



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

January 27, 2017

Mr. Mike Annacone
Vice President, Columbia Fuel Operations
Westinghouse Electric Company
5801 Bluff Road
Hopkins, SC 29061

**SUBJECT: WESTINGHOUSE ELECTRIC COMPANY – NUCLEAR REGULATORY
COMMISSION INTEGRATED INSPECTION REPORT NO. 70-1151/2016-005 AND
NOTICE OF VIOLATION**

Dear Mr. Annacone:

This letter refers to an inspection conducted during the fourth quarter of calendar year 2016 (September 1 – December 31, 2016), at your Westinghouse Columbia Fuel Fabrication Facility in Hopkins, SC. The purpose of the inspection was to determine whether activities authorized under your license were conducted safely and in accordance with Nuclear Regulatory Commission (NRC) requirements. The enclosed report presents the results of the inspection. At the conclusion of this inspection, the results were discussed with you and members of your staff at an exit meeting on November 17, 2016.

The inspection examined activities conducted under your license as they relate to public health and safety, the common defense and security, and to confirm compliance with the Commission's rules and regulations and with the conditions of your license. The inspection consisted of facility walk-downs, selective examinations of relevant procedures and records, interviews with plant personnel, and plant observations. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel.

Based on the results of the inspection, the NRC has determined that a 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 is considered repetitive per Section 2.3.2 of the Enforcement Policy.

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; (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 and Procedures," 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 Agencywide Documents Access and Management 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 or proprietary information so that it can be made available to the Public without redaction.

If you have any questions concerning the inspection, 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

Enclosures:

1. Notice of Violation
2. NRC Inspection Report 70-1151/2016-005
w/Supplementary Information

cc: (See page 3.)

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.

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/RA/

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

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

cc: (See page 3)

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NOTICE OF VIOLATION

Westinghouse Electric Company
Hopkins, SC

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

During an NRC inspection conducted November 14-17, 2016, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

Safety Condition S-1 of SNM License SNM-1107 states, in part, "For use in accordance with statements, representations, and conditions in the license application."

Chapter 3 of the Westinghouse Electric Company license application, Conduct of Operations, Section 3.4.1, Procedure Structure, states, in part, that "Operations to assure safe, compliant activities involving nuclear material are conducted in accordance with approved procedures."

Step 6 of Weekly OM- S1030 Inlet Transition, Elbow and Front of Basket Media Inspection in Work Order (WO) 747917 states "Remove LOTO [lockout/tagout] and restart nozzles."

Contrary to the above, on November 8, 2016, the licensee failed to remove LOTO and restart nozzles. Specifically, the licensee failed to reestablish process water flow to the spray nozzles for the front of the S-1030 scrubber packing section. The failure to reestablish process water flow resulted in a degradation to the ability of IROFS VENT-S1030-105 to perform its intended safety function of preventing excess uranium accumulation for approximately 23 hours.

This is a Severity Level IV violation (Section 6.2 of the Enforcement Policy).

Pursuant to the provisions of 10 CFR 2.201, Westinghouse Electric Company is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, Region II, within 30 days of the date of the letter transmitting this Notice. 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.

Enclosure 1

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document Agency Documents Access and Management System, 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 NOV within two working days.

Dated this 27th day of January, 2017

U. S. NUCLEAR REGULATORY COMMISSION
REGION II

Docket No.: 70-1151

License No.: SNM-1107

Report No.: 70-1151/2016-005

Licensee: Westinghouse Electric Company

Location: Hopkins, SC 29061

Dates: November 14-17, 2016

Inspectors: R. Gibson, Senior Fuel Facility Inspector
P. Glenn, Fuel Facility Inspector
J. Munson, Fuel Facility Inspector
T. Sippel, Fuel Facility Inspector
P. Startz, Fuel Facility Inspector
M. Ruffin, Fuel Facility Inspector

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

Enclosure 2

EXECUTIVE SUMMARY

Westinghouse Electric Company
NRC Integrated Inspection Report 70-1151/2016-005
November 14-17, 2016

NRC regional inspectors conducted an inspection during normal shifts in the areas of Nuclear Criticality Safety, Radiation Protection, Effluent Controls, Environmental Protection, Radioactive Waste Management, and Plant Modifications. During the inspection period, normal production activities were observed. This announced, routine inspection consisted of a selective examination of procedures and representative records, observations of activities, walk-downs of items relied on for safety and interviews and discussions with licensee personnel. One violation was identified during this inspection.

