



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

April 28, 2016

EN 51660

Mr. David Precht
Vice President, Columbia Fuel Operations and
Manager, Columbia Plant
Westinghouse Electric Company
5801 Bluff Road
Hopkins, SC 29061

**SUBJECT: WESTINGHOUSE ELECTRIC COMPANY – NUCLEAR REGULATORY
COMMISSION INTEGRATED INSPECTION REPORT NO. 70-1151/2016-002**

Dear Mr. Precht:

The Nuclear Regulatory Commission (NRC) conducted an announced inspection during the first quarter of calendar year 2016 (January 1 - March 31, 2016), at the Westinghouse Columbia Fuel Fabrication Facility in Hopkins, SC. The purpose of the inspection was to determine whether activities authorized under the license were conducted safely and in accordance with NRC requirements. The enclosed report presents the results of the inspection. At the conclusion of this inspection, the results were discussed with your acting plant manager and members of your staff at an exit meeting on February 4, 2016.

During the inspections, NRC staff examined activities conducted under your license as they related to public health and safety, and to confirm compliance with the Commission's rules and regulations, and with the conditions of your license. Areas examined during the inspection are identified in the enclosed report. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel.

The inspection covered the following areas; Operational Safety, Fire Protection, and Emergency Preparedness. No findings of significance were identified.

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390 of NRC's "Rules of Practice and Procedure," a copy of this letter and enclosure will be made available electronically for public inspection in the NRC Public Document Room, or from the NRC's Agencywide Documents Access and Management System (ADAMS), which is accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html>.

If you have any questions, please call me at (404) 997-4555.

Sincerely,

/RA/

Eric C. Michel, Chief
Projects Branch 2
Division of Fuel Facility Inspection

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

Enclosure:
NRC Inspection Report 70-1151/2016-002
w/Supplemental Information

cc: (See page 3)

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U. S. NUCLEAR REGULATORY COMMISSION
REGION II

Docket No.: 70-1151

License No.: SNM-1107

Report No.: 70-1151/2016-002

Licensee: Westinghouse Electric Company

Facility: Columbia Fuel Fabrication Facility

Location: Hopkins, SC 29061

Dates: January 1 through March 31, 2016

Inspectors: P. Glenn, Fuel Facility Inspector (Sections A.1 and C.1)
N. Peterka, Fuel Facility Inspector (Section A.2)
D. Anderson, Fuel Facility Inspector (Section B.1)

Approved by: E. Michel, Chief
Projects Branch 2
Division of Fuel Facility Inspection

Enclosure

EXECUTIVE SUMMARY

Westinghouse Electric Company
Columbia Fuel Fabrication Facility
NRC Integrated Inspection Report 70-1151/2016-002
January 1 through March 31, 2016

The inspection was conducted by Nuclear Regulatory Commission (NRC) regional inspectors during normal shifts in areas of safety operations and facility support. The inspectors performed a selective examination of license 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. No findings of significance were identified.

Operational Safety

- The Items Relied on for Safety reviewed were properly implemented and maintained in order to perform their intended safety function (Paragraph A.1).
- The Fire Protection program was implemented in accordance with the licensee application and regulatory requirements. (Paragraph A.2)

Facility Support

- The Emergency Preparedness program was implemented in accordance with the licensee application and regulatory requirements. (Paragraph B.1)

Other Areas

- Closure of Licensee Event Report (LER) 2016-001, "Plating Room Fire." The LER was reviewed. No violations of NRC requirements were identified. (Paragraph C.1)

Attachment:

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

REPORT DETAILS

Summary of Plant Status

The Westinghouse Facility converts uranium hexafluoride (UF₆) into uranium dioxide using a wet conversion process and fabricates fuel assemblies for use in commercial nuclear power reactors. During the inspection period, normal production activities were ongoing.

