and sludges were processed. The inspector observed that the controls were available and operable.

(3) Conclusions

Engineered safety controls for the "wet" portion of the ADU process were available and operable.

d. Implementation of Storage Safety Controls (O3.04)

(1) Inspection Scope

Storage of licensed material was reviewed to verify that documented safety controls were being properly implemented.

(2) Observations and Findings

The inspector observed the storage of licensed material throughout the facility. The inspector observed that waste drums were being stored in arrays and racks in the southwest expansion area of the facility. The inspector observed three different criticality safety postings in the area, each with differing (and sometimes conflicting) requirements for the same storage containers. The inspector discussed the inconsistencies with the area safety engineer and found that the postings had been recently revised to accommodate storage of containers moved from the southeast expansion area to make space for the BAES project (see Section 2.a). However, the licensee had not completed replacing the postings prior to relocating the containers. The inspector found that the containers were being stored in accordance with the revised posting. The licensee completed replacing the postings before the end of this inspection.

The inspector observed a new storage area outside the Contamination Controlled Area (CCA) for packaged pellets being prepared for shipment. Previously, pellets being prepared for shipment were stored inside the CCA. This new storage area was established to make space for the BAES project. The inspector observed workers transporting the packaged pellets from the CCA to the new storage area. The techniques and equipment used to transport the packaged pellets appeared adequate to maintain criticality and radiological safety. However, the inspector noted that license requirements indicate that the processing and storage of unencapsulated radioactive materials was to be performed in CCAs. Encapsulated radioactive material is generally considered to be material sealed in a capsule that can be opened only by destroying the capsule. Although this new storage area appeared to be contradictory to the license requirements, no definition of unencapsulated (or encapsulated) existed in the license or in NRC regulations. This potential for conflicting views on the definition of

unencapsulated material and the requirements for CCAs was to be forwarded to NRC licensing staff for resolution.

(3) Conclusions

Revisions to safety requirements for storage of waste drums were not posted in a timely manner. A potential conflict with the license requirements concerning the processing and storage of unencapsulated material was identified.

e. Housekeeping (O3.06)

(1) Inspection Scope

Conditions throughout the facility were reviewed to verify that housekeeping did not adversely affect the radiological safety or emergency egress of the facility.

(2) Observations and Findings

The inspector observed housekeeping conditions throughout the facility. Despite the relocation of numerous bulk containers due to the BAES project (see Section 2.a), the site was generally free of clutter except in the staging area for decontamination of non-combustible trash. The auxiliary emergency exit for that area was adequately free from clutter. The inspector also noted an improvement in cleanliness of the ADU process areas.

(3) Conclusions

Housekeeping was adequate to ensure emergency egress pathways were clear of debris. Process area cleanliness showed improvement.

f. Review of Previous Events (O3.07)

(1) Inspection Scope

The licensee's response to Event No. 37441 (NMED No. 000814), concerning loss of criticality safety controls for a UF₆ vaporizer, was reviewed to determine if adequate measures had been taken to prevent recurrence.

(2) Observations and Findings

The inspector reviewed the licensee's investigation of the loss of criticality safety controls identified in NRC Licensee Event Report No. 37441. This event involved the potential loss of steam condensate level controls that are used to limit the amount of moderator available in a non-favorable geometry UF₆ vaporizer. These controls became plugged when paint chips flaked off of a UF₆ cylinder that was being processed in the vaporizer. The control failure was identified by the licensee during a functional test of the controls performed after processing the cylinder. The licensee's investigation indicated that the

actual failure of the controls likely occurred during the functional testing and not during the processing of the cylinder.

The inspector observed the cylinder and noted paint was peeling over its entire surface and appeared scorched. The licensee's investigation found that the UF₆ supplier had used the wrong paint on the problem cylinder. The licensee also found that the method used to functionally test the controls may have contributed to the failure by flushing the paint chips into the level control system. The inspector noted that the licensee's corrective actions to prevent recurrence of this event included working with the UF₆ vendor to ensure the proper paint would be used in future shipments, and revising the functional testing procedure to prevent flushing debris into the level control system. The inspector noted that the licensee was implementing immediate corrective actions by instituting a more frequent check of the condensate handling system to more quickly detect problems in the removal of condensate from the vaporizers. The inspector also noted that the licensee was investigating a long-term corrective action by designing a volume-limiting insert for the bottom of each vaporizer to eliminate the need for moderation control on the vaporizers for criticality safety.

(3) Conclusions

The licensee's investigation and corrective actions in response to NRC Licensee Event Report No. 37441 adequately addressed immediate and long-term concerns to prevent recurrence.

g. Follow-up on Previously Identified Issues (O3.08)

(1) Inspection Scope

The licensee's actions to address previously identified issues were reviewed to determine completion to closure.

