



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

June 12, 2006

EA-06-038
NMED 050101

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

SUBJECT: NOTICE OF VIOLATION (NRC INSPECTION REPORT NO. 2005-002 AND
OFFICE OF INVESTIGATIONS REPORT NOS. 2-2005-007 AND 2-2005-011)

Dear Mr. Fecteau:

This refers to the subject inspection report and Office of Investigations reports involving activities at the Westinghouse Electric Company (WEC), located in Columbia, South Carolina. The inspection and investigations documented our review of the circumstances surrounding an apparent violation that occurred in February of 2005, when a number of WEC chemical process operators failed to follow procedures while taking composite samples of calcined uranium powder during the conversion process. The results of our review were transmitted to you by our letter of March 10, 2006.

On April 12, 2006, a predecisional enforcement conference was conducted at WEC's facility in Columbia, South Carolina, with you and members of your staff to discuss the apparent violation, its significance, root causes, and your corrective actions. The enclosures to this letter include a listing of conference attendees and material presented by WEC at the conference.

Based on the information developed during the inspection and investigations, and the information presented by WEC at the conference, the NRC has determined that a violation of NRC requirements occurred. The violation is cited in the enclosed Notice of Violation (Notice), and the circumstances surrounding it are described in detail in the subject inspection report and in our letter of March 10, 2006. The violation involved multiple examples of failure to follow plant procedures by chemical process operators while taking composite samples of calcined uranium powder during the conversion process. In particular, operators failed to sample full poly packs, failed to collect samples using the procedurally specified tool for sample collection, and failed to allow the powder to cool for approximately ten minutes before sampling as required.

In this case, the violation did not result in any actual consequences. Although proper sampling of the calcined uranium powder is a nuclear criticality safety control, a criticality accident was improbable due to other controls in place, such as visual inspection of the blender and polypacks for foreign material and for obvious high moisture content. In addition, the bulk blending room is maintained by WEC as a moderation controlled area. Nonetheless, the NRC

views the violation to be significant, because proper sampling is an important nuclear criticality safety control, and because of the willful actions of multiple WEC operators. Willful violations are of particular concern to the NRC because our regulatory program is based on licensees and their employees acting with integrity. Therefore, based on the significance of the underlying violation, and because the NRC views willful violations as a significant matter, this violation has been categorized at Severity Level III in accordance with the NRC Enforcement Policy.

In accordance with the Enforcement Policy, a base civil penalty in the amount of \$32,500 is considered for a Severity Level III violation. Because the violation was determined to be willful, the NRC considered whether credit was warranted for the factors of Identification and Corrective Action in accordance with the civil penalty assessment process described in Section VI.C.2 of the Enforcement Policy.

Because your staff identified the violation, credit is warranted for the factor of Identification. Your corrective actions were discussed in detail at the conference, and included: (1) the immediate suspension of the conversion process pending an investigation and resolution of the issues that led to the event; (2) the re-sampling of all conversion oxide material to verify that criticality safety limits for moisture were satisfied; (3) the conduct of training for operators and independent observers involved in the sampling process; (4) the reinforcement of WEC management expectations that all processes at the facility will be conducted in accordance with procedures; (5) the taking of remedial and disciplinary action against the individuals involved in the procedural non-compliance; (6) the initiation of a system design modification to automate the sampling process. Additional corrective actions were discussed by WEC at the conference as well. Based on the above, the NRC concluded that credit was warranted for the factor of Corrective Action.

Therefore, to encourage prompt and comprehensive identification and correction of violations, I have been authorized, after consultation with the Director, Office of Enforcement, to propose that a civil penalty not be assessed in this case. However, similar violations in the future could result in further escalated enforcement action. Issuance of this Notice constitutes escalated enforcement action, that may subject you to increased inspection effort.

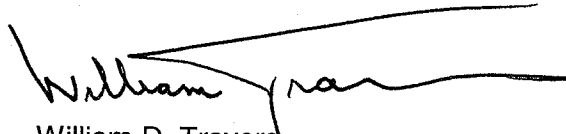
The NRC has concluded that information regarding the reason for the violation, the corrective actions taken and planned to correct the violation and prevent recurrence, and the date when full compliance was achieved is adequately addressed on the docket in the information presented by WEC at the conference, and in this letter. Therefore, you are not required to respond to this letter unless the description herein does not accurately reflect your corrective actions or your position. In that case, or if you choose to provide additional information, you should follow the instructions specified in the enclosed Notice.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and your response (should you choose to provide one) will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), which is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, the response should not include any personal privacy, proprietary, classified, or safeguards information so that it can be made available to the Public without redaction. The NRC also includes significant enforcement

actions on its Web site at www.nrc.gov; select **What We Do, Enforcement**, then **Significant Enforcement Actions**.

If you have any questions regarding this matter, please contact Douglas M. Collins, Director, Division of Fuel Facility Inspection, at 404-562-4700.

Sincerely,

A handwritten signature in black ink, appearing to read "William D. Travers". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

William D. Travers
Regional Administrator

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

Enclosures:

1. Notice of Violation
2. List of Attendees
3. Information Presented by WEC

cc w/encls:
Sam McDonald, Manager
Environment, Health and Safety
Commercial Nuclear Fuel Division
Westinghouse Electric Corporation
P. O. Box R
Columbia, SC 29250

NOTICE OF VIOLATION

Westinghouse Electric Company
Columbia, SC

Docket No. 70-1151
License No. SNM-1107
EA-06-038

During an NRC inspection completed on April 4, 2005, and multiple investigations completed by the NRC's Office of Investigations on January 9, 2006, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

Safety Condition No. S-1 of Special Nuclear Material License No. 1107, requires that material be used in accordance with the statements, representations, and conditions in the License Application.

License Application, Section 3.4.1, provides that operations to assure safe, compliant activities involving nuclear material will be conducted in accordance with approved procedures.

Chemical Operating Procedure (COP)-811001, Fitzmill, Revision 35, dated July 8, 2004, Section II, Normal Operation, Step 1.11, requires operators to allow calcined uranium powder to cool for approximately ten minutes before sampling. Section II, Step 1.13 of COP 811001, requires operators to sample full packs of calcined uranium powder per CF-81-900, ADU Conversion Line Sample Schedule. Chemical Form CF-81-900 requires operators to use a specific tool to collect the samples.

Contrary to the above, chemical process operations involving nuclear material were not conducted in accordance with the above procedures, as evidenced by the following three examples:

- On February 19, 2005, three operators failed to sample full packs of calcined uranium powder as required by COP-811001. No samples were taken from several polypacks.
- On February 19, 25, and 28, 2005, two operators failed to use the sampling tool specified by CF-81-900. Instead of the specified tool, the operators used polypack lids to collect the calcined uranium powder samples.
- On February 19, 2005, an operator failed to allow calcined uranium powder to cool for approximately ten minutes before sampling as required by COP 811001. Instead, the operator almost immediately sampled the full pack of calcined uranium powder.

This is a Severity Level III violation (Supplement VI).

The NRC has concluded that information regarding the reason for the violation, the corrective actions taken and planned to correct the violation and prevent recurrence, and the date when full compliance was achieved is already adequately addressed on the docket in the subject inspection report, the information provided by Westinghouse Electric Company at the pre-decisional conference, and in the cover letter transmitting this Notice of Violation (Notice).

Enclosure 1

However, you are required to submit a written statement or explanation pursuant to 10 CFR 2.201 if the description therein does not accurately reflect your corrective actions or your position. In that case, or if you choose to respond, clearly mark your response as a "Reply to a Notice of Violation, EA-06-038," and send it to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, Region II within 30 days of the date of the letter transmitting this Notice.

If you contest this enforcement action, you should also provide a copy of your response with the basis for your denial to the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

Because any response will be made 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), to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction. ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/ADAMS.html> (the Public Electronic Reading Room). If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days.

Dated this 12th day of June 2006

Distribution w/encls:

- L. Reyes, EDO
- C. Paperiello, DEDMS
- L. Chandler, OGC
- B. Jones, OGC
- M. Johnson, OE
- E. Julian, SECY
- D. Decker, OCA
- Enforcement Coordinators
- RI, RIII, RIV
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- H. Bell, OIG
- M. Burrell, OE
- B. Pierson, NMSS
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- R. vonTill, NMSS
- D. Collins, RII
- C. Evans, RII
- S. Sparks, RII
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- PUBLIC
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- RII Docket File, DFFI

*Via email from
M. Burrell*

PUBLICLY AVAILABLE NON-PUBLICLY AVAILABLE SENSITIVE NON-SENSITIVE
 ADAMS: Yes ACCESSION NUMBER: _____

OFFICE	ORA	DFFI	OE	NMSS	OGC		
SIGNATURE	<i>CE</i>	<i>DC</i>					
NAME	CEVANS	DCOLLINS	M Johnson	G Manuel	G LONGO		
DATE	6/9/06	6/9/06	6/8/06	6/8/06	6/8/06		
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

LIST OF ATTENDEES

Nuclear Regulatory Commission:

L. Plisco, Deputy Regional Administrator
D. Collins, Director, Division of Fuel Facilities Inspection (DFFI)
J. Henson, Chief, DFFI Branch 1
C. Evans, Regional Counsel and Enforcement Officer

Westinghouse Electric Company:

M. Fecteau, Plant Manager, Columbia Plant
S. McDonald, Environment, Health and Safety Manager, Columbia Plant
N. Parr, Lexington Manager for the Columbia Site

**PRESENTATION TO THE
U. S. NUCLEAR REGULATORY COMMISSION**

**PREDECISIONAL ENFORCEMENT CONFERENCE
REGARDING**

**NRC INSPECTION REPORT NO. 70-1151/2005-002 &
INVESTIGATION REPORT NOS. 2-2005-007 & 2-2005-011**

APRIL 13, 2006



AGENDA

- INTRODUCTORY REMARKS M. FECTEAU, CFFF PLANT MANAGER
- EVENT OVERVIEW
 - SAFETY SIGNIFICANCE
- WESTINGHOUSE RESPONSE TO THE NOTICE OF APPARENT VIOLATION
- CFFF INVESTIGATIONS AND ROOT CAUSE DETERMINATIONS
- IMMEDIATE, SHORT TERM AND LASTING CORRECTIVE ACTIONS
 - COMPREHENSIVE AND EFFECTIVE
- MITIGATION FACTORS AND DISCRETIONARY CONSIDERATIONS
- SUMMARY AND CONCLUSIONS



INTRODUCTORY REMARKS

- Westinghouse Electric Company LLC (W) is here to discuss the procedural non-adherence occurring at the Columbia Fuel Fabrication Facility (CFFF) involving the failure of chemical process operators to take appropriate samples of calcined uranium powder in the conversion process.
- NRC IR No. 70-1151/2005-002 dated April 4, 2005, as supplemented by multiple investigations completed by the NRC's Office of Investigations, documents NRC's current perspective of the issue and its noted Apparent Violation.



INTRODUCTORY REMARKS

- The in-depth investigative efforts and comprehensive corrective actions taken demonstrate our commitment to fully respond to the event:
 - Westinghouse discovered the situation as a result of a Hazard and Operability (HAZOP) analysis and internal audit and immediately shutdown the process.
 - A root cause analysis team, led by an independent process safety expert outside of Westinghouse, was appointed to determine the programmatic factors that led to the event.
 - Immediate actions were implemented, and lasting improvements are underway to correct the causes of the event and prevent recurrence of other procedural non-compliance events.
- Westinghouse and plant management remain strongly committed to:
 - Ensuring the health and safety of CFFF employees, the public, and protection of the environment.
 - Compliance with all applicable NRC regulations, CFFF license conditions, procedures and commitments made to the NRC.
 - Complete and open communications with NRC staff.
 - Ensuring these shared values, beliefs, attitudes and practices are in place at all levels of the CFFF organization.



EVENT OVERVIEW

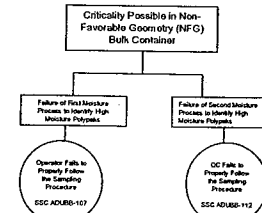
Conversion Line/Bulk Container Criticality Safety Protection

- Double contingency protection is based upon preventing the introduction of a moderator into the non-favorable geometry (NFG) bulk container.
 - Material introduced into the NFG bulk container is handled in polypak containers, which are created at the fitzmill at the end of a conversion line.
- Criticality safety is provided by a tiered layer of controls on the material contained in the polypaks.
 - A composite sample of the 56 polypaks stored on a single polypak cart is obtained and analyzed.
 - 3 individual samples, obtained from 3 randomly selected polypaks on the polypak cart, are independently obtained and independently analyzed.

