



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

January 29, 2013

Mr. David Precht  
Manager, Columbia Plant  
Westinghouse Electric Company  
5801 Bluff Road  
Hopkins, SC 29250

**SUBJECT: WESTINGHOUSE ELECTRIC COMPANY NUCLEAR REGULATORY  
COMMISSION INTEGRATED INSPECTION REPORT NUMBER 70-1151/2012-  
005 AND NOTICE OF VIOLATION**

Dear Mr. Precht:

This refers to the inspections conducted during the fourth quarter of calendar year 2012, at your facility in Columbia, South Carolina. The purpose of the inspections was to determine whether activities authorized under the license were conducted safely and in accordance with Nuclear Regulatory Commission (NRC) requirements. The enclosed report presents the results of the inspections. At the conclusion of the inspections, the results were discussed with members of your staff at exit meetings held on October 4, November 1, and November 9, 2012, for this integrated inspection report.

During the inspections, the staff examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspections consisted of facility walk-downs; selective examinations of relevant procedures and records; interviews with plant personnel; and plant observations. Throughout the inspections, observations were discussed with your managers and staff.

The inspections covered the following areas: safety operations, fire protection, permanent plant modifications, and emergency preparedness.

Based on the results of these inspections, the NRC has determined that one Severity Level IV violation of NRC requirements occurred. The violation was evaluated in accordance with the NRC Enforcement Policy. The current Enforcement Policy is included on the NRC's Web site at <http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html>.

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. The violation is being cited in the Notice because it was identified by the NRC.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. If you have additional information that you believe the NRC should consider, you may provide it in your response to the Notice. The NRC review of your response to the Notice will also determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

If you contest the violation, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001, with copies to: (1) the Regional Administrator, Region II; and (2) the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, 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>. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction

If you have any questions, please call me at (404) 997-4629.

Sincerely,

*/RA/*

Marvin D. Sykes, Chief  
Fuel Facility Inspection Branch 3  
Division of Fuel Facility Inspection

Docket No. 070-1151  
License No. SNM-1107

Enclosures:

1. Notice of Violation
2. NRC Inspection Report w/ attachment

cc w/encls: (See page 3)

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Distribution w/encls:

- M. Sykes, RII
- M. Thomas, RII
- R. Johnson, NMSS
- C. Ryder, NMSS
- M. Baker, NMSS
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ADAMS: X Yes      ACCESSION NUMBER: ML13029a529      X SUNSI REVIEW COMPLETE      X FORM 665 ATTACHED

OFFICE	RII:DFFI	RII:DFFI	NMSS:FCSS	RII:DFFI	RII:DFFI	RII:DFFI	
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DATE	1/29/2013	1/29/3013	1/24/2013	1/25/2013	1/28/2013	1/29/2013	
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Marc Rosser

Manager

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Industrial Safety

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Susan E. Jenkins

Assistant Director, Division of Waste Management

Bureau of Land and Waste Management

Department of Health and Environmental Control

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## NOTICE OF VIOLATION

Westinghouse Electric Company, L.L.C.  
Columbia, South Carolina

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

During an NRC inspection conducted on October 1 through 5, 2012, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

Safety Condition S-1 of Special Nuclear Material License No. 1107 requires that material be used in accordance with statements, representations, and conditions in the license application, dated June 27, 2007; or as revised, pursuant to 10 CFR 70.32 or 10 CFR 70.72, and the supplements thereto.

Section 3.3.2.1, Quality Level A (A-6/A-5); High Consequence Systems ("Crucial"), of the License Application states, in part, that these systems are crucial to safety and, therefore, receive rigorous attention to installation, operation, and maintenance. They are defined by controlling the following performance indicators:

- a) Greater than or equal to 100 rem dose equivalent to a worker;
- b) Greater than or equal to ERPG3 chemical exposure to a worker;
- c) Greater than or equal to 25 rem dose equivalent to the offsite public;
- d) Greater than or equal to 30 milligrams soluble intake of uranium by the offsite public;
- e) Greater than or equal to 40 milligrams soluble intake of uranium by a worker; and/or,
- g) Greater than or equal to ERPG2 chemical exposure to the offsite public.

Crucial safety systems receive full application of the Regulatory Component Quality Assurance (QA) program requirements to assure failure of their availability and reliability is highly unlikely. That is, each of the 18 criteria that could apply is specifically addressed.

