



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

January 23, 2019

EA-16-173  
EN53746

Mr. Mike Annacone  
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 NUMBER 70-1151/2018-005

Dear Mr. Annacone:

This letter refers to inspections conducted from October 1 through December 31, 2018, at the Westinghouse Columbia Fuel Fabrication Facility in Hopkins, SC. The purpose of the inspections was to determine whether activities authorized under the license and implementation of programs and procedures in the areas of Radiological Controls and Facility Support were conducted safely and in accordance with Nuclear Regulatory Commission (NRC) requirements. The enclosed inspection report presents the results of this inspection. At the conclusion of the inspections, the inspectors discussed the findings with you and members of your staff during an exit meeting held on November 14 and November 29, 2018.

Based on the results of these inspections, the NRC has determined that no violations of more than minor 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 contact Tom Vukovinsky of my staff at (404) 997-4622.

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 70-1151/2018-005  
w/Supplemental Information

cc:  
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Environment, Health and Safety  
Electronic Mail Distribution

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SUBJECT: WESTINGHOUSE ELECTRIC COMPANY – NUCLEAR REGULATORY  
COMMISSION INTEGRATED INSPECTION REPORT NUMBER 70-1151/2018-005

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U. S. NUCLEAR REGULATORY COMMISSION  
REGION II

Docket No.: 70-1151

License No.: SNM-1107

Report No.: 70-1151/2018-005

Licensee: Westinghouse Electric Company

Facility: Columbia Fuel Fabrication Facility

Location: Hopkins, SC 29061

Dates: October 1 through December 31, 2018

Inspectors: R. Gibson, Senior Fuel Facility Project Inspector, (Paragraph B.2)  
T. Vukovsky, Senior Fuel Facility Inspector, (Paragraphs C.1, C.2)  
T. Grice, Senior Fuel Facility Inspector, (Paragraph A.1)  
N. Staples, Senior Project Engineer, (Paragraph C.1)  
P. Glenn, Fuel Facility Inspector, (Paragraph B.1)  
T. Sippel, Fuel Facility Inspector, (Paragraph A.1, C.3)

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

Enclosure

## **EXECUTIVE SUMMARY**

Westinghouse Electric Company  
Columbia Fuel Fabrication Facility  
Nuclear Regulatory Commission Integrated Inspection Report 70-1151/2018-005  
October 1 through December 31, 2018

The inspection was conducted by Nuclear Regulatory Commission (NRC) regional inspectors during normal shifts in areas of radiological controls 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 violations of more than minor significance identified during the inspection.

### **Radiological Controls**

- In the area of Radiation Protection, no violations of more than minor significance were identified. (Paragraph A.1)

### **Facility Support**

- In the area of Plant Modifications, no violations of more than minor significance were identified. (Paragraph B.1)
- In the areas of Radioactive Waste Processing, Handling, Storage and Transportation, no violations of more than minor significance identified during the inspection. (Paragraph B.2)

### **Other**

- Confirmatory Order/Enforcement Action # 16-173, Area Needing Improvement (ANI) from Inspection Report (IR) 2017-001 closed. (Paragraph C.1)
- Supplemental inspection activities associated with the ANI from IR 2017-001 closed. (Paragraph C.2)
- Licensee Event Report 2018-003-00: Contaminated Worker Requiring Medical Treatment (EN53746) closed. (Paragraph C.3)

### **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 (UF<sub>6</sub>) 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. Radiological Controls**

##### **1. Radiation Protection (Inspection Procedure 88030)**

###### **a. Inspection Scope**

The inspectors reviewed the Annual Radiation Protection Program Review, quarterly presentations, and interviewed licensee health physics (HP) staff to verify that the program was being documented in accordance with 10 CFR 20.1101(a) and implemented in accordance with the license requirements related to the evaluation of doses to personnel, dose trends, and the establishment of As Low As Reasonably Achievable (ALARA) goals and metrics. The inspectors reviewed organizational charts and interviewed licensee management to verify that the radiation protection (RP) program's function and responsibilities remained independent from operations as required by Section 5.2.4 of the license application. The inspectors reviewed changes in the radiation protection program organization to verify that the new managers either met the criteria and qualification requirements specified by Section 2.1.1.3(e) of the license application, or that the licensee compensated for any missing qualifications as required by Section 2.1.1.3(e) of the license application when needed.