Safety Operations

- In the area of Nuclear Criticality Safety, one Severity Level IV violation of NRC requirements was identified. (Paragraph A.1)

Radiological Controls

- In the area of Radiation Protection, no violations were identified. (Paragraph B.1)
- In the area of Effluent Controls and Environmental Protection, no violations were identified. (Paragraph B.2)
- In the area of Radioactive Waste Management, no violations were identified. (Paragraph B.3)

Facility Support

- In the area of Plant Modification, no violations 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. Normal production activities were observed during the inspection period.

A. Safety Operations

1. Nuclear Criticality Safety (Inspection Procedure 88015)

a. Inspection Scope and Observations

The inspectors reviewed selected criticality safety evaluations (CSEs) and associated assumptions and calculations to verify that they were consistent with the commitments in the License Application, including the consideration of the Double Contingency Principle, assurance of subcriticality under normal and credible abnormal conditions with the use of subcritical margin, technical practices and methodologies, and treatment of Nuclear Criticality Safety (NCS) parameters. The inspectors reviewed the selected CSEs to determine whether properly reviewed and approved CSEs were in place prior to conduct of new or changed operations and were of sufficient detail and clarity to permit independent review. The inspectors reviewed the selected CSEs to determine whether calculations were performed within their validated area of applicability and consistent with the validation report. The CSEs were selected based on factors such as risk-significance, whether or not they were new and/or revised, and operating history. The CSE review focused on CSE-16-F, CSE-16-I, and CSE-18-C.

The inspectors reviewed the licensee's generation of accident sequences in the above CSEs to determine whether normal and credible abnormal conditions were systematically identified in accordance with the commitments and methodologies in the License Application for the analysis of process upsets. This included the review of accident sequences that the licensee determined to be not credible to determine whether the bases for incredibility were consistent with the commitments, definitions, and methodologies in the License Application, and were documented in sufficient detail to permit an independent assessment of credibility. Additionally, the inspectors reviewed selected accident sequences designated as not credible to determine whether the bases for incredibility rely on any items which should be identified as items relied on for safety (IROFS). This review was conducted for the Met Lab and Floor Storage of SNM CSEs.

The inspectors verified that no changes to the validation report were made since the last NCS inspection. The inspectors also reviewed the NCS Manual sections for heterogeneous UO₂/water and UO₂/oil single parameter limits.

The inspectors performed walk-downs focusing on the cylinder wash area, Met Lab, and the S-1030 scrubber system to determine whether existing plant configuration and operations were covered by, and consistent with, the process description and safety basis in the CSE. The inspectors observed the weekly inspection of the S-1030 scrubber elbow, inlet transition, and front of packing section (VENT-S1030-126). The inspectors verified that selected engineered controls established in the CSEs were

appropriately included in process and system descriptions and drawings. The inspectors reviewed operating procedures and postings to verify that selected administrative controls established in the NCSEs were included. The inspectors interviewed operators to verify that selected administrative controls established in the CSEs were understood.

The inspectors reviewed the integrated safety analysis (ISA) Summary and supporting ISA documentation to determine whether the controls identified in the ISA were supported by technical basis in the CSEs.

The inspectors interviewed operators in the Cylinder Wash and Met Lab areas to determine whether they were cognizant of NCS hazards and control methods as they relate to their specific job function. The inspectors reviewed records of facility walkthrough assessments and accompanied an NCS engineer on a facility walkthrough assessment of the Cylinder Wash area to determine whether the NCS function assesses field compliance with established NCS controls. During the weekly inspection of the S-1030 scrubber elbow, inlet transition, and front of packing section (VENT-S1030-126), the inspector observed that NCS engineers were present and participated in the inspection.

The inspectors conducted interviews and reviewed records to determine whether NCS staff reviewed new and/or revised fissile material operations and procedures, including maintenance plans, consistent with program procedures and at a level commensurate with their significance.