(2) Observations and Findings

The inspector reviewed the licensee's actions in response to Inspector Follow-up Item (IFI) 98-05-01 concerning thermo-luminescent dosimetry (TLD) issuance and control problems. In addition to previously documented actions (see inspection reports 70-1151/98-10, 70-1151/99-03, and 70-1151/00-04), the inspector observed that the licensee had implemented a system for investigating lost TLDs and started a biweekly dosimetry compliance tour/audit for each shift. These actions appeared adequate to improve the control and issuance of TLDs, thus IFI 98-05-01 was closed, but this program area will continue to be monitored in future inspections.

The inspector reviewed the licensee's actions in response to IFI 99-06-01 concerning level probes on uranyl nitrate (UN) bulk tanks. Software changes were being made to system to improve the reliability of the monitoring system. Other protections (enhanced administrative controls) were also in place to detect failure of the level control system quickly enough to prevent a significant accumulation of material in the tanks. The

licensee also indicated that a project was underway to replace many of the administrative controls on the UN bulk tanks with engineered controls during the next fiscal year. These actions appeared adequate to address the inspector's concerns on the effects of a UN tank level control failure, thus IFI 99-06-01 was closed.

The inspector reviewed unresolved item (URI) 99-06-04 concerning welds on shipping containers not in accordance with the Certificate of Compliance. The inspector received information from NRC headquarters transportation staff that indicated the existing welds were adequate to ensure the integrity of the package. Thus, no safety significant concern existed and URI 99-06-04 was closed.

The inspector reviewed IFI 00-01-01 concerning condensation in the calciner exhaust stack sample lines. The licensee had developed a plan to install moisture removal traps and make other modifications to prevent moisture accumulation. The inspector found that the plan was beginning to be implemented and appeared adequate to correct the condensation problem. Thus, IFI 00-01-01 was closed.

The inspector reviewed the licensee's actions in response to violation (VIO) 00-02-02 concerning inadequate configuration management of uranyl nitrate piping system. In a letter dated May 25, 2000, the licensee had committed to completing certain corrective actions by June 30, 2000 in response to the violation. However, the inspector found that the corrective actions had not been completed as committed. The licensee indicated that upon further study, the original corrective actions were not feasible and the response to the violation would be revised. The revised response was received by the inspector on December 6, 2000, with a revised completion date of December 31, 2000. Thus VIO 00-02-02 remained open.

(3) Conclusions

The licensee's actions were adequate to close four previously identified items. Corrective actions to Violation 00-02-02 were not completed by the date committed to NRC. This item remained open.

3. Transportation (R4) (IP 86740)

a. Preparation of Packages for Shipment (R4.01)

(1) Inspection Scope

The preparation of fresh fuel packages for shipment was reviewed to verify proper labeling.

(2) Observations and Findings

The inspector observed a fresh fuel shipment that was prepared for transport to the Czech Republic. The inspector measured the radioactivity at the surface of and at one meter from selected packages in the shipment. Based on these measurements, the inspector determined that the appropriate labels (radioactive yellow II) were placed on the packages.

(3) Conclusions

Fresh fuel packages for shipment to the Czech Republic were properly labeled.

4. Exit Meetings

The inspection scope and results were summarized on November 17, 2000, with those persons indicated in the Attachment. 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.

ATTACHMENT

PARTIAL LIST OF PERSONS CONTACTED

Licensee Personnel

*J. Allen, Vice President, U.S. Manufacturing - Westinghouse Nuclear Fuel
D. Goldbach, Manager, Environment, Health & Safety (EH&S)
*D. Graham, EH&S Technician
*J. Heath, Manager, Integrated Safety Engineering
B. Monley, Manager, Columbia Plant
*C. Perkins, Manager, Maintenance
*J. Rankar, Integrated Safety Engineer
D. Williams, Criticality Safety Engineer
*R. Williams, Advisory Engineer, EH&S

* Attended exit meeting on November 17, 2000.

INSPECTION PROCEDURES USED

IP 86740 Inspection of Transportation Activities
IP 88020 Regional Nuclear Criticality Safety Inspection Program
TI 2600/003 Operational Safety Review

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

98-05-01	IFI	Verify corrective action to resolve procedural non-compliances associated with TLD issuance, collection, and storage.
99-06-01	IFI	Evaluate and correct the disabling of safety alarms and controls caused by a failure of the uranyl nitrate tank level probe system.
99-06-04	URI	Welds on shipping containers not in accordance with Certificate of Compliance.
00-01-01	IFI	Eliminate condensate in calciner exhaust stack sample lines.

Discussed

00-02-02	VIO	Inadequate configuration management of uranyl nitrate piping system.
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ACRONYMS

ADU	Ammonium Diuranate
BAES	Burnable Absorber Expansion System
CCA	Contamination Controlled Area
EH&S	Environment, Health & Safety
IFI	Inspector Follow-up Item
IP	Inspection Procedure
ISA	Integrated Safety Assessment
LLW	Low Level Waste
NMED	Nuclear Material Event Database
NRC	Nuclear Regulatory Commission
TI	Temporary Instruction
TLD	Thermo-Luminescent Dosimetry
UN	Uranyl Nitrate
URI	Unresolved Item
VIO	Violation