The inspectors reviewed changes to procedure (e.g., RA-203, General HP Rules and Recommendation) to verify that safety-significant changes to procedure was in compliance with regulatory and license requirements. The inspectors reviewed the procedures listed in Section 4 of the Attachment to verify precautions and controls specified in the procedures were consistent with regulations and selected sections of the license application (including, 5.2.25, 5.2.26, 5.2.28, and 5.2.29). The inspectors also reviewed a sampling of radiation protection procedures to review revisions and verify that changes were made in accordance with the licensee's Configuration Management program described in Sections 3.1 and 4.1 of the license application. Specifically, the inspectors interviewed the licensee HP manager to verify that changes were reviewed and approved by the appropriate management and implemented in accordance with the license application.

The inspectors reviewed the Annual Radiation Protection Program Review, Calendar Year 2017, dated November 14, 2018, the quarterly ALARA reports, and interviewed licensee RP managers and engineers to verify that the RP program performance was being reviewed, at least annually, for content and implementation in accordance with 10 CFR 20.1101(c). The inspectors reviewed these documents to verify that the dose limits were routinely monitored, that doses were within the regulatory limits established in 10 CFR 20.1201, and that the licensee's ALARA programs were implemented in accordance with the requirements in Sections 5.2.3 through 5.2.7 of the license application. The inspectors further reviewed audit reports (including, EHS-AUDIT-16-2, EHS-AUDIT-18-11), procedures (including, RA-106, ROP-05-055, ROP-05-066) and

interviewed licensee staff to verify that the licensee conducted audits and self-assessments of the program in accordance with the requirements of Section 5.2.67 of the license application.

The inspectors reviewed corrective action program (CAP) and Redbook items to determine whether the licensee was identifying radiation protection issues at an appropriate threshold and entering them into the CAP as required by Section 3.8 of the license application. The inspectors reviewed selected events related to the RP to verify that the licensee considered the extent of condition, previous occurrences, and when required, identified corrective actions to correct the problem and prevent recurrence. The records reviewed included those listed in Section 4 of the Attachment. The inspectors also evaluated selected events to verify that the licensee complied with the reporting requirements of 10 CFR Part 20 and Part 70. The inspectors reviewed entries written in response to surveys detecting high levels of contamination to verify that the licensee was taking appropriate action (including posting the area, restricting access, cleaning the area, and fixing the source of the contamination) as required by licensee procedures (including RA-203 and ROP-05-055).

The inspectors reviewed training material and documents (including, general employee training, respirator training, and operator qualifications) to verify that the training was in compliance with license requirements for frequency and content as required by 10 CFR 19.12; 10 CFR 20, Subpart H; and Section 5.2.11 of the license application. As part of this review, the inspectors specifically reviewed training related to the use of respirators and training related to response to unusual events to verify that workers were instructed in radiological protective measures used to minimize exposure, in the purposes and functions of protective devices employed, and in the appropriate response to warnings of unusual events or malfunctions that may involve exposure. The inspectors also interviewed operators and radiation protection technicians to determine if workers understood RP related hazards and procedural requirements related to their jobs and if they had opportunities to discuss rad safety concerns with the RP staff.

The inspectors reviewed selected radiological work permit (RWPs), including RWP 2018-05 and RWP 2018-06, to verify that the licensee complied with Sections 5.2.9 and 5.2.11 of the licensee application for training of operators working in the area. The inspectors also observed radiation technicians release work areas upon task completion and interviewed licensee radiation technicians and RP management to verify that procedural and license requirements for releasing work areas were being implemented.

The inspectors reviewed recent calibration records of friskers, gamma detectors, and alpha/beta detectors to verify that the licensee had a system to identify instruments and equipment used for quantitative radiation measurements and when they are due for periodic calibration or functional testing in accordance with 10 CFR 20.1501(c). The inspectors interviewed licensee staff to verify that the licensee tracks individual instruments to determine if their performance was in accordance with license requirements/licensee procedures. The inspectors observed checks of personnel monitoring stations, and the use of other selected instruments (including friskers, and alpha/beta detectors) to verify that there were no conditions that could impact the sensitivity of the detectors, and (as applicable) that they were set to alarm at the set points specified in the licensee procedures. The inspectors reviewed licensee performed audits of offsite vendors or companies providing calibration services (EHS-AUDIT-16-3, EHS-AUDIT-16-11) to verify that the licensee was ensuring that the vendors were implementing license requirements for calibration.

The inspectors observed licensee staff taking smears and air samples, reviewed survey records, and interviewed licensee staff to verify that the licensee performed periodic scheduled radiation and contamination surveys in accordance with licensee procedures (including, ROP-05-001, ROP-05-055, and ROP-05-067) to meet the requirements of 10 CFR 20.1501(a) and (b). The inspectors reviewed, ROF-05-046-1, "Inventory and Leak Test of Sealed Sources," performed August 13, 2018 and February 15, 2018, to verify that the licensee was leak testing the sealed sources twice a year, and that they were not leaking, as required by Section 12.1.2 of the license application.