The inspectors reviewed the selected CSEs listed above to verify that they were performed in accordance with NCS program procedures and received appropriate independent review and approval. The inspectors reviewed the NCS program audits to verify that they were conducted at a frequency consistent with license requirements and with appropriate thoroughness. The inspectors reviewed the licensee's CAPAL and Redbook systems through interviews and review of NCS-related entries to verify that audit observations and findings were communicated to licensee management and were appropriately followed up on.

Failure to Reestablish Process Water Flow to S-1030 Front Packing Section Nozzles

Introduction: A licensee-identified cited Severity Level (SL) IV violation (VIO) of Special Nuclear Material (SNM) License 1107, License Application Section 3.4.1, was identified for failure to follow a procedural requirement for safely restarting the spray nozzle system in the S-1030 scrubber. This failure resulted in a negative impact on the ability of IROFS VENT-S1030-105 to perform its intended safety function of preventing excess uranium accumulation for approximately 23 hours.

Description: On November 8, 2016, the weekly inspection of the S-1030 scrubber inlet transition, elbow, and front of basket media was performed per a weekly OM (VENT-S1030-126). The inspection was performed via Work Order (WO) 747917. In order to facilitate the weekly inspection, the procedure required that process water flow to the transition spray nozzles be physically isolated and tagged out. Step 1 of the procedure required the licensee to "[s]hut-off and [lockout/tagout] LOTO the elbow, inlet transition top and bottom, and front packing top and bottom nozzles" before performing the visual inspection of the lower half of the inlet transition elbow, the internal surfaces of the inlet transition, and the packed media basket surfaces within the S-1030 scrubber. Step 6 of the same procedure required the licensee to "[r]emove LOTO and restart nozzles" upon completion of the visual inspection.

On November 9, 2016, the licensee discovered that process water flow had not been reestablished to the spray nozzles for the front of the packing section following the weekly inspection performed on November 8, 2016. Upon discovery, operations personnel restored flow to the nozzles and notified licensee management and the appropriate disciplines. The licensee determined that process water flow to the spray nozzles for the front of the packing section had been inappropriately isolated for approximately 23 hours. Process water flow to the spray nozzles for the packing section is associated with an IROFS. Per the CSE for the S-1030 Scrubber System (CSE-1-E, Rev 10), IROFS VENT-S1030-105 states that, “[t]he scrubber packing shall be sprayed with liquid when the system is operating. The pressure associated with the spray shall be sufficient to meet the minimum required for proper scrubber operation.” The intended safety function of the liquid spray is to prevent excessive uranium accumulation. Process water was isolated to the spray nozzles for the front of the packing section for approximately 23 hours; however, process water to the spray nozzles for the top of the packing section was maintained. Therefore, the licensee determined that VENT-S1030-105 was degraded. After the incident, the licensee entered the anomalous condition into their corrective action program (CAP) (CAPAL 100428685 “S-1030 Front Sprays Valved Off” and CAPAL 100428704 “S-1030 Transition Degraded IROFS, VENT-S1030-105”).

Analysis: The licensee failed to reestablish process water flow to the spray nozzles for the front of the packing section after a weekly inspection of the S-1030 elbow, inlet transition, and front of basket media. This is a VIO of SNM License 1107, License Application Section 3.4.1, which required, in part, that “[o]perations to assure safe, compliant activities involving nuclear material are conducted in accordance with approved procedures.”

This issue was determined to be more than minor because it aligned with Inspection Manual Chapter (IMC) 0616, “Fuel Cycle Safety and Safeguards Inspection Reports,” Appendix B, “Examples of Minor Issues,” screening question 9 which asks, “[d]oes the noncompliance adversely affect the ability of an IROFS or safety related component to perform its intended safety function?” IROFS VENT-S1030-105 requires that the system be sprayed with liquid while the scrubber is in operation. The intended safety function of this IROFS is to prevent excessive uranium accumulation. The failure to reestablish process water to the spray nozzles for the front of the packing section adversely affected the ability of IROFS VENT-S1030-105 to perform its intended safety function of preventing excess uranium accumulation for approximately 23 hours.

The inspectors determined that the actual safety significance was low as no high or intermediate consequence events occurred. The inspectors determined that the potential safety significance was also low because, despite VENT-S-1030-105 being degraded, the likelihood of criticality remained highly unlikely based on the licensee’s ISA.

In accordance with the NRC Enforcement Policy Section 6.2.d, failures of safety systems or controls such that an acceptable safety margin has not been maintained, and the failure does not result in a SL I, II, or III VIO, are characterized as SL IV VIOs. The failure to reestablish process water to the spray nozzles for the front of the S-1030 packing section adversely affected the ability of IROFS VENT-S1030-105 to perform its intended safety function, but did not result in a SL I, II, or III violation. Therefore, this violation is characterized as a SL IV VIO.

Enforcement: Safety Condition S-1 of SNM License SNM-1107, states, in part, “[f]or use in accordance with statements, representations, and conditions in the license application.”

Chapter 3 of the Westinghouse Electric Company license application, Conduct of Operations, Section 3.4.1, Procedure Structures, states, in part, that “[o]perations to assure safe, compliant activities involving nuclear material are conducted in accordance with approved procedures.”

Step 6 of Weekly OM-S1030 Inlet Transition, Elbow and Front of Basket Media Inspection in WO 747917 states, “[r]emove LOTO and restart nozzles.”

Contrary to the above, on November 8, 2016, the licensee failed to remove LOTO and restart nozzles. Specifically, the licensee failed to reestablish process water flow to the spray nozzles for the front of the S-1030 packing section. The failure to reestablish process water flow resulted in a degradation to the ability of IROFS VENT-S1030-105 to perform its intended safety function of preventing excess uranium accumulation for approximately 23 hours.

The inspectors determined that the actual safety significance was low as no high or intermediate consequence events occurred. The inspectors determined that the potential safety significance was also low because, despite VENT-S-1030-105 being degraded, the likelihood of criticality remained highly unlikely based on the licensee’s ISA. The licensee restored spray to the nozzles once discovered. The licensee also initiated corrective actions, CAPAL 100428685 S-1030 Front Sprays Valved Off to report the issue and CAPAL 100428704 S-1030 Transition Degraded IROF, VENT-S1030-105 to modify the OM implementing procedures to include additional guidance for restarting nozzles. Additionally, upon discovery that the process water flow to the spray nozzles for the front of the packing section had been isolated for approximately 23 hours, the licensee re-performed the weekly inspection (VENT-S1030-126) to verify that no significant uranium accumulation was allowed to occur during the 23 hours when the VENT-S1030-105 was degraded. No significant accumulation was discovered as a result of this inspection.

The failure to follow a procedure for safely restarting the spray nozzle system in the S-1030 scrubber is a SL IV VIO of NRC requirements and will be tracked as VIO 70-1151/2016-005-01, “Failure to Reestablish Process Water Flow to the Spray Nozzles for the Front of the S-1030 Packing Section.” A Notice of Violation is enclosed.

b. Conclusion

One SL IV violation of NRC requirements was identified.

B. Facility Support

1. Radiation Protection (Inspection Procedure 88030)

a. Inspection Scope and Observations

The inspectors reviewed the most recent Quarterly and Annual As Low As Reasonably Achievable (ALARA) Reports to verify that the program performance was being reviewed, at least annually, to comply with 10 CFR 20.1101, as required by

Section 5.2.7 of the license application. The inspectors interviewed the licensee health physics (HP) manager to verify the HP function's responsibilities and independence from operations as required by Section 5.2.4 of the license application.

The inspectors observed testing, interviewed HP staff, and reviewed a sample of results of corrective actions to verify that the performance of ventilation and air sampling systems were in accordance with the license application (including Sections 5.2.13, 5.2.14, 5.2.22, 5.2.23, 5.2.25, and 5.2.28). The inspectors interviewed licensee HP staff and reviewed a sample of calibration records to verify that radiation protection instruments were calibrated and used in accordance with the requirements of Sections 5.2.59, 5.2.60, and 5.2.62 of the license application.

The inspectors reviewed the respiratory protection program to evaluate if the selection of respirators, training of staff, bioassay provisions, and fit tests were in compliance with 10 CFR 20.1703 and Sections 5.2.26 and 5.2.27 of the license application. The inspectors observed the use of respirators, reviewed licensee procedures (including SYP-218, Respiratory Protection, and RA-203, General HP Rules and Recommendations), training (including TRN-002, Respirator Training Guide) and a sample of various training and qualification records to determine if the respiratory protection program adequately identified potential hazards and that users were properly trained and qualified in the use of respiratory protection equipment.

The inspectors toured the controlled access area to determine if radiological signs, postings, and barriers, accurately reflected radiological conditions within the posted area and areas were posted in accordance with 10 CFR Part 20. The inspectors evaluated if licensee staff using personnel protective equipment and exiting the contaminated area were conducted in accordance with the requirements of RA-203.

The inspectors reviewed the completed 2015 and 2016 Quarterly ALARA Reports, and interviewed HP staff to evaluate if the ALARA program was being performed in accordance with written procedure (RA-219, ALARA Program) and Sections 5.2.2, 5.2.3, 5.2.5, and 5.2.6 of the License application. The inspectors reviewed the Total Effective Dose Equivalent results in the ALARA reports to determine if exposures were less than the regulatory limit of 5 rem/year. The inspectors sampled the highest personnel dosimeter results from 2015 and 2016 to evaluate if the Lens Dose Equivalent and Shallow Dose Equivalent exposures were less than the regulatory limits of 15 rem and 50 rem/year, respectively.

b. Conclusion

No findings of significance were identified.

2. Effluent Controls and Environmental Protection (Inspection Procedure 88045)

a. Inspection Scope and Observations

The inspectors evaluated if the licensee had established and implemented an environmental program in accordance with Chapter 10, titled Environmental Protection, of the license application for the Columbia Fuel Fabrication Facility SNM-1107, Revision (Rev.) 2.0, dated March 20, 2012. The inspectors reviewed the semi-annual effluent reports for calendar year (CY) 2015 and the first half of CY 2016 to evaluate licensee compliance with effluent requirements of 10 CFR 70.59. The inspectors reviewed the semi-annual effluent data used to calculate the maximum possible dose of a member of

the public at the licensee's fence line as a result of normal gaseous effluent releases to determine compliance with the regulatory limits specified in 10 CFR 20.1101 (d). The inspectors reviewed a sample of the calibration data records for flow indicators that are used on effluent stack differential pressure indicators. This would determine if effluent stack sampling system was being maintained in accordance with licensee procedure ROP-06-002, Rev. 24, titled Roof Effluent Air Sampling and Counting. The inspectors reviewed a sample of the licensee's environmental discharge records and calculations for compliance with licensee procedure RA-401, Rev. 20, titled Environmental Control Requirement Mandated by 10 CFR 20 Regulations and NRC License SNM-1107. The inspectors reviewed the public dose assessment and evaluated whether the average annual effluent concentrations released in 2015 exceeded the values specified in Appendix B of 10 CFR Part 20.

An inspection of all known ambient atmospheric monitoring stations was performed to evaluate if the equipment was in adequate operational condition and available to provide accurate sampling performance in compliance with paragraph 10.1.4 of the license application SNM-1107. The licensee's environmental technician discovered the failure of a sampler vacuum pump and immediately radioed maintenance for a replacement to be installed. Inspectors evaluated the pump failure and the technician's response activities to determine compliance with procedure ROP-06-003, Rev. 12, Ambient Environmental Air Monitoring for Radioactivity.

The inspectors observed a licensee radiological technician obtain three sets of liquid effluent samples, observed how the samples were prepared for analysis and packaged for shipping to a subcontracted laboratory for testing, and evaluated the entire series of sampling activities for compliance with procedure ROP-06-001, Rev. 42, NPDES Daily, Weekly, and Monthly Effluent Sample Collection. The inspectors observed the same technician change out approximately twelve air monitoring samples from process exhaust stacks to evaluate whether the series of sampling activities were in compliance with procedure ROP-06-002, Rev. 24, Roof Effluent Air Sampling and Counting. The inspectors also witnessed a large number of air monitoring filter papers being prepared for processing, and reviewed a sample batch being processed through a Tenelec activity counter to evaluate compliance with the analysis portion of ROP-06-002, Rev. 24, Roof Effluent Air Sampling and Counting.

The inspectors physically inspected all known groundwