



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

February 25, 2011

EA-10-153
EN 46122
EN 46138

Mr. David Precht
Manager, Columbia Plant
Westinghouse Electric Company
Commercial Nuclear Fuel Division
5801 Bluff Road, Drawer R
Columbia, SC 29250

SUBJECT: NOTICE OF VIOLATION (NRC INSPECTION REPORT NUMBER
70-1151/2010-014)

Dear Mr. Precht:

This letter refers to the inspection conducted from July 26 through October 28, 2010, at the Westinghouse Electric Company (Westinghouse) facility, located in Columbia, South Carolina. The purpose of the inspection was to review the circumstances associated with your failure to establish items relied on for safety (IROFS) to reduce the likelihood of a high consequence event involving the Integral Fuel Burnable Absorber (IFBA) Filter Press. The filter press is used to ensure that material in waste water is removed before discharge. Without appropriate controls, more material than anticipated may accumulate in the filter during credible abnormal conditions by permitting the introduction of additional filter plates that would violate criticality safety assumptions for the maximum number of plates in the system. The results of the inspection, including the identification of six apparent violations, were documented in our letter to you, dated December 17, 2010. Additional details of the inspection were documented in NRC Inspection Report No. 70-1151/2010-202, dated December 10, 2010.

On January 21, 2011, a predecisional enforcement conference was conducted at the NRC's Region II office with you and members of your staff, to discuss the significance and root causes of the apparent violations and your corrective actions. At the conference, Westinghouse acknowledged five of the six violations, and presented details of its corrective actions to prevent recurrence. Westinghouse expressed its view that the significance of the violations should be characterized at Severity Level IV, due to the low safety significance. Specifically, Westinghouse stated that the number of IFBA filter press plates never exceeded the authorized number of plates, and the uranium concentration was well below safe limits at all times. Westinghouse also stated that Apparent Violations (AVs) 70-1151/2010-202-01 and -02 should be combined into one violation because both are related to the same incident, and requested that AV 70-1151/2010-202-03 be considered another example of an existing open violation (previously cited in NRC Inspection Report No. 70-1151/2009-201, dated April 23, 2009, as Violation 70-1151/2009-201-01). Finally, Westinghouse denied that the circumstances involving AV 70-1151/2010-202-05 represented a violation of regulatory requirements, for reasons discussed at the conference.

Based on the information developed during the inspection and the information that you provided during the conference, the NRC has determined that five violations of NRC requirements occurred. Three violations are considered escalated enforcement and are cited in the enclosed Notice of Violation (Notice), and the circumstances surrounding them are described in detail in NRC Inspection Report No. 70-1151/2010-202 and in our letter of December 17, 2010. In summary, the violations considered for escalated enforcement involve: (Violation A) the failure to establish double contingency for the IFBA filter press to protect against an inadvertent criticality, as required by Special Nuclear Material License (SNM) No. 1107, License Section 6.1.1; (Violation B) the failure to establish Items Relied On For Safety (IROFS) as needed to meet the performance requirements of 10 CFR 70.61; and (Violation C) the failure to designate the passive engineered controls of the IFBA filter press as an IROFS as required by the license and license application, based on the conclusion that the accident scenario was not credible.

The NRC recognizes that the violations did not result in any actual consequences. In this case, the number of filter press plates never exceeded the authorized number of plates and the uranium concentration in the IFBA filter press was below the critical mass for the IFBA filter press configuration that was analyzed. Therefore, an inadvertent criticality did not occur. However, the potential consequences were significant because an inadvertent criticality could have occurred under credible abnormal scenarios. Although the scenario for an inadvertent criticality was unlikely, no IROFS were established and the passive engineered controls for the IFBA filter press would not have precluded inadvertent criticality under all credible circumstances. Based on the above, the failure to establish double contingency, and because Violations A, B, and C of the Notice are interrelated, these violations have been characterized collectively as a Severity Level III Problem in accordance with the Enforcement Policy.

