



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

February 27, 2002

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

SUBJECT: NRC INSPECTION REPORT NO. 70-1151/2002-002

Dear Mr. Monley:

This refers to the inspection conducted on February 11, 2002, 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.

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 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/

Leonard Wert, Acting 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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Environment, Health and Safety
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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 70-1151

License No.: SNM-1107

Report No.: 70-1151/2002-002

Licensee: Westinghouse Electric Company

Facility: Commercial Fuel Fabrication Facility
Columbia, SC 29250

Inspection Conducted: February 11, 2002

Inspectors: D. Ayres, Senior Fuel Facility Inspector, Region II

Approved by: L. Wert, Acting Chief
Fuel Facilities Branch
Division of Nuclear Materials Safety, Region II

Enclosure

EXECUTIVE SUMMARY

The focus of this reactive inspection was the observation and evaluation of the licensee's responses to the discovery of a bypassed safety control on February 2, 2002. The report includes the inspection efforts of one regional inspector. The inspection identified the following aspects of the licensee's responses as outlined below:

Plant Operations

- Immediate corrective actions taken in response to the discovery of a defeated proximity switch were adequate to ensure other engineered criticality safety controls in the uranium recovery system were functional. The worker discovering the bypassed control properly informed licensee management in a timely manner. Licensee management was properly proceeding in their investigation to identify the full extent of the causal factors associated with this incident.

Attachment

Partial List of Persons Contacted

Inspection Procedures Used

List of Items Opened, Closed, and Discussed

Acronyms

REPORT DETAILS

1. Summary of Plant Status

This report covered a one day period. Powder, pellet, and fuel assembly production proceeded at normal rates.

2. Plant Operations (O3) (Inspection Procedure (IP) 88020 and Temporary Instruction (TI) 2600/003)

a. Review of Previous Event (O3.07)

(1) Inspection Scope

The licensee's discovery of a bypassed safety control was reviewed to verify that proper steps were being taken by the licensee in a timely manner to mitigate the effects of lost control(s), and to discover the full extent of the causal factors associated with this incident such that adequate corrective actions could be implemented.

(2) Observations and Findings

The inspector reviewed a situation discovered by the licensee concerning a bypassed safety control in part of the uranium recovery system. The licensee recycled scrap uranium by dissolving it into nitric acid that can be used as a feed to the fuel manufacturing process. The vessels used to dissolve the uranium included outlets for undissolved solids to be removed from the system. The undissolved solids were typically low in uranium content and routinely collected in metal cans inside ventilated hoods. The equipment used to collect these undissolved solids included safety controls to help prevent the solids from forming an unfavorable geometry configuration. The safety controls included proximity switches that detected the presence of buckets to receive the undissolved solids. These buckets were placed on a small platform and mechanically raised into position to receive the undissolved solids. When a bucket was fully raised to receive the solids, a proximity switch actuated to open a valve that allowed the undissolved solids to discharge from the dissolver vessel. On February 2, 2002, a licensee operator was replacing a filled bucket with an empty one. When the filled bucket was lowered from its raised position, the operator noticed that the solids discharge valve did not close. Upon further investigation, the operator discovered that a metal object had been wedged into place to make contact with the proximity switch, thus defeating the control for closing the solids discharge valve when a receiving bucket was not in place. The licensee immediately shut down the entire uranium recovery system to conduct an investigation.

The inspector reviewed the licensee's investigation into the matter. The licensee visually checked other engineered controls in the uranium recovery system and performed functional tests of all interlocks associated with the dissolver system. The licensee also began conducting extensive interviews of workers in the area to determine the cause and extent of the problem. The licensee found through plant records and interviews with personnel that a particular individual was likely to have wedged the

object against the proximity switch and defeated the control. The licensee also found that other plant workers observed the same individual making unauthorized adjustments to electronic process control equipment and performing equipment cleaning in an unauthorized manner. The licensee's investigation indicated that the individual had adjusted certain flow switch(es) on the outlet piping for certain uranyl nitrate pump(s). These flow switches were installed to turn off pumps if low (or no) flow was detected for 20 seconds. This protected the pumps from "dead heading" that can cause pump overheating and possibly a fire or explosion.