The inspectors toured work and storage areas in the contamination controlled area to verify that the licensee posted the areas in accordance with 10 CFR 20.1902 (as applicable), and that radiological signs and postings accurately reflected radiological conditions within the posted area. The inspectors observed areas where radioactive material containers were stored and handled to verify that the areas were posted in accordance with Sections 12.2.2 and 5.2.36 of the license application.

The inspectors reviewed the Annual Radiation Protection Program Review, Calendar Year 2017, and interviewed licensee RP staff to verify that doses were less than the applicable regulatory limits. Specifically, the maximum Total Effective Dose Equivalent results for 2017, were reviewed. Likewise, the inspectors reviewed the Annual Radiation Protection Program Review to verify that the licensee limited the soluble uranium intake to less than the 10 CFR 20.1201(e) chemical toxicity limit. The inspectors reviewed these dose records to verify that these records were being maintained in accordance with 10 CFR 20.2106.

The inspectors reviewed the bulletin board in the cafeteria where NRC Form 3, Notice to Employees was posted to verify that the licensee was posting Notices in accordance with 10 CFR 19.11.

b. Conclusion

No violations of more than minor significance were identified.

B. Facility Support

1. Plant Modifications (Inspection Procedure 88070)

a. Inspection Scope and Observations

The inspectors reviewed the licensee's configuration management program to verify compliance including Chapter 3.1, "Configuration Management," of the license application, and applicable portions of 10 CFR 70 requirements. The inspectors reviewed configuration management program documents, performed walkdowns of plant modifications, and conducted interviews with licensee managers, engineers, and staff to verify that the licensee had established an effective configuration management program, in accordance with the aforementioned requirements; to evaluate, implement, and track plant modifications to the site that could affect safety.

The inspectors evaluated changes to the configuration control program procedure since the last NRC plant modifications inspection to verify that program changes were consistent with license requirements. Additionally, the inspectors reviewed program procedures to verify that the licensee's configuration control program had provisions to



ensure pre-job planning and preparation of plant modification design packages as required. The inspectors also reviewed the configuration control program to verify that provisions existed to ensure that plant modifications did not degrade performance capabilities of items relied upon for safety (IROFS) or other safety controls that are credited as a part of the safety design basis.

The inspectors reviewed a selection of plant modification packages (listed in Section 4 of the Attachment) that were implemented since the last plant modification inspection. The inspectors reviewed the packages and interviewed licensee staff to verify that the change packages were prepared, reviewed, and completed in accordance with approved plant procedures as required. Selected change packages were also reviewed and field inspected to verify that applicable post maintenance installation and testing requirements were identified and appropriately implemented. Additionally, selected packages were reviewed to verify that impacted operator training was identified and updated and that operators were trained prior to returning affected equipment and or systems back to service.

The inspectors reviewed the selected change packages to verify that the licensee addressed the impacts of modifications to the Integrated Safety Analysis (ISA), ISA Summary, and other safety program information developed in accordance with 10 CFR 70.62 as required. The inspectors also reviewed the change packages to verify that the licensee conducted evaluations to determine whether NRC pre-approval was necessary for prior to a plant modification as required by 10 CFR 70.72.

The inspectors observed a Configuration Management Risk Assessment Board Meeting change review board meeting to verify that the meeting was conducted as required by procedure TA-500-10. The inspectors also reviewed selected configuration management-related CAP entries to verify that configuration control issues were promptly identified, entered into the CAP, and resolved as required. The CAP entries reviewed included those listed in Section 4 of the Attachment.

b. Conclusion

No violations of more than minor significance were identified.

2. Radioactive Waste Processing, Handling, Storage and Transportation (Inspection Procedure 88035)

a. Inspection Scope

The inspectors evaluated whether the licensee had established, maintained, and implemented procedures in accordance with license requirements and quality assurance programs (QAPs) in order to verify compliance with the requirements of 10 CFR Part 20 and 10 CFR Part 61, as applicable, to low-level radioactive waste form, classification, stabilization, and shipment manifests/tracking.

The inspectors reviewed procedures for the incinerator operation and the combustible trash collection, and observed a chief chemical operator processing combustible radioactive trash charging the incinerator as required by procedure, COP-830210, Revision (Rev.) 45, dated August 23, 2018 (IROFS INCIN-105, 106, 108, 109, 128, and 129). The inspectors verified that operators were familiar with their responsibilities as they performed their tasks in accordance with the on-site procedures.