In accordance with the NRC's Enforcement Policy, a base civil penalty in the amount of \$17,500 is considered for a Severity Level III Problem. Since Westinghouse has been the subject of escalated enforcement within the past two years, NRC considered whether credit was warranted for *Identification* and *Corrective Action* in accordance with the civil penalty assessment process in Section 2.3.4 of the Enforcement Policy. The NRC has concluded that credit is warranted for the factor of *Identification* because Violations A, B, and C were identified as the result of Westinghouse's discovery of the IFBA filter press issues in July 2010.

Corrective actions taken by Westinghouse for Violations A, B, and C included, but were not limited to: 1) the prompt restoration of compliance of the IFBA filter press configuration as per double contingency requirements; 2) the designation of all passive Safety Significant Controls (SSCs) as IROFS; 3) the designation of Facility Walkthrough Assessments as IROFS to address double contingency; 4) the submittal of Event Reports 46122 and 46138 upon discovery of the circumstances of the issues; 5) performance of an extent of condition review relative to other passive engineered controls used in non-credible scenarios at its facility; and 6) the submittal of a license amendment to address issues discovered as part of Criticality Safety Evaluation (CSE) development. Based on the above and other corrective actions discussed at the conference, credit is warranted for the factor of *Corrective Action*.

Therefore, to emphasize the importance of promptly identifying and correcting violations to preclude an inadvertent criticality, I have been authorized, after consultation with the Director, Office of Enforcement, to propose that a civil penalty not be assessed for this Severity Level III Problem. However, significant violations in the future could result in a civil penalty. In addition, issuance of this Severity Level III Problem constitutes escalated enforcement action that may subject you to increased inspection effort.

At the conference, Westinghouse requested that the NRC consider AV 70-1151/2010-202-03 (Violation C of the Notice) as an additional example of violation 70-1151/2009-201-01, and noted that the corrective actions associated with the completion of the Nuclear Criticality Safety Improvement Plan-II (NCSIP-II) will address both non-compliances. As background, the NRC documented Violation 70-1151/2009-201-01 by letter dated April 23, 2009. Westinghouse's letter of May 20, 2009, denied that a violation occurred, for reasons as discussed therein. After careful consideration, the NRC's letter of August 7, 2009, documented our conclusion that, notwithstanding the bases of Westinghouse's denial, the violation occurred as stated. The NRC acknowledges that Westinghouse has informally provided the status of its activities and plans regarding the previously issued violation, as well as its activities for Violation C. As of the date of the pre-decisional enforcement conference, Westinghouse has denied that Violation 70-1151/2009-201-01 occurred and has not identified corrective actions planned or completed to preclude recurrence.

The NRC notes that Violation C occurred several months after the occurrence of violation 70-1151/2009-201-01 (the former occurred on or before July 2010, while the latter occurred on and before March 2009). In addition, the consequences of the two violations were substantially different, in that Violation C led to or permitted an actual plant configuration in which no IROFS were established and the passive engineered controls for the IFBA filter press along with the failure to establish IROFS would not have precluded inadvertent criticality under all credible circumstances. For these reasons, the NRC has concluded that Violation C should not be considered an additional example of violation 70-1151/2009-201-01.

The NRC agrees that corrective actions as discussed at the conference would likely be comprehensive to address both violation 70-1151/2009-201-01 and Violation C of the enclosed Notice. In response to Westinghouse's request at the conference, the NRC has concluded that as part of its written response to Violation C, Westinghouse should acknowledge or deny the occurrence of the previous violation (Violation 70-1151/2009-201-01), and document its corrective actions planned or taken to preclude recurrence of both non-compliances. Furthermore, the NRC requests that Westinghouse include a milestone schedule for completion of any planned corrective actions for Violation C.

Two additional violations are cited in the enclosed Notice, and involve: (Violation D) the failure to establish adequate operating procedures for the filter press; and (Violation E) the failure to make a change to facility equipment in accordance with approved procedures. Violations D and E have been characterized as separate Severity Level IV violations in accordance with the Enforcement Policy. Regarding AV 70-1151/2010-202-05, after careful consideration of the information presented by Westinghouse at the conference, the NRC has concluded that a violation did not occur.

You are required to respond to this letter and should follow the instruction specified in the enclosed Notice, as well as that discussed above for previously issued Violation 70-1151/2009-201-01 and Violation C of the Notice, when preparing your response. NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

Administratively, AVs 70-1151/2010-202-01, -02, -03, -04, -05, and -06 are closed. The following violations are opened: 70-1151/2010-202-01, -02, -03 (Violations A, B, and C), 70-1151/2010-201-04 (Violation D), and 70-1151/2010-202-05 (Violation E).

D. Precht

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In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

Should you have any questions concerning this letter, please contact Mr. Anthony Gody at (404) 997- 4700.

Sincerely,

/RA/

Victor M. McCree
Regional Administrator

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

Enclosure: Notice of Violation

cc w/encl:
Marc Rosser
Manager
Environment, Health and Safety
Commercial Nuclear Fuel Division
Electronic Mail Distribution

Susan E. Jenkins
Assistant Director, Division of Waste Management
Bureau of Land and Waste Management
Department of Health and Environmental Control
Electronic Mail Distribution

D. Precht

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cc w/encl:
Marc Rosser
Manager
Environment, Health and Safety
Commercial Nuclear Fuel Division
Electronic Mail Distribution

Susan E. Jenkins
Assistant Director, Division of Waste Management
Bureau of Land and Waste Management
Department of Health and Environmental Control
Electronic Mail Distribution

X PUBLICLY AVAILABLE NON-PUBLICLY AVAILABLE SENSITIVE X NON-SENSITIVE

ADAMS: X Yes ACCESSION NUMBER: ML110560481 X SUNSI REVIEW COMPLETE

OFFICE	RII:DFFI	RII:DFFI	RII: EICS	ORA	NMSS	OE
SIGNATURE	/RA by MT for MS/	/RA by JC for AG/	/RA by CE/	/RA by LW/	Via e-mail	Via e-mail
NAME	MSykes	AGody	CEvans	LWert	MBailey	RSummers
DATE	2/25/2011	2/25/2011	2/24/2011	2/24/2011	2/25/2011	2/25/2011
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

Letter to: David Precht from Victor M. McCree dated February 25, 2011

Subject: NOTICE OF VIOLATION (NRC INSPECTION REPORT NUMBER 70-1151/2010-014)

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NOTICE OF VIOLATION

Westinghouse Electric Company
Columbia, SC

Docket No. 70-1151
License No. SNM-1107
EA-10-153

During an NRC inspection completed on October 28, 2010, violations of NRC requirements were identified. In accordance with the NRC Enforcement Policy, the violations are listed below:

- A. Safety Condition S-1 of Special Nuclear Material License (SNM) No. 1107 requires that material be used in accordance with the statements, representations, and conditions in the license application dated June 27, 2007, and supplements thereto.

License Section 6.1.1 states, in part, the Double Contingency Principle of ANSI/ANS-8.1(1998) is the basis for design and operation of processes using SNM within the Columbia Fuel Fabrication Facility (CFFF). Double Contingency Protection means that all process designs incorporate sufficient margins of safety to require at least two unlikely, independent, and concurrent changes in process conditions before a criticality accident is possible.

Contrary to the above, on and before July 23, 2010, the licensee failed to establish Double Contingency for the filter press to protect against an inadvertent criticality. Specifically, the Integral Fuel Burnable Absorber (IFBA) filter press relied solely on a 'peg and hole' design to prevent the introduction of additional filter plates, which could have led to an inadvertent criticality.

- B. 10 CFR 70.61(b) states that the risk of each credible high-consequence event must be limited. Engineered controls, administrative controls, or both, shall be applied to the extent needed to reduce the likelihood of occurrence of the event so that, upon implementation of such controls, the event is highly unlikely or its consequences are less severe than those in paragraphs (b)(1)-(4) of this section.

10 CFR 70.61(e) states, in part, that each engineered or administrative control or control system necessary to comply with paragraphs (b), (c), or (d) of this section shall be designated as an item relied on for safety.

Contrary to the above, on and before July 23, 2010, the licensee failed to limit the risk of a credible high-consequence event by implementing items relied on for safety to reduce the likelihood of a credible high-consequence event to highly unlikely. Specifically, the licensee failed to implement items relied on for safety (IROFS) for the IFBA filter press to prevent an inadvertent nuclear criticality, which is a high consequence event.

- C. Safety Condition S-1 of SNM License No. 1107 requires that material be used in accordance with the statements, representations, and conditions in the license application dated June 27, 2007, and supplements thereto.

Section 4.1.2 of the License Application states, in part, that the ISA "is developed in accordance with methods acceptable to the CFFF management, as approved by the Handbook titled "Baseline ISA and ISA Summary Handbook." Subsection 7.2 activities are specific commitments to the NRC and must be executed, as described, for each ISA."

Enclosure

Section 7.2.3, Accident Sequence Likelihood Scoring, states in part, "For those sequences in which this conclusion (incredible) is based on inherently safe Passive Design Feature, then the passive engineered Safety Significant Controls (SSCs) will be designated as an IROFS, with an additional administrative IROFS established to provide for EH&S regulatory review of all work packages issued within the IROFS Boundary."

Contrary to the above, on and before July 23, 2010, the licensee performed Criticality Safety Evaluations in which a criticality accident scenario was classified as incredible based on the dependence on SSCs, which were not designated as IROFS. Specifically, the licensee failed to designate the peg and hole design of the filter press as an IROFS when the conclusion for the accident scenario was determined to be incredible based on the peg and hole design feature.

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

- D. Safety Condition S-1 of SNM License No. 1107 requires that material be used in accordance with the statements, representations, and conditions in the license application dated June 27, 2007, and supplements thereto.

Section 3.4 of the License Application states, in part, that operations to assure safe, compliant activities involving nuclear material are conducted in accordance with approved procedures.

Licensee Procedure RA-108, Safety Significant Controls, Section 6.1.5, states that whenever components associated with SSCs are observed to be defective, the controlled operation shall be terminated until appropriate controls can be temporarily instituted. Section 6.1.6 requires that SSCs that fail to perform their intended function thru normal operation or verification activities, shall be immediately reported to Environmental Health & Safety (EH&S) and the area engineer.

Contrary to the above, on and before July 23, 2010, the licensee failed to conduct operations to assure safe, compliant activities involving nuclear material in accordance with approved procedures. Specifically, the licensee operated the IFBA filter press without an approved procedure that instructed the operators that in the event of missing filter plate pegs, the operation should be shut down and notifications made to EH&S. On July 22, 2010 operators observed the IFBA filter plate pegs were missing and placed the filter press into service. The missing filter press plate pegs were designated as a SSC to prevent an inadvertent nuclear criticality accident and prior to the filter press being placed back into service, EH&S and the area engineer were not notified that the SSC had failed.

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

- E. Safety Condition S-1 of SNM License No. 1107 requires that material be used in accordance with the statements, representations, and conditions in the license application dated June 27, 2007, and supplements thereto.

Section 3.4 of the License Application states, in part, that operations to assure safe, compliant activities involving nuclear material will be conducted in accordance with approved procedures.

Licensee Procedure TA-500, Columbia Manufacturing Plant Configuration Control, states, in part, the requirement for the close-out after a project has been implemented, including the update of drawings.

Contrary to the above, on and before July 23, 2010, the licensee closed out a project without updating IFBA filter system design drawing 807F04EQ02. Specifically, IFBA filter system design drawing 807F04EQ02 was not updated to indicate that the pegs in the IFBA filter press plate were replaced without the all purpose PVC glue.

This is a Severity Level IV Violation (Supplement VI).

Pursuant to the provisions of 10 CFR 2.201, Westinghouse Electric Company is hereby required to submit a written statement or explanation 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 of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation; EA-10-153 and should include for each violation: (1) the reason for the violation, or, if contested, the basis for disputing the violation or severity level, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken, and (4) the date when full compliance will be achieved. Your response may reference or include previous docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an order or a Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time.

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, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> to the extent possible, it should not include any personal privacy, proprietary or safeguards/classified information so that it can be made available to the public without redaction. 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.

If Classified Information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR Part 95.

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

Dated this 25th day of February 2011