The licensee's investigation also revealed that the individual had been observed cleaning out a sight glass port used to view scrap powder flowing into the dissolver vessel. Occasionally, this dissolver feed system became clogged with the scrap powder and had to be cleared. Although not proceduralized, the normal method for clearing the clog was to tap on the sides of the feed tube to knock loose the powder without opening the enclosed scrap powder feed system. However, the suspected individual had been observed clearing the clog by removing the sight glass and spraying water into the feed system to flush the clog into the dissolver vessel. This action would lead to a potential localized release of airborne radiation if the proper precautions were not taken prior to removing the sight glass.

The licensee's investigation also found one of the radiation pipe detectors in the same area that was out of adjustment. These pipe detectors were used to monitor uranyl nitrate solutions being pumped to unfavorable geometry storage vessels as an overcheck to ensure uranium concentration limits were not exceeded. Access to the pipe detectors was normally limited to instrument technicians specially trained to calibrate and adjust them. However, the only barrier to unauthorized access to the pipe detectors was a stainless steel enclosure that can be removed by loosening a few wing nuts. The licensee's investigation had not revealed that anyone observed an unauthorized access and adjustment of the affected pipe detector. Although these pipe detectors are just one of several overchecks used to control uranium concentration in the unfavorable geometry vessels, unauthorized adjustment of these detectors would be a potentially significant safety issue.

The inspector reviewed recent maintenance history and observed the condition of the equipment involved in the investigation. The inspector observed that a mechanical coupling on the bucket lift system was being replaced about every five months and that the proximity switches were replaced about every two years. The inspector observed that although operable, the condition of the proximity switches were degraded due to environmental effects. The inspector also observed that a level probe (used to detect when a bucket was full) was mounted above the proximity switch. The licensee indicated that the level probe was removed and tested quarterly, thus potentially exposing the proximity switch to nitric acid. The inspector observed that the jack screws (used to lift the bucket into place) were also potentially exposed to nitric acid during level probe testing. The inspector also noted that the flow switch(es) discussed above were easily accessible for someone to make unauthorized adjustments to the flow switch sensitivity.

The inspector reviewed the licensee's immediate corrective actions. The inspector determined that licensee management took proper precautions by shutting down the

uranium recovery process and testing all area safety interlocks before restarting the process. In addition, the inspector determined that licensee management was properly proceeding in their investigation to discover the full extent of the causal factors associated with this incident. The inspector also determined that the worker discovering the bypassed control properly informed licensee management in a timely manner. At the time of this inspection, the licensee was still investigating the extent and causes of the defeated proximity switch, and therefore the NRC required additional information to ascertain whether or not this issue involved a violation of regulatory requirements. This issue is identified as Unresolved Item (URI) 70-1151/02-02-01: Proximity Switch Defeated in Uranium Recovery System.

(3) Conclusions

Immediate corrective actions taken in response to the discovery of a defeated proximity switch were adequate to ensure other engineered criticality safety controls in the uranium recovery system were functional. The worker discovering the bypassed control properly informed licensee management in a timely manner. Licensee management was properly proceeding in their investigation to identify the full extent of the causal factors associated with this incident.

ATTACHMENT

1. **PARTIAL LIST OF PERSONS CONTACTED**

Licensee Personnel

S. McDonald, Environment, Health and Safety Manager
C. Perkins, Maintenance Manager
D. Precht, Chemical Operations Manager

2. **INSPECTION PROCEDURES USED**

IP 88020 Regional Nuclear Criticality Safety Inspection Program
TI 2600/003 Operational Safety Review

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

<u>Item Number</u>	<u>Status</u>	<u>Description</u>
70-1151/02-02-01	Open	URI: Proximity Switch Defeated In Uranium Recovery System.

4. **ACRONYMS**

IP	Inspection Procedure
NRC	Nuclear Regulatory Commission
TI	Temporary Instruction
URI	Unresolved Item