Contrary to the above, on and before October 5, 2012, the licensee failed to provide full application of the Regulatory Component QA program requirements to items relied on for safety (IROFS) controlling performance indicators related to a greater than or equal to 100 rem dose equivalent to a worker. Specifically, nuclear criticality safety controls designated as IROFS did not receive full application of the Regulatory Component QA program requirements to assure failure of their availability and reliability was highly unlikely. The licensee did not implement the following QA components: Procurement; Control of Purchased Materials, Equipment, and Services; Control of Special Services; Control of Measuring and Test Equipment; and QA Records.

This is a Severity Level IV violation (Section 6.2).

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

Enclosure 1

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; 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 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.

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

Dated this 29<sup>th</sup> day of January 2013

U.S. NUCLEAR REGULATORY COMMISSION  
REGION II

Docket No.: 70-1151

License No.: SNM-1107

Report No.: 070-1151/2012-005

Licensee: Westinghouse Electric Company

Location: Hopkins, South Carolina

Dates: October 1 through December 31, 2012

Inspectors: M. Thomas, Senior Fuel Facility Inspector (Section A.1 and A.2)  
T. Vukovinsky Fuel Facility Inspector (Section A.1 and A.2)  
N. Covert, Acting Senior Fuel Facility Inspector (Section B.1)  
O. López, Senior Fuel Facility Inspector (Section B.1)  
C. Rivera, Fuel Facility Inspector (Section B.1)  
P. Glenn, Fuel Facility Inspector (Section B.2)

Approved by: M. Sykes, Chief  
Fuel Facility Branch 3  
Division of Fuel Facility Inspection

## **EXECUTIVE SUMMARY**

Westinghouse Electric Company  
NRC Inspection Report No. 70-1151/2012-005

Inspections were conducted by regional inspectors during normal shifts in the areas of safety operations, radiological controls, and facility support. The inspectors performed a selective examination of licensee activities that were accomplished by direct observation of safety-significant activities and equipment, tours of the facility, interviews and discussions with licensee personnel, and a review of facility records.

### **Operational Safety**

- The Items Relied On For Safety (IROFS) reviewed were properly implemented and maintained in order to perform their intended safety function (Paragraph A.1).

### **Fire Protection**

- The inspectors performed the annual fire protection inspection to evaluate compliance with license conditions and applicable regulatory requirements. (Section A.2)

### **Permanent Plant Modifications**

- The Plant Modifications program was implemented in accordance with the license application and applicable regulatory requirements. (Paragraph B.1)
- One violation was identified for the failure to ensure criticality safety IROFS received full application of the Regulatory Component Quality Assurance program requirements to assure failure of their availability and reliability was highly unlikely. (Paragraph B.1)

### **Emergency Preparedness**

- An unresolved item was opened to verify compliance with training requirements as outlined in the licensee's emergency plan. (Section B.2)

### **Special Topics**

- Follow-up on previously identified items (Paragraph C).

### **Attachment**

Key Points of Contact  
List of Items Opened, Closed, and Discussed  
Inspection Procedures Used  
List of Acronyms  
Documents Reviewed



## REPORT DETAILS

### Summary of Plant Status

The Westinghouse Facility converts uranium hexafluoride (UF<sub>6</sub>) into uranium dioxide and fabricates fuel assemblies for use in commercial nuclear power reactors. During the inspection period, normal production activities were ongoing.

#### A. Safety Operations

##### 1. Plant Operations (IP 88020)

###### a. Inspection Scope and Observations

The inspectors interviewed staff and reviewed records associated with the conversion area, with particular focus on the vaporizers and associated items relied on for safety (IROFS). The inspectors determined that the IROFS associated with the vaporizers were being adequately implemented and properly communicated as described in the Integrated Safety Analysis (ISA). The inspector determined that the licensee was operating safely and in compliance with requirements.

The inspectors confirmed that passive relief valves, steam shutoff valves, and emergency shutoff valves were present and capable of performing their intended safety function(s). To complete this confirmation, the inspectors verified the physical presence of passive and active engineered safety controls, evaluated the safety controls to determine their capability and operability, and verified that potential accident scenarios were covered.

The inspectors determined that administrative controls were implemented and communicated. The inspectors reviewed operating procedures and preventative maintenance (PM) procedures and determined that required actions, as identified in the ISA Summary, were correctly transcribed into written operating procedures. The inspector evaluated the procedures' contents with respect to operating limits and operator responses for upset conditions and verified that limits needed to assure safety were adequately described in the procedures.

The inspectors reviewed several operators' qualifications and determined that the operators were qualified for the areas they were tasked with operating. Additionally, training on interlocks associated with safety related equipment was observed. This training focused on refreshing and reinforcing the operators' knowledge of interlocks and was giving primarily to operators who had several years experience operating the plant equipment.

The inspectors observed shift turnover and noted appropriate focus on safety and status of equipment. The inspectors also observed the daily operations meeting and noted an appropriate focus on safety items. The operations meeting also served as the corrective action program (CAP) status meeting to discuss the most recent actions pending. The meeting communicated the need for evaluating Operations Experience and an operating reactor event was tasked to be reviewed by the safety department.

The inspectors interviewed various team leaders, chief operators, and operators and determined that operators and technicians were adequately implementing the required safety controls. The inspectors observed operators' performance and determined that they were adhering to applicable safety procedures. The inspectors reviewed the postings and operator aids applicable to the tasks being observed and determined that these postings and operator aids were current, reflected safety controls, and were followed by the operators.

Through interviews and document reviews, the inspectors verified that the licensee conducted PM, calibrations, and periodic surveillances as required by the ISA Summary for the selected safety controls. The inspector noted that there was a difference in the way post maintenance testing (PMT) for planned and emergency work was determined. During planned maintenance, the planner and system engineer determined if any PMT was required for safety significant equipment. The determination of the need for PMT for emergent work was at the discretion of the team leader and/or the control room chief operators. No examples of missed PMT were identified; however, this difference in determining the required PMT has the potential for a required PMT to be missed.

The inspectors reviewed the licensee's CAP entries for the past several months and determined that deviations from procedures and unforeseen process changes affecting nuclear criticality, chemical, radiological, or fire safety were documented and investigated promptly. Also, the inspector evaluated the corrective actions associated with CAP program and determined that the completed corrective actions were adequate.

b. Conclusion

No safety significant findings were identified.

2. Fire Protection (IP 88055)

a. Inspection Scope and Observations

The inspectors reviewed the licensee's fire safety program against Chapter 8 of the License Application, "Fire Safety," and determined that the licensee was implementing the fire safety program as written.

The inspectors verified that flammable materials were stored in marked cabinets as specified in approved procedures and that housekeeping and the control of combustible materials (IROFS ADUFIRE-901, URSFIRE-901, UF6FIRE-901, and SOLXFIRE-901) were adequate and consistent with the approved procedures. The inspectors also verified that the cutting, welding, and hot work program was implemented in accordance with approved procedures.

The inspectors reviewed pre-fire plans and determined that the pre-fire plans contained sufficient information to support the response of the facility's emergency response team and offsite fire department.

The inspectors verified that portable fire extinguishers were readily available in their correct locations and rated for the relevant fire scenarios. The inspectors noted that the general condition of fire extinguishers was satisfactory with proper operating pressure

and unobstructed accessibility. The inspectors determined that fire extinguishers were tested and spaced in accordance with NFPA 10, "Standard for Portable Fire Extinguishers."

The inspectors reviewed Emergency Response Organization (ERO) drills for the past year and verified the Emergency Response Team (ERT) members received training and participated in drills on at least an annual basis. The inspectors verified that the offsite fire support organizations were offered an opportunity for site orientation. The inspectors did not note any issues with the communication equipment and verified that the members of the ERT had access to their own portable radio communications while they were on duty. The inspectors also verified implementation of the following IROFS ADUFIRE-902, URSFIRE-902, UF6FIRE-902, and SOLXFIRE-902, which involved the use of proper fire fighting techniques to prevent introduction of moderator to fissile material.

The inspectors reviewed Redbook and CAP entries associated with fire safety issues to determine if the licensee staff identified and resolved fire safety and IROFS related issues at a proper threshold.

The inspectors conducted walk-downs of the hot oil room and the incinerator areas to evaluate the presence, condition, and effectiveness of passive fire protection features, including fire barriers designated as IROFS. Passive fire protection features included fire walls, penetrations through fire walls, fire doors, and the presence of fire dampers in ducting that passed through fire barriers. The inspectors compared installed protective features to as-built drawings and component specifications. The inspectors reviewed samples of preventative maintenance activities associated with the periodic inspection and functional testing of passive fire protection systems, features, and equipment.

The inspectors reviewed the material condition and operational lineup of fire suppression systems. The inspectors verified that sprinklers were not obstructed and that water supply to the systems was readily available. The inspectors also reviewed the inspection, testing, and maintenance records for fire suppression systems to verify that the systems were reliable and available. The fire protection systems reviewed included standpipes, fire pumps and water distribution systems, and hydrants.

The inspectors walked down the fire detection system and noted that the detection devices were not obstructed. The inspectors verified that a surveillance program was in place to verify the operation of the fire alarm system.

b. Conclusion

Fire safety controls, including IROFS, were properly implemented and maintained. Process areas, equipment, and material storage areas were operated in accordance with fire safety requirements. No safety significant findings were identified.

B. Facility Support

1. Permanent Plant Modifications (IP 88070)

a. Inspection Scope and Observations

The inspectors interviewed managers, supervisors, and staff to verify that the licensee had established an effective configuration management system to evaluate, implement, and track permanent plant modifications (PPMs) which could affect safety.

The inspectors verified that the licensee addressed the impacts of modifications to the ISA Summary, and other safety program information developed in accordance with 10 CFR 70.62. The inspectors also verified that the reviewed PPMs were in compliance with the requirements of 10 CFR 70.72.

The inspectors reviewed PPM design packages since the last PPM inspection to ensure the as-built design installations were in conformance with the design drawings. The inspector verified that applicable post installation testing requirements were adequately identified and performed prior to implementation of PPM design packages. Completed modifications were adequately reviewed prior to implementation and before returning affected equipment to service.

The inspectors verified that the PPMs involving IROFS were adequately designed and implemented, and that assumptions were validated with the actual configuration and operation of the modified processes. The inspectors also verified that the licensee had implemented management measures to assure that modified IROFS were available, and reliable to perform their intended safety function when needed.

The inspectors reviewed change package CCF 11252, Replacement Pressure Relief Valves (PRVs). The purpose of the change was to install new PRVs from a different manufacturer because the existing valves needed calibration and they could not be sent offsite for calibration. During the review of the ISA Summary and associated drawings for the hot oil system, the inspectors noted that the PRVs leading to the hot oil expansion tank were not designated as part of IROFS ADUHOS-907, Hot Oil System Structural Integrity. The inspectors also noted that the PRVs did not have a formal PM to replace the valve at the specified frequency, like others PRVs in the hot oil system, to ensure the availability and reliability of the PRVs. The inspectors reviewed the applicable accident sequences and determined that the licensee had enough IROFS in place to meet the performance requirements without taking full credit for the integrity of the hot oil system. The licensee entered the issue in their CAP, Issue Report # 12-278-CO01, to designate the PRVs as part of IROFS ADUHOS-907 and implement the necessary management measures.

The inspectors reviewed the licensee's problem identification and resolution program to verify that issues relating to the preparation and installation of PPMs were entered into the CAP and the adequacy of corrective actions. The inspectors reviewed CCF 10625, Erbia Grinder Bowl Feeder PolyPac Level Switch Probe modification, which was associated with the erbia grinder level sensor, IROFS

PELGRIND-103. On August 24, 2010, during a routine functional test, COP-850005, the licensee identified a previously unknown failure mechanism, such that a broken wire or loss of electrical power to the level sensor, would not automatically alarm and shut down the erbia grinder system. The associated Critical Safety Evaluation (CSE)-08-D, Revision (Rev.) 8, stated that the safety function of IROFS PELGRIND-103 was to prevent mass or moderator from accumulating above the top of the pack. The CSE also stated that the sensor was configured to fail to a high level failsafe condition; such that if the sensor was to fail due to damage, loss of power, etc., it would alarm as if it were reading a high level.

The licensee had generated a corrective action report, Redbook 16180, to capture the issue and later to initiate the modification performed under CCF 10625. However, the inspectors determined that the environmental health and safety (EH&S) review of the Redbook item did not indicate that a management measure or safety significant control (SSC) had potentially failed or if a safety function was affected. In addition, the licensee did not perform an extent of condition review for other similar IROFS level sensors.

The inspectors questioned the extent of condition and potential impacts on other accident sequences, if other sensors had similar failure mechanisms. The licensee generated Issue Report # 12-277-COI, to document the failure to perform an extent of condition review, to initiate an apparent cause analysis, and to perform functional testing to validate other sensors' performance. During the testing, the licensee identified the same failure mechanism on grinder bowl feeder line 5. The inspectors reviewed the results from the erbia grinder and the bowl feeder line 5 and verified that the IROFS were degraded but not failed and the licensee still met the performance requirements due to other IROFS credited in the accident sequences remaining available and reliable.

The inspectors reviewed the apparent cause analysis and associated corrective actions and determined that they were adequate to address the issue and prevent reoccurrence of similar issues. The inspectors determined that this was a NRC identified issue and was a minor violation of 10 CFR 70.62 (d) "Management measures," which states, in part, that management measures shall ensure that engineered and administrative controls and control systems that are identified as IROFS are designed, implemented, and maintained, as necessary, to ensure they are available and reliable to perform their function when needed," to comply with the performance requirements of § 70.61. Specifically, the licensee did not perform adequate configuration management on original installation or subsequent maintenance and incident investigation for the Drexelbrook level switch sensor, such that the same IROFS failure mechanism existed and was uncorrected for over two years from original discovery. The inspectors determined that this issue was not more than minor because the level sensors IROFS had not failed and the licensee met the associated performance requirements. Although this issue should be corrected, it constitutes a violation (VIO) of minor significance that is not subject to enforcement action in accordance with Section 2.3.1 of the NRC Enforcement Policy.

The inspectors reviewed PPMs to verify that they were in compliance with the licensee's QA Program requirements, as documented in the License Application, Section 3.3 and Section 1.2 of RA-120-08, "Regulatory Policy – Application of Quality Assurance (QA) Program Criteria," Rev. 2.

Section 3.3, "Quality Assurance," of the License Application states, in part, that QA must be provided to ensure those SSCs designated as IROFS, are designed, installed, tested, modified, and maintained in accordance with approved procedures to guarantee their availability and reliability. Section 3.3.2, "Graded Approach for Safety Systems," defines the different quality levels for the identified SSCs that prevent and/or mitigate the consequences of the hazards evaluated during the systematic ISA performed for the facility.

Section 3.3.2.1, "Quality Level A (A-6/A-5); High Consequence Systems ("Crucial")," states, in part, that high consequence systems are defined as systems that control the following performance indicators, specifically: a) Greater than or equal to 100 rem dose equivalent to a worker; and c) Greater than or equal to 25 rem dose equivalent to the offsite public. Section 3.3.2.1 also states that "Crucial safety systems receive full application of the Regulatory Component QA Program requirements to assure failure of their availability and reliability is highly unlikely. That is, each of the 18 criteria that could apply is specifically addressed."

In addition, Section 1.2 of RA-120-08, states, in part, that Quality Level A ("Level A") controls are those identified by cognizant regulatory experts as being required to prevent and/or mitigate consequences described in subparagraph "Quality Level A; Crucial Safety Systems" of Materials License SNM-1107.

The inspectors noted that the licensee treated criticality safety IROFS as Safety Significance C items as described in Section 3.3.2.2, "Quality Levels B (B-4) and Safety Significant C (C<sub>ss</sub>); Intermediate Consequence Systems ("Important")," of the License Application. Section 3.3.2.2 states, in part, that C<sub>ss</sub> items are important to safety and, therefore receive appropriate attention to installation, operation, and maintenance. They are defined by controlling the performance indicator of loss of Nuclear Criticality Safety Double Contingency Protection. Section 3.3.2.2 also states, in part, that important safety systems receive selective application of the Regulatory Component QA program requirements to assure failure of their availability and reliability is unlikely.

The licensee stated that criticality safety IROFS were classified as C<sub>ss</sub> because they were used to prevent the loss of Nuclear Criticality Safety Double Contingency Protection as indicated in Section 3.3.2.2. Therefore, the licensee determined that criticality safety IROFS did not need to be treated as QA level A as described in Section 3.3.2.1, even though these IROFS were controlling some of the high consequence systems performance indicators described in Section 3.3.2.1. The licensee stated that the intent of QA level A was for sole IROFS that controlled the performance indicators described in Section 3.3.2.1.

Based on interviews with licensee personnel and documentation review, the inspectors determined that the licensee was not in compliance with Section 3.3.2.1, "Quality Level A (A-6/A-5); High Consequence Systems ("Crucial"), of the License Application. Specifically, the licensee failed to ensure criticality safety IROFS

received full application of the Regulatory Component QA Program requirements to assure failure of their availability and reliability was highly unlikely. The inspectors reviewed procedure RA-120-08 and determined that the licensee failed to implement the following QA components to these controls: Procurement; Control of Purchased Materials, Equipment, and Services; Control of Special Services; Control of Measuring and Test Equipment; and QA Records. Failure to comply with Section 3.3.2.1 of the License Application was considered a violation (VIO) of NRC requirements, VIO 70-1151/2012-005-01.

b. Conclusion

One VIO was identified for the failure to ensure criticality safety IROFS received full application of the Regulatory Component QA Program requirements to assure failure of their availability and reliability was highly unlikely.

2. Emergency Preparedness (IP 88050)

a. Inspection Scope and Observations

Through interviews of staff and a review of records the inspectors determined that changes made to the Emergency Plan (EP) or within the facility were properly coordinated within the emergency preparedness program as applicable. The inspectors reviewed several procedures with revisions since the last emergency preparedness inspection and determined that the changes were in compliance with the EP. The inspectors also reviewed the licensee's emergency call list and verified that the list was current.

The inspectors reviewed training records and interviewed licensee staff regarding emergency preparedness training completed since the last emergency preparedness inspection. With the exception of certain Emergency Command Staff member, the inspectors determined that emergency preparedness training reviewed had been conducted in accordance with the EP. The inspectors interviewed an emergency director, incident commander, security guard responsible for assisting with accountability, and a health physicist and medical technician that would be called upon to assist during an actual emergency. During the interviews, licensee staff discussed integral responsibilities associated with their positions which included a table-top of emergency scenarios, mitigation actions, decision making, and response measures that were independently assessed by the inspectors. The inspectors also verified that the licensee provided training representative of various postulated emergency situations which were effective and consistent with the frequency and performance objectives required in the EP. An unresolved item (URI) was opened to verify the licensee's compliance with the EP related to requirements for annual training based on the records reviewed for the Emergency Command Staff. The URI is being tracked via URI 70-1151/2012-005-02.

The inspectors reviewed the current Memorandums of Understanding (MOUs) in place with off-site support agencies and verified that the organizations required by the EP had up-to-date agreements. The inspectors interviewed various off-site support agency representatives, including Columbia Fire Department, Palmetto Health Richland Hospital, and South Carolina Department of Health and Environmental Control and determined that they maintained an understanding of the written agreements. The

inspectors also verified via interviews with off-site personnel and records reviewed that the licensee invited the off-site support agencies for training as required by the EP. The inspectors concluded that the training provided to off-site support personnel was understood and periodically included participation in the licensee's on-site drills. The inspectors performed an independent communication test with the NRC Emergency Operations Center (EOC) and verified via reviewed records that the licensee conducted communications testing with the off-site organizations and on-site ERO at the required frequency as outlined by the EP and Emergency Plan Implementing Procedures (EPIPs).

The inspectors observed the storage of emergency equipment in the primary and alternate on-site EOC as well as in several remote storage locations on-site. During those observations, the inspectors verified that the inventory levels were maintained as required by the EP. The inspectors also verified that the primary and alternate EOCs were readily accessible and maintained the appropriate amount of communication equipment. The inspectors reviewed the accountability process and verified that assembly points were present and accessible for means of performing accountability and mustering during an evacuation. The inspectors also reviewed the control, distribution, and maintenance of the site's pre-fire plan, EP, and EPIPs.

The inspectors reviewed the licensee's internal and external, independent audits of the emergency preparedness program and verified that a system was in place for tracking and resolving audit findings.

b. Conclusion

URI 70-1151/2012-005-02 was identified to verify the licensee's compliance with the EP related to requirements for annual training on the EP, emergency procedures, and additional assignment specific training for the Emergency Command Staff. There were no additional safety significant findings were identified.

C. Special Topics

1. Follow-up on Previously Identified Issues

- a. (Closed) VIO 70-1151/2011-005-01: Failure to establish management measures that would ensure that IROFS ADUHOS-906 would perform its intended function when needed to comply with the performance requirements. The inspectors followed up on corrective actions to establish management measures for IROFS ADUHOS-906 in Inspection Report 70-1151/2012-004. However, during their follow-up, the inspectors noted that the lower clearance for fire doors (especially in the incinerator room) appeared to exceed the NFPA code limits (3/4"), the fire doors are part of IROFS. The licensee evaluated the issue and determined that several doors exceeded the limit. Corrective actions included installation of new door sills and revision of the fire door preventative maintenance procedure to include the clearance acceptance criteria given in NFPA 30 "Standard for Fire Doors and Other Opening Protectives." This item is closed.



D. Exit Meeting

The inspection scope and results were presented to members of your staff at various meetings throughout the inspection period and were summarized on October 4, November 1, and November 9, 2012. No dissenting comments were received from the licensee. Proprietary information was discussed but not included in the report.

## **SUPPLEMENTARY INFORMATION**

### **1. Key Points of Contact**

<u>Name</u>	<u>Title</u>
S. Armstrong	Operations Manager
K. Barber	Engineer
R. Bates	Maintenance and Equipment Improvement
D. Baustert	Pellet Operations Manager
P. Bartman	EHS Audit Coordinator
L. Brownlee	Organizational Improvement Manager
E. Byrd	EHS Engineering
S. Carver	EHS Emergency Preparedness Manager
G. Couture	EHS Licensing Manager
M. Goddard	HUP Manager
D. Graham	EHS Engineering
J. Howell	Conversion Area Operations Manager
C. Kneece	Industrial Safety Manager
K. Merritt	Product Assurance Chemical Operation
T. Northcutt	CAP Manager
J. Peterson	Site Maintenance Manager
B. Phillips	Conversion Operations Manager
D. Precht	Plant Manager
M. Rosser	EHS Manager
D. Shealy	Emergency Preparedness Incident Commander
P. Simmons	Human Resources Manager
C. Snyder	EHS Engineering Manager
J. Spires	Training Organization
R. Taylor	EHS Engineering
J. Watkins	Product Assurance Manager

### **2. List of Items Opened, Closed, and Discussed**

<b>Item Number</b>	<b>Status</b>	<b>Description</b>
VIO 70-1151/2011-005-01	Closed	Failure to establish management measures that would ensure that IROFS ADUHOS-906 would perform its intended function when needed to comply with the performance requirements.
VIO 70-1151/2012-005-01	Open	Failure to ensure criticality safety IROFS received full application of the Regulatory Component QA program requirements to assure failure of their availability and reliability was highly unlikely.
URI 70-1151/2012-005-02	Open	Verify the licensee's compliance with the EP related to training requirements.

### 3. **Inspection Procedures Used**

IP 88020	Operational Safety
IP 88050	Emergency Preparedness
IP 88055	Annual Fire Protection
IP 88070	Permanent Plant Modifications

### 4. **List of Acronyms Used**

ADAMS	Agency-wide Document Access and Management System
CAP	Corrective Action Program
CSE	Criticality Safety Evaluation
Css	Safety Significant C
EH&S	Environmental Health and Safety
EOC	Emergency Operations Center
EP	Emergency Plan
EPIP	Emergency Plan Implementing Procedures
ERO	Emergency Response Organization
ERT	Emergency Response Team
ETAPS	Columbia Plant Electronic Training and Procedure System
IROFS	Items Relied on for Safety
ISA	Integrated Safety Analysis
MOU	Memoriam of Understanding
No.	Number
NOV	Notice of Violation
NRC	Nuclear Regulatory Commission
PM	Preventative Maintenance
PMT	Post Maintenance Testing
PPM	Permanent Plant Modification
PRV	Pressure Relief Valve
QA	Quality Assurance
Rev.	Revision
SAR	Safety Analysis Report
SSCs	Safety Significant Controls
UF <sub>6</sub>	Uranium Hexafluoride
UPS	Uninterruptible Power Supply
URI	Unresolved Item
VIO	Violation

### 5. **Documents Reviewed**

#### Records:

OM-81204, ADU Line 4 Annual OM, completed October 17, 2012  
 OM-81201, ADU Line 1 Annual OM, completed March 1, 2012  
 OM-81202, ADU Line 2 Annual OM, completed November 16, 2011  
 ERO Training Records – 2012  
 EOC Training Records – 2011

Monthly Training for Fire Brigade (Records, Outline, Schedule) – 2012  
 Emergency Facilities and Equipment Inventory Records: December 2011, February 2012, May 2012, September 2012  
 Emergency Communications Testing Records: December 2011, February 2012, May 2012, September 2012  
 2011 Biennial Exercise Drill Package, dated March 14, 2011  
 Records Flow Schedule, dated January 6, 2012

Procedures:

SCM-308, MRO Storeroom stock Requirements, Rev. 3  
 RA-120-20, Regulatory Policy - Safety Significance Controls - Inspection of Procured Item Relied on for Safety, Rev. 3  
 RA-120-08, Regulatory Policy – Application of Quality Assurance (QA) Program Criteria, Rev. 2  
 RA-120-15, Regulatory Policy – Management Policy for Nuclear Criticality Safety (NCS) at CFFF, Rev. 1  
 RA-104, Regulatory Review of Configuration Change Authorizations, Rev. 25  
 QA-004, Equipment and Process Qualifications and/or Verification, Rev. 36  
 FA- 115, Full Engineering Reviews, Rev. 2  
 FA- 114, Independent Technical Reviews, Rev. 4  
 RAF-104-3, Environment, Health and Safety, Nuclear Criticality Safety Review Guidelines  
 for Configuration Control Change Packages, Rev. 8  
 RA- 121, Redbook Internal Reporting System, Rev. 8  
 COP-810093, Maintenance or Replacement of Valves on UF6 and Education Line  
 CA-007, Corrective and Preventive Action, Rev. 27  
 RA-108, Safety Significant Controls, Rev. 32  
 CSE-08-D, Criticality Safety Evaluation (CSE) for the Columbia Fuel Fabrication Facility Pellet Grinder Line, Rev. 8  
 CA-002, Columbia Plant Electronic Training and Procedure System (ETAPS), Rev. 47  
 MCP-203305, Verification of Interlock ADUVAP-101, Rev. 3  
 MCP-108103, Maintenance Work Order Handling, Rev. 27  
 MCP-203376, Verification of Instrument Safety Function ADUVAP-117, Rev. 4  
 MCP-203302, Verification of Interlock ADUVAP-904, Rev. 4  
 MCP-203301, Verification of Interlock ADUVAP-903, Rev. 3  
 COP-810201, Hydrolysis Operation, Rev. 36  
 COP-810101, UF6 Piping and Valve Leak Check, Rev. 46  
 COP-816001, Pressure Test of UF6 Supply and Education Lines, Rev. 12

Condition Reports Written as a Result of the Inspection:

Issue Report 12-317-C002  
 Issue Report 12-317-C004  
 Issue Report 12-317-C005  
 Issue Report 12-317-C003

Condition Reports Review:

CAP 12-277-C011, Pellet Grinder Functional Testing  
CAP 12-206-C010, Blue M Oven  
CAP 12-303-C007, Fire Barrier Penetration – Red Putty  
Redbook 16180  
Issue Report 12-277-COI 1  
Issue Report 12-031-C010  
Issue Report 12-280-C001  
Issue Report 10-118-C007  
Issue Report 11-109-C032  
Issue Report 11-144-C003  
Issue Report 11-227-C003  
Issue Report 12-090-C006  
Issue Report 12-090-C008  
Issue Report 12-270-C001  
Issue Report 12-103-C004  
Issue Report 12-090-C007

Drawings:

338F02P101, "ADU Line 5 / Hydrolysis & Nitrate Storage," Rev. C1  
338F03P101, "ADU Line 5 / Precipitation," Rev. C2  
338F01P101, "ADU Line 5 / UF6 Vaporization," Rev. C2  
950403-1, "General Assembly IUMON (Uranium Monitor)," Rev. CA  
950403-1/31, "Sub-Assembly Control Unit IUMON (Uranium Monitor)," Rev. CA  
347F04PI02, "Hot Oil System 3," Rev. 23  
347F04PI02, "Hot Oil Systems 3 & 4 Expansion Tank," Rev. 4  
Sketch No. 815417-4, "Chemical Operating Procedure Sketch Conversion Area,"  
Rev. 35  
Sketch No. 850002-1, "Chemical Operating Procedure Sketch ERBIA AREA," Rev. 30

Modifications (CCFs):

11097  
11174  
11209  
11252  
10637  
10638  
10625  
10761  
10763  
10766  
10767  
10768  
11452  
11281  
11193

Other Documents:

EHS-Audit-11-15, Conduct of Operations, Maintenance, Recordkeeping and Reporting, conducted January 13, 2012  
OM 81090, FL-312A Bag Filter Housing O-Ring Replacement  
OM 81015, Calciner Off-Gas Scrubber  
Emergency Plan Revision Packet, Rev. 16, dated September 14, 2012  
Emergency Preparedness Memorandums of Understanding with Off-site Support Agencies  
EHS Audit 10-5, 2010 Emergency Preparedness Program Audit  
EHS Audit12-4, 2011 Emergency Preparedness Program Audit (April 2011)  
2012 Emergency Preparedness Program Audit (February 2012)  
2011 EHS Program and Formal Compliance Audit Schedule and Status  
2012 EHS Program, Supplier, and Formal Compliance Audit Schedule  
Technical Rescue Monthly Training, dated March 20, 2011  
2012 Rope Rescue Refresher Training Course Outline  
TRN-001-3, EHS Quarterly Training  
TRN-095, EOC Refresher Training  
EOC Training Health Physics Response to Emergency Events, dated October 26, 2011  
ECD Training Presentation 2012  
Site Emergency Plan Commitment Matrix  
Westinghouse Pre-Fire Plan