A. Safety Operations

1. Operational Safety (IP 88020)

a. Inspection Scope and Observations

The inspectors interviewed staff and reviewed records associated with the Ammonium Diuranate (ADU) conversion process with a specific focus on the vaporization area. The inspectors determined that the items relied on for safety (IROFS) were being adequately implemented and properly communicated as described in the Integrated Safety Analysis (ISA). The inspectors determined that the licensee was operating safely and in compliance with requirements.

The inspectors confirmed that a sample of IROFS 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 licensee administrative controls were implemented and communicated. The inspectors reviewed applicable procedures and records and determined that required actions as identified in the ISA Summary had been correctly transcribed into written operating procedures. The inspectors 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 interviewed seven operators and determined that operators 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, reflect safety controls, and were followed by the operators.

Through interviews and document reviews, the inspectors verified that the licensee conducted periodic surveillance testing as required by the ISA Summary for the selected safety controls.

The inspectors reviewed a sample of the licensee's corrective action program (CAP) since the last operational safety inspection 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

inspectors evaluated the corrective actions associated with Redbook entry #70249 regarding the backing up of floor drains in the pelleting furnace area on December 29, 2015. The inspectors determined that the completed corrective actions were adequate and no IROFS were effected.

b. Conclusion

No violations of significance were identified.

2. Fire Protection Annual (IP 88055)

a. Inspection Scope and Observations

The inspectors reviewed Westinghouse procedures and toured plant areas containing safety controls and IROFS to assess the material condition of fire protection equipment, systems, and features. The areas of focus for the inspections included the Conversion Area Hot Oil Room, the Uranium Recovery (UR) Incinerator, and the SOLX process in UR. 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 were adequate and consistent with the approved procedures. The inspectors verified that the hot work program was implemented in accordance with approved procedures.

The inspectors reviewed records and interviewed Westinghouse personnel to verify that the observed fire protection systems were maintained in an adequate state of readiness and had been properly tested to verify their ability to perform their safety function. The inspectors determined that fire dampers, doors, and penetration seals were being maintained in a condition that would ensure they were available and reliable to perform their safety function. In addition, the inspectors determined that fire hoses and portable extinguishers were provided at their designated locations and access was unobstructed.

The inspectors reviewed a sample of the licensee's CAP entries for the past 12 months and determined that the licensee had identified safety controls or IROFS fire protection operability problems at an appropriate threshold, and had entered them into the corrective action program. Also, the inspectors evaluated the corrective actions associated with a sample of the CAP entries and determined that the completed corrective actions were adequate.

Based on field observations and discussions with licensee personnel the inspectors determined that firefighting vehicles and supplies were adequately maintained and available for use. Firefighting vehicles were observed to be stocked with appropriate equipment and supplies. Personnel protective equipment for emergency response personnel was available for use and adequately maintained.

Material condition and operability of the fire protection system primary and secondary pumps were reviewed by the inspectors. Based on field observations, review of records and interviews with licensee personnel the inspectors determined that the pumps were tested and maintained in accordance with approved procedures and available for use. Licensee personnel responsible for the performance of routine pump operability tests were knowledgeable of the testing requirements.

b. Conclusion

No violations of significance were identified.

B. Facility Support

1. Emergency Preparedness (IP 88050)

a. Inspection Scope and Observations

The inspectors interviewed staff and reviewed records and determined that changes made to the Emergency Plan (EPlan) or within the facility were properly coordinated with the emergency preparedness program, as applicable. The inspectors reviewed several EPlan implementing procedures (EIPs) revised since the last emergency preparedness inspection. The inspectors determined that the EIP changes reviewed were in compliance with the EPlan and did not result in a decrease of effectiveness of the emergency preparedness program. The inspectors also reviewed changes made to the EPlan since the last emergency preparedness inspection and determined that the changes did not result in a decrease in effectiveness of the program. The inspectors reviewed the licensee's emergency call list and verified that the list was periodically tested for accuracy and maintained as required.

The inspectors interviewed licensee staff and reviewed training records related to emergency preparedness training completed since the last emergency preparedness inspection. Interviews conducted included an Emergency Director, Incident Commander (IC), and other personnel with responsibilities associated with the Emergency Operations Center (EOC) and emergency response activities. The inspectors determined that the training reviewed was conducted in accordance with the EPlan. The inspectors verified that the licensee provided emergency management and emergency response training for site personnel as required. Additionally, based on the records reviewed, the inspector verified that individuals responsible for using emergency equipment were qualified as required. The inspectors also verified that the licensee provided training representative of various postulated emergency situations consistent with the frequency and performance objectives required in the EPlan. During the inspection, the inspectors observed the activation of the EOC in response to a severe weather event. During the observation, the inspectors confirmed that the licensee had implemented the EPlan and complied with applicable EIPs as required.

The inspectors reviewed the current memorandums of understanding (MOU) in place with off-site support agencies and verified that the organizations required by the EPlan had up-to-date agreements. The inspectors interviewed various off-site support agency representatives, including Columbia Fire Department, Richland County Emergency Medical Service 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 support personnel and records reviewed that the licensee invited off-site support agencies to participate in site specific training as required by the EPlan. The inspectors noted that off-site support personnel periodically participated in the licensee's on-site emergency drills. The inspectors also verified that the licensee performed a periodic communication check with the off-site organizations as required.

The inspectors observed the storage of emergency equipment in the Emergency Brigade Building and EOC and verified that inventory levels were maintained as required by the EPlan. The inspectors also verified that the EOC was readily accessible and maintained the required amount of communication equipment. The inspectors reviewed the accountability procedure and verified that assembly points were present and accessible for performing accountability and mustering during an evacuation. The inspectors also reviewed the control, distribution, and maintenance of the site's pre-fire plan, EPlan, and EPIPs and determined that the licensee was maintaining these documents as required by the EPlan. The inspectors observed a successful communication test with the NRC EOC and verified via reviewed records that the licensee conducted communications testing with all required off-site support organizations at the required frequency as outlined by the EPlan and EPIPs.

The inspectors reviewed the licensee's audits of the emergency preparedness program conducted since the last inspection and verified that a system was in place for tracking and resolving audit findings. The inspectors also reviewed records associated with EOC activations which required the implementation of the EPlan, and drills that occurred since the last emergency preparedness inspection. The inspectors verified that problems or deficiencies identified, that were associated with the implementation of the EPlan, were documented during the critique process and detailed in the licensee's corrective action system.

b. Conclusion

No violations of significance were identified.

C. Special Topics

1. Follow-up on Previously Identified Issues

a. (Closed) Licensee Event Report (LER) 2016-001, Event Number (EN) 51660, "Plating Room Fire"

On January 17, 2016, a fire occurred in the mechanical factory at the Westinghouse Commercial Fuel Fabrication Facility (CFFF) plant. The fire occurred in an area where there was no radioactive material present. Specifically, the fire was in an area where metal plating equipment was used. The fire was a result of a malfunction of a furnace heating element. In response to the fire, the licensee conservatively declared an Alert for a fire which the IC believed would potentially not be extinguished within 15 minutes, as required by the site EPlan. On January 21, 2016, the licensee retracted this event on the bases that the fire was extinguished within 15 minutes.

During the routine fire protection and emergency preparedness inspections, conducted February 1-4, 2016, inspectors independently reviewed the circumstances associated with the fire in the plating room and implementation of the EPlan. The inspectors confirmed that the fire was extinguished within 15 minutes and that no radioactive material was impacted. The inspectors also determined the EPlan was implemented as required and in accordance with a Local Response Event which was the proper event classification for the plating room fire, per the site EPlan. There were no safety impacts to IROFS, the environment, or plant personnel. This item is consider closed.

D. Exit Meeting

The inspection scope and results were presented to members of the licensee's staff at various meetings throughout the inspection period and were summarized on February 4, 2016, to Bruce Phillips and staff. The inspectors received no dissenting comments from the licensee. Proprietary and security-related information were discussed but not included in the report.

SUPPLEMENTAL INFORMATION

1. KEY POINTS OF CONTACT

<u>Name</u>	<u>Title</u>
G. Byrd	Licensing Engineer
L. Berry	Fire Protection Engineer
R. Bates	Maintenance Manager
S. Carver	Emergency Preparedness Manager
T. Graves	Conversion Engineer
J. Howell	Environmental, Health and Safety (EH&S) Manager
C. Kneece	Industrial Health & Safety Manager
N. Parr	Licensing Manager
R. Rivers	Conversion Trainer
S. Weathers	Conversion Engineer
D. Wilkerson	Team Manager, Conversion

Other licensee employees contacted included engineers, technicians, production staff, and office personnel.

2. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Closed

70-1151/2016-001 LER Event Number 51660, Plating Room Fire
(Paragraph C.1.a)

3. INSPECTION PROCEDURE USED

IP 88020, Operational Safety
IP 88055, Fire Protection
IP 88050, Emergency Preparedness

4. DOCUMENTS REVIEWED

Records:

PM 81030, Electric Tumble Blender Lubrication - Oil Change, reviewed October 13, 2014

OM 81201, SI-Safety Items, ADU Line 1, reviewed February 5, 2014

OM 81203, SI-Safety Items, ADU Line 3, reviewed February 10, 2014

OM 81204, SI-Safety Items, ADU Line 4, reviewed February 10, 2014

PM 81109, SI-Safety, Seismic SSC Verification, Reviewed 01/11/16

CCF 15235, Jockey Pump for Fire Water Loop, dated May 12, 2015

EHS-Audit-13-9, EH&S Audit for the Fire Safety Program, dated June 20, 2013

WO #676171, Annual Preventive Maintenance (PM) – Fire Pump 2, dated December 4, 2015

WO #707643, 26 Week PM – Fire Alarm System, dated November 10, 2015

WO #672597, Annual PM – Fire Alarm System, Chemical Area and Map Line, dated December 15, 2014

WO #709070, Annual PM – Hot Oil Room Integrity Inspection, dated November 12, 2015

WO #712197, Annual PM – Fire Pump 2, dated December 4, 2015

WO #711902, Annual PM – Fire Pump 1, dated December 7, 2015
 Emergency Operations Center Refresher Training – Emergency Command Staff, 2015
 Emergency Preparedness Internal Audits, 2015
 Fire Brigade Emergency Response Training, 2015
 Fire Engine Inventory, October 2015
 SCBA Units, July 2015
 Monthly Inspection of Emergency Radio and Telephones, September 2015

Work Orders:

650296, 665274, 668484, 669004, 674083, 681310, 681381, 681765, 687380,
 690689, 693558, 693996, 695529, 701680, 702718, 706100, 710584, 712134,
 713015, 713920

Procedures:

CA-007, Corrective and Preventive Action, Revision (Rev.) 33, dated December 4, 2015
 RA-121, Redbook Internal Reporting System, Rev. 13, dated August 13, 2015
 COP-810601, Spiked UN and Acidic Uranium Solutions Processing V-x06A, Rev. 30,
 dated March 14, 2013
 COP-810106, UF6 Cylinder Heel Education for Lines 1-4, Rev. 33, dated August 10, 2015
 COP-810201, Hydrolysis Operation, Rev. 40, dated November 11, 2015
 COP-810103, UF6 Bay Condensate Removal System, Rev. 23, dated June 4, 2012
 COP-810101, UF6 Piping and Valves Leak Check, Rev. 51, dated August 10, 2015
 COP-816021, UF6 Autoclave for Line 5, Rev. 2, dated June 25, 2010
 COP-816022, Maintenance or Replacement of Valves on UF6 Lines for CL5, Rev. 0,
 dated June 29, 2015
 COP-810100, Nitrogen Purging UF6 Lines for Lines 1-4, Rev. 8, dated August 10, 2015
 COP-810098, UF6 Cylinder Installation and Removal, Rev. 45, dated November 25,
 2015
 COP-810099, UF6 Vaporizer, Rev. 29, dated August 10, 2015
 MCP-203351, Verification of Instrumented Safety Function ADUHYD-908 / ADUVAP-
 110, ADUHYD-912 / ADUVAP-147: V-x02 High Level, Rev. 10, dated August 10, 2015
 MCP-203377, Verification of Instrumented Safety Functions ADUVAP-121, ADUVAP-
 930, ADUVAP-116, ADUVAP-936, dated March 26, 2015
 MCP-203382, Verification of Instrumented Safety Function ADUVAP-115 AUTOCLAVE-
 Vx01 Low Pressure, Rev. 3, dated October 4, 2011
 TR-300, Unload UF6 Cylinders, Rev. 25, dated January 7, 2016
 CF-81-028, Conversion Field Data Checklist (Hot Oil Systems 3 and 4), Rev. 12, dated
 October 15, 2015
 COP-814001, Hot Oil Systems, Rev. 30, dated February 25, 2014
 FSS-002, Design and Implementation of Fire Alarm Systems, Rev. 10, dated March 5,
 2015
 MCP-108111, Regulatory Compliance for Maintenance and Contractors, Rev. 26, dated
 September 24, 2015
 MCP-108232, Maintaining Integrity of Fire Barriers, Rev. 2, dated August 6, 2015
 SEP-004, Emergency Equipment and Supplies, Rev. 11, dated September 20, 2013
 SYP-207, Cutting, Welding, and Hot Work, Rev. 28, dated April 29, 2015
 SYP-300, Housekeeping, Rev. 21, dated December 10, 2015
 SYP-305, Fire Watch Safety, Rev. 7, dated November 7, 2013
 SYP-306, Fire Alarm, Criticality System Impairment, and Fire Pump Reporting, Rev. 14,
 dated December 6, 2013
 CA-007, Corrective and Preventive Action, Rev. 33, dated December 4, 2015
 ER-003, Corrective Action Process, Rev. 0, dated September 4, 2008

RA-106, Internal Program, Formal Compliance, Supplier and External Audits, Rev. 31, dated June 19, 2015

RA-123, Qualification of EH&S Audit Personnel, Rev. 8, dated June 19, 2015

SEP-001, Emergency Response Organization, Rev. 7, dated May 17, 2013

SEP-002, Classification, Rev. 6, dated March 13, 2014

SEP-003, Emergency Response Team, dated May 16, 2013

SEP-004, Emergency Equipment and Supplies, Rev. 11, dated September 20, 2013

SEP-005, Evacuation, Accountability and General Response, Rev. 6, dated March 19, 2015

SEP-007, Notification Guidelines for NRC and other Agencies, Rev. 39, dated January 14, 2016

SEP-018, Emergency Operations Center Operations, Rev. 2, dated May 16, 2013

SEPF-013-1, Post Incident Analysis (PIA), Rev. 3, dated March 27, 2015

Condition Reports Review:

Redbook # 70249

100315786

100318180

100318475

100342314

100347866

100314977

100342625

100141384

100308039

Other Documents:

FHA-13-001, Fire Hazard Analysis for Westinghouse Columbia Fuel Fabrication Facility

Drawing #510F01PP01, Fire Protection and Sprinkler System Over-all Plan, Rev. 20

Emergency Operations Center Refresher Training

Off-site Support Letter of Agreement/Memorandum of Understanding:

National Nuclear Security Administration, dated September 9, 2014

Columbia Fire Department, dated February 24, 2015

Richland County EMS, dated February 24, 2015

Richland County Sheriff, dated September 5, 2014

Palmetto Health, dated March 18, 2015

DHEC, dated March 19, 2015