The inspectors reviewed the QAP for radioactive waste management in order to verify that the licensee was performing the required audits as per 10 CFR 20, Appendix G. The inspectors verified that the findings from these audits were entered into the licensee's CAP for resolution as required by the license application.

The inspectors reviewed the licensee's program for classifying low-level radioactive waste and mixed waste in order to verify compliance with 10 CFR 61.55 and 10 CFR 20 Appendix G. Specifically, the inspectors reviewed the licensee's program for classifying waste as well as records relating to waste since the last inspection. The inspectors reviewed the licensee's program for ensuring that waste was properly packaged and verified that the waste form met the requirements of 10 CFR 61.56 and 10 CFR 20, Appendix G. The inspectors performed visual examinations of the waste storage areas both inside the UF<sub>6</sub> bay areas, and the waste storage areas located outside of the facility. The inspectors reviewed inventories and inspected a sample of waste containers stored in sea-land shipping containers in the back of the facility. The inspectors verified that the licensee was in compliance with federal regulations and the license.

The inspectors reviewed the licensee's procedures for labeling waste shipments and tracking radioactive waste. The inspectors reviewed the procedures in order to verify that they were in accordance with license requirements and that radioactive waste was properly labeled and specified actions to be taken should the shipments not reach the intended destination in the time specified. Additionally, the inspectors reviewed the procedures for placement, inspection, and repackaging of radioactive waste. The inspectors reviewed radioactive waste shipment records since the last inspection and verified that the licensee was labeling and tracking the waste in accordance with the license application.

The inspectors performed walk-downs of selected radioactive material storage areas (i.e., UF<sub>6</sub> Bay areas and the outside areas with sea-land containers). The storage areas had required postings to ensure that the proper material was being stored in the area and the material was safely stored in accordance with the nuclear criticality safety requirements. The containers were properly labeled to reflect their contents and were in good physical condition. The inspectors observed production personnel carrying waste to the disposal areas, to verify that specific wastes were being added to the correct containers. Additionally, the inspectors observed a chemical production operator performing daily checks and calibrating the dry and the wet trash collection scales as required by procedure, COP-836033, Combustible Trash Collection Scale System, Rev. 20, dated November 17, 2016 (IROFS Trash-101, 102, 103, and 106; and IROFS Wet-104, 105, 106, 107, and 108).

b. Conclusion

No violations of more than minor significance were identified.

C. Other Topics

1. Nuclear Safety Culture (Inspection Procedures 88161, 93100, 95003)

a. Inspection Scope and Observations

The inspectors conducted a focused supplemental inspection in the areas of nuclear safety culture (NSC) due to an Area Needing Improvement (ANI) for a weakness identified in Westinghouse's Columbia Fuel Fabrication Facility's (CFFF) NSC. The ANI is detailed in Inspection Report (IR) 70-1151/2017-001 dated March 6, 2017 (ML17067A134).

The inspectors reviewed the results of CFFF's most recent NSC assessment dated October 22, 2018 (CAP 2018-17942). The inspectors noted that CFFF's Nuclear Safety Culture Monitoring Panel reviewed the assessment and conducted a gap analysis of the results which have been entered into the facility's CAP for evaluation. The inspectors noted that the latest assessment was not required by the confirmatory order (CO), however, it was done prior to the CO required assessment to evaluate how corrective actions implemented by the facility have impacted NSC. The inspectors noted that in all ten NSC traits assessed, more positive and less negative results were achieved in every trait compared to the previous NSC assessment. The CO required NSC assessment is due by August 2019 plus or minus six months.

The inspectors reviewed data collected by the Employee Concerns Program (ECP) over the last year and noted that there was a rise in the number of ECP complaints being addressed by CFFF. The inspectors noted that there has been a full time ECP representative on site for the last year and that anonymous ECP drop boxes have been provided at various locations throughout the facility which may attribute to the increase in ECP complaints at the site. The inspectors noted that the ECP was investigating and evaluating concerns in a timely manner, and that they were actively working with senior management to resolve concerns.

The inspectors interviewed multiple employees including senior management, line management, and line personnel to assess the Safety Conscious Work Environment at the facility in accordance with the questions listed in Inspection Procedure (IP) 88161, "Corrective Action Program Implementation at Fuel Cycle Facilities," Appendix A. The inspectors noted that the overall environment at the facility was healthy and that workers felt free to raise nuclear safety concerns through the various methods available to them (i.e., line supervisors, senior management, CAP, ECP, NRC, etc.)

b. Conclusion

No violations of more than minor significance were identified. The results of this inspection complete the supplemental inspections required by the ANI detailed in IR 2017-001. A previous supplemental inspection was completed on December 22, 2017, for the other portions of the ANI which required inspection (IR 2017-009, ML17356A091).

## 2. Review of Confirmatory Order Section V Item 6 (Inspection Procedure 88020)

### a. Inspection Scope

The inspectors reviewed the licensee's actions regarding CO Section V, Item 6 (ML17221A112), which requires the licensee to develop and implement a criticality safety basis/IROFS database to maintain the proper flow down of the safety basis into implementing procedures.

The licensee created and implemented a new database called Job Assistant for Navigating & Using System, Structures and Components (SSCs) (JANUS). As part of the root cause for the S-1030 scrubber event, the safety basis documentation was identified as being archived in different repositories and they were disjointed. JANUS was created to allow end users to visualize both upstream and downstream documents affecting SSCs in a single interconnected relational database. This database was developed to address some the following shortcomings:

- SSCs were listed in multiple sketches with different owners with different definitions,
- SSCs were identified for different areas of the facility with different procedures listed,
- Revision errors (typographical, cut and paste, etc.) were harder to catch since the SSCs were in multiple sketches, and
- Similar SSCs may have different names in different sketches.

In addition to correcting the above, the inspectors noted that the new database will allow users to find corresponding procedures, open related documents, and create corrective action program entries. Planned future enhancements include incorporating drawings, flagging SSCs that are reportable to the NRC, and incorporation of criticality safety postings, to list a few. Implementation of this database was through the licensee's Employee Training and Procedures System (ETAPS) for the required personnel. The inspectors noted that the use of this database will be monitored through the effectiveness reviews conducted for the S-1030 root cause evaluation.

### b. Conclusion

The licensee has implemented a criticality safety basis/IROFS database to maintain the proper flow down of the safety basis into implementing procedures. Based on a review of the training presentation and the new database, the NRC concludes that Westinghouse has met the requirements as stated in the CO, Section V, Item 6. This item is considered closed.

## 3. Event Follow-up

### a. Licensee Event Report (LER) 2018-003-00: Contaminated Worker Requiring Medical Treatment (Event Notification (EN) 53746)

On November 30, 2018, the licensee made a 24-hour report under 10 CFR 70.50(b)(3) for unplanned medical treatment at a medical facility of an individual with spreadable radioactive contamination on the operator's clothing or body. On November 29, 2018, an operator was sent to the hospital for observation following a potential HF exposure.

The operator's pants leg was splashed with solution containing HF while responding to a spill from a passive overflow. Before leaving the contaminated area the operator was surveyed and radioactive material contamination was detected on one hand. The contamination was above free release criteria and was unable to be removed by normal decontamination methods. The licensee placed a glove around the contaminated hand before transferring the operator. The licensee discussed the details of the event and their completed and planned corrective actions in LTR-RAC-18-86, Westinghouse 30 Day Follow-Up Report (EN 53746), dated December 13, 2018.

During the week of November 26, 2018, the inspectors interviewed the effected operator and licensee staff concerning the event and the licensee's response. The licensee had documented the event in their CAP IR #2018-19356 and initiated an apparent cause analysis. The licensee opened IR #2018-19828 to find out why the operator's hand was contaminated. During the week of November 26, 2018, the inspectors observed the licensee coming out of a safety stand down that had been initiated in response to the spill and potential HF exposure. In response to this event the licensee took action to reduce or mitigate the risk associated with spills and leaks, provided refresher training on personnel monitoring requirements, reviewed the expectations for performing personal safety assessments with all employees, and halted on the job training of new employees pending development of corrective actions related to hazard identification and risk recognition/mitigation, spill response and personnel monitoring.

b. Conclusion

The situation described above resulted from a failure to follow the licensee's requirements for personnel protective equipment (PPE). Specifically, the type of pants worn by the individuals responding to the spill were not appropriate for the chemical hazard. This failure to use the required PPE was screened using the guidance of IMC 0616 Appendix B (RP Example h) and determined to be a minor violation that is not subject to enforcement action in accordance with the NRC Enforcement Policy. This item is 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 November 14, 2018, to E. Wills and staff, and on November 29, 2018, to Mike Annacone and staff. No dissenting comments were received from the licensee. Proprietary information was discussed but not included in the report.