EVENT OVERVIEW

Conversion Line Oxide Generation Safety Margin

- One leg of double contingency was maintained throughout this event - at no time was oxide with greater than 0.3 wt% moisture (the maximum allowed moderation level) introduced into a NFG bulk container.
 - The second, independent set of required samples was obtained and analyzed properly.
- In addition, several other considerations existed that bolstered the system subcriticality.
 - Substantial margin to criticality exists even if the wt% moisture was at the established limit of 0.3 wt %.
 - Conversion was running normally, producing dry oxide.
 - Most of the composite samples were being taken and analyzed as required.
 - A sample was being submitted for the composite sample, which was being analyzed as required - this provided indication that the system was generating dry oxide.



EVENT OVERVIEW

Safety Significance of the Event

- At no time during the actual event was there a risk that an accidental criticality could occur.
- There is substantial margin to criticality even if the moisture level were at the established limit of 0.3 wt%.
- All of the samples in the second moisture sample set were obtained and analyzed as required (SSC ADUBB-112).
- None of the composite samples taken (including those that were incomplete) were found to contain moisture greater than the established limit of 0.3 wt%.
- Independent sample results obtained from all existing bulk containers were less than the established limit of 0.3 wt% moisture.
 - Highest result was 0.19 wt % moisture
- These low moisture values are consistent with the demonstrated long-term process performance.

WESTINGHOUSE RESPONSE TO NRC'S FINDINGS OF APPARENT VIOLATION

NRC Report EA-05-186, dated March 10, 2006, documents three examples where chemical process operations involving nuclear material were not conducted in accordance with approved procedures:

- 1 On February 19, 2005, operators failed to remove the lid from full packs and sample per CF-81-900, ADU conversion line sample schedule.
- 2 On February 19, 2005, an operator failed to allow powder to cool for approximately ten minutes before sampling.
- 3 On February 19, 25, and 28, 2005, operators failed to use the sample tool specified by the procedure, and instead, used a sample cup lid to collect the samples.

CORRECTIVE ACTIONS - SHORT TERM

Personnel Performance

✓ Appropriate remedial action was taken for the individuals who acted inappropriately in this event.

- Operators Who Failed To Take Samples
 - ✓ Operators A & B terminated 2/23/2005.
 - ✓ Operator C denied wrong-doing, and investigation was inconclusive.
- Operators Who Failed To Use The Sample Tool
 - ✓ Operator D received a 5-day unpaid suspension and was disqualified as a Conversion Operator. Upon re-qualification, Operator D was required to present lessons learned to peers on each shift and work under close supervision. Operator D was subsequently terminated from W.
 - ✓ Operator E received a 5-day unpaid suspension and was disqualified as a Conversion Operator. Upon re-qualification, Operator E was required to present lessons learned to peers on each shift and work under close supervision.
- Operators Who Failed To Comply After Independent Observer Program
 - ✓ Operator F terminated 3/2/2005.
 - ✓ Operator G terminated 3/18/2005.

CORRECTIVE ACTIONS - SHORT TERM

Personnel Performance

✓ A culpability review of conversion area management was performed and determined that there was no individual purposeful or passive contribution.

✓ The seriousness of the event was made clear to conversion area managers, and subsequently to the rest of the Columbia Plant management operations team, by direct and personal communication from the Plant Manager.

CORRECTIVE ACTIONS - SHORT TERM

Verification & Enforcement of Procedural Requirements

✓ Following this event, Conversion Supervision implemented a formal shift report, requiring daily documentation of the following activities:

- Two safety and two procedure adherence observations per shift
- Examples of Human Performance (HuP) tool usage
- Face-to-face activity with employees
- Management oversight of high risk administrative controls

✓ This shift report followed Aubrey Daniels' Antecedent-Behavior-Consequence (ABC) methodology for reinforcing desired behaviors and coaching at-risk behaviors.

✓ Subsequently, training was completed for all management personnel, including supervision, on how to perform effective observations that reinforce procedure adherence expectations.

CORRECTIVE ACTIONS - SHORT TERM

Verification & Enforcement of Procedural Requirements

✓ HuP event investigations are performed by management at the CFFF on safety and compliance events that have a human performance component, including procedure non-adherence.

✓ A comprehensive EH&S certification program for professional and management personnel has been completed.

• A new EH&S qualification program for professional and management personnel will begin mid-year 2006.