## **SUPPLEMENTAL INFORMATION**

### **1. KEY POINTS OF CONTACT**

<u>Name</u>	<u>Title</u>
G. Anderson	Chemical Operator, URRS
M. Annacone	Manager, Columbia Plant
A. Brown	Process Engineer, URRS
G. Byrd	Licensing Engineer
E. Cauley	Engineer Technician
G. Couture	Licensing Engineer
P. Creech	Chemical Operator, URRS
K. Drafts	Chief Chemical Operator, URRS
M. Eddy	Process Engineer, URRS
J. Freeman	Maintenance Mechanic
A. Hansen	Process Engineer, URRS
C. Hansen	Maintenance Supervisor
J. Jordan	Process Engineer, URRS
R. Meddaugh	Chief Chemical Operator, URRS
A. Pearson	RP Manager
M. Reynolds	Chemical Operator, URRS
R. Rossiter	Chief Chemical Operator, URRS
R. Ruiz	URRS Team Manager
S. Salonich	Maintenance Mechanic
W. Hurlong	Configuration Control Assistant
K. Lundy	Configuration Control Manager
K. Smith	Engineer
D. Strimple	Engineer
D. Wagoner	RP Engineer

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

### **2. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED**

#### Closed

EN 53746, LER 2018-003-00	LER	Contaminated Worker Requiring Medical Treatment.
Supplemental inspections required by IR 2017-001	ANI	NRC completed a supplemental inspection in the areas of NSC due to an ANI that was described in IR 70-1151/2017-001 dated March 6, 2017 (ML17067A134).
CO Section V, Item 6	CO	Implementation of a criticality safety basis/IROFS database to maintain the proper flow down of the safety basis into implementing procedures.

### 3. **INSPECTION PROCEDURES (IP) USED**

IP 88020, Operational Safety  
 IP 88030, Radiation Safety  
 IP 88035, Radioactive Waste Processing, Handling, Storage, and Transportation  
 IP 88070, Plant Modifications (Annual)  
 IP 88161, Corrective Action Program (CAP) Implementation at Fuel Cycle Facilities  
 IP 93100, Safety-Conscious Work Environment Issue of Concern Follow-up  
 IP 95003, Supplemental Inspection for Repetitive Degraded Cornerstones, Multiple Degraded Cornerstones, Multiple Yellow Inputs or One Red Input

### 4. **DOCUMENTS REVIEWED**

#### Records:

CCF 15214, Optional Modification to Conversion Area Calciner Off-Gas Scrubber Crossover Piping  
 CCF 15432, Fire Tank #2 Auto Maintain Fill Loop  
 CCF 15520, Replace BPCS float switch on Wash Tanks with Vibratory Probes  
 CCF 15568, Install V-412 Surge Tank in Conversion  
 CCF 15581, Replace XV-1087A and XV-1087B Automatic Valves and Actuators  
 CCF 15618, Re-route tubing to PT-S-941E  
 CCF 15640, Modification to Vaporizer V-401B to Address Steam Leak  
 CCF 15652, Install Leak Testing Port in UN line From FL-748A/B in URRS  
 CCF 15653, Upgrade XV-S-748A and XV-S-748B to Align with Recommended Plant Standards  
 CCF 16083, Install a Fire Barrier Between the Wall and the Thermal Enclosure at Process Air Heater H-1411 in Cylinder Recertification  
 CCF 16099, Install port to facilitate leak testing of ADU waste valves.  
 CCF 16215, Change Material of Construction for Vaporizer Hold Down Bolt Washers to Grade 8 Steel  
 CCF 16317, Replace PRV in hot oil system  
 CCF 16345, Installation of UPS Power Feed for ADU Sintering Furnace PLC Room  
 CCF 16427, Ventilation System for ECG Machine  
 CCF 16523, Allow modification to components in the RH-1070 Hood and Extension Hood  
 CCF 16563, S-958 Process Water Air Gap & Level Control  
 CCF 16687, Scrap Cage Blue M Oven #1 Filter Pressure Monitoring  
 CCF 16690, Scrap Cage Blue M Oven #2 Filter Pressure Monitoring  
 CCF 17230, HF Tank (T-1174/1191) Replacement - Mechanical Scope  
 CCF 17240, Install HF T-1174 Electrical Controls  
 Annual Radiation Protection Program Review, Calendar Year 2017, dated November 14, 2018  
 EHS-AUDIT-16-2, Formal Compliance Audit, Rev. 1  
 EHS-AUDIT-16-3, Supplier Audit of Thermo Eberline, LLC, dated April 8, 2016  
 EHS-AUDIT-16-11, Supplier Audit of Mirion Technologies, Inc., dated September 22, 2016  
 EHS-AUDIT-18-11, Regulatory Component Audit for the Radiation Safety Program, dated October 25, 2018  
 EHS-OCC-17-40, Organizational Change Control Review of EHS Operations Team Manager, dated September 29, 2017  
 EHS-OCC-17-43, Organizational Change Control Review of EHS Operations Process Analyst, dated September 29, 2017

EHS-OCC-17-57, Organizational Change Control Review of Health Physics Operations Team Manager, dated December 15, 2017  
 EHS-OCC-17-62, Organizational Change Control Review of Health Physics Operations Team Manager, dated December 19, 2017  
 LTR-EHS-17-83, CY 2017 3<sup>rd</sup> Quarter ALARA Report, dated December 15, 2017  
 LTR-EHS-18-23, CY 2017 4<sup>th</sup> Quarter ALARA Report, dated March 28, 2018  
 LTR-EHS-18-46, CY 2018 1<sup>st</sup> Quarter ALARA Report, dated August 10, 2018  
 LTR-EHS-18-67, CY 2018 2<sup>nd</sup> Quarter ALARA Report, dated November 14, 2018  
 LTR-RAC-18-86, Westinghouse 30 Day Follow-Up Report (EN53746), dated December 13, 2018  
 RAF-125-14, Environmental Health and Safety Operations HP Technician Radiation Protection Training Checklist, Rev. 6, dated July 12, 2018  
 RAF-125-21, Environmental Health and Safety Health Physics Operations Team Manager Training Checklist, Rev. 1, dated June 26, 2014  
 ROF-01-025-2, TENNELEC #3, Tennelec Calibration Record, Various Dates  
 ROF-01-025-2, TENNELEC #8, Tennelec Calibration Record, Various Dates  
 ROF-05-014-10, Bi-Weekly Contamination Survey of Operating Equipment Conversion Area, performed November 6, 2018  
 ROF-05-014-11, Bi-Weekly Contamination Survey of Operating Equipment Pellet Area, performed November 6, 2018  
 ROF-05-014-12, Bi-Weekly Contamination Survey of Operation Equipment URRS UF6 Bay Area, performed November 6, 2018  
 ROF-05-014-13, Bi-Weekly Contamination Survey of Operating Equipment Incinerator, Solvent Extraction, & Dissolver Areas, performed November 28, 2018  
 ROF-05-014-16, Miscellaneous Contamination Survey, Various Dates  
 ROF-05-046-1, Inventory and Leak Test of Sealed Sources, Rev. 1, performed August 13, 2018 and February 15, 2018  
 ROF-07-001-2, Check List for Health Physics Response to Contaminated Injury/III Victim, completed November 19, 2018  
 ROP-01-028-1, Flowmeter Calibration Verification for A Board, Rev. 7, performed July 3, 2017  
 RWP 2018-05, Inspect and cleanout S-958 8A Scrubber on the roof, dated June 4, 2018  
 RWP 2018-06, Apply new roof material over existing roof under Conversion platform, dated July 3, 2018  
 TRN-002, Respirator Training Guide, Rev. 7  
 TRN-006, Supplied Air Respirator Training, Rev. 4  
 CCF 16467  
 CCF 16468  
 CCF 17155  
 CCF 17036  
 Shipping Manifest for Zirconium in Sea Land containers  
 Shipping Manifest for Soil excavated from the Boiler location

Procedures:

TA-500, Columbia Manufacturing Plant Configuration Control, Revs. 28D, 32, 33, 37 and 36  
 TA-500-10, Configuration Management Risk Assessment Board Meeting, Rev. 2  
 RA-104, Regulatory Review of Configuration Change Authorization, Rev. 31  
 RA-106, Regulatory Component Audits at the Columbia Fuel Fabrication Facility, Rev. 35, dated August 30, 2018  
 RA-108-9, Ventilation & Scrubbing Safety Significant Controls, Rev. 77  
 RA-203, General HP Rules and Recommendation, Rev. 32, dated March 1, 2018



RA-207, Radiation Work Permit, Rev. 23, dated February 26, 2015  
 RA-126, Layers of Protection Analysis (LOPA), Rev. 12  
 COP-836030, Ultrasonic Cleaning Station for Metallic Parts Free Release or Reuse, Rev. 9  
 COP-830210, Incinerator Operation, Rev. 45, dated August 23, 2018  
 COP-830250, Qualification to Operate Assay Systems, Rev. 11, dated January 6, 2011  
 COP-831001, Handling, Processing, & Disposing LLRS, Rev. 58, dated August 23, 2018  
 COP-831006, Low Level Radioactive Scrap Low Pressure Compactor, Rev. 16, dated February 28, 2014  
 COP-831010, Shipping Low Level Radioactive Waste, Rev. 31, dated January 14, 2016  
 COP-831012, Operation of Assay 2 (Canberra Segmented Gamma Scanner), Rev. 22, dated September 20, 2018  
 COP-831017, Disposal of Dry Combustible Material, Rev. 0, dated January 23, 2014  
 COP-835510, Operation of Assay 3 (Canberra Q2 System), Rev. 25, dated May 31, 2018  
 COP-836028, Low Level Waste Solids Processing, Rev. 25, dated April 13, 2018  
 COP-836033, Combustible Trash Collection Scale System, Rev. 20, dated November 17, 2016  
 COP-836044, Operation of the Process, Sanitary, and Contaminated Sump System, Rev. 3, dated September 12, 2013  
 COP-841000, Low Level Radioactive Scrap Handling, Rev. 27, dated October 1, 2015  
 COP-801016, Inspection of Building Ventilation Ducts, Rev. 15, October 25, 2018  
 COP-833010, Cylinder Cleaning System, Rev. 55, November 8, 2018  
 COP-833001, UF6 Cylinder Re-certification, Rev. 55, March 30, 2017  
 PM #OM85233, 13 weeks Ventilation Duct Inspection (URRS 6A)  
 PM #OM85232, 13weeks Ventilation Duct Inspection (URRS 5A)  
 SOI-M-011, Removal and Disposal of Soil, Rev. 1, dated November 13, 2018  
 RA-136, Soil Sampling and Disposal, Rev. 2, dated September 11, 2018  
 SYP-309, Safe Use of Scaffolds, Rev. 8  
 MCP-203516, Verification of Interlocks UN-101 (Dissolver Gamma Monitors A & B), Rev. 2  
 MCP-203517, Verification of Interlocks UN-102 (SOLX I Gamma Monitors A & B), Rev. 2  
 FA-105, Planning and Implementation of Plant Projects, Rev. 16  
 FA-106, Installation Instructions, Rev. 18  
 FA-114, dependent Technical Reviews, Rev. 7  
 FA-120, Design Reviews, Rev. 4  
 ROP-01-028, Calibration Verification of Flowmeters, Rev. 12, dated June 22, 2017  
 ROP-01-050, Operation of Quantifit Personnel Respirator Leak Rate Analyzer, Rev. 16, dated June 7, 2018  
 ROP-05-001, Preparation, Analysis and Processing of In-Plant Air Samples, Rev. 18, dated December 21, 2017  
 ROP-05-055, Surveillance Non-Routine Operations, Rev. 18, dated July 27, 2017  
 ROP-05-066, EH&S Operations Observations Program, Rev. 1, dated August 12, 2016  
 ROP-05-067, Radiation Surveys for Radiation Producing Machines – General Plant, Rev. 25, December 21, 2017  
 CA-006, Columbia Plant Training Delivery System (TDS), Rev. 20, dated August 17, 2017  
 SEP-007, Notification Guidelines for NRC and Other Agencies, Rev. 45, dated April 13, 2018  
 SEP-009, Emergency Response Organization Check Sheets, Rev. 16, dated August 31, 2017

SEP-014, Response to Extreme Environmental Conditions, Rev. 5, dated August 31, 2017

Other Documents:

TAF-500-10, Risk Assessment Board Collaborative Review, Rev. 10  
 CSE-1-H, Criticality Safety Evaluation (CSE) for the S-958 Solvent Extraction Scrubber, Rev. 7  
 CSE-3-E, Criticality Safety Evaluation (CSE) for the Conversion Line Decanter System and Associated Vessels, Rev. 10  
 Calibration Certificate 0035615-23224, dated March 2, 2018  
 Calibration Certificate 00362359-2780, dated March 26, 2018  
 Calibration Certificate 00558043-287, dated July 30, 2018  
 EHS-AUDIT-16-12, EHS-AUDIT-17-2, EHS-AUDIT-18-2, WO #814020, WO #819042

Condition Report Written as a Result of the Inspection:

CAPL 10094041, 480V Electric Panel Door Propped Open, dated September 21, 2017

Condition Reports:

2018-7288, Internal Oversight: Recommend Reviewing for Effectiveness Activities Necessary to Implement the Site Emergency Plan  
 2018-7755, Lack of Communication and Barricade during AC-32 Zirc Fire  
 2018-9169, Internal Oversight: EHS Audit for the Emergency Preparedness Program, Emergency Preparedness  
 2018-10568, Training related issues from HAZMAT Shutdown training 2018  
 Other: IR-2018-10982; IR-2018-11065; IR-2018-11073; IR-2018-11084  
 IR #2018-19356, 2018-5384, 2018-9428, 2018-14561, 2018-19109, 2018-19693, 2018-19736, 2018-17639, 2018-73643, 2018-73775, 2018-73806  
 Redbook # 73087, 73124, 73214, 73218, 73225, 73294, 73423, 73534, 73535, 73543, 73572, 73608, 73626, 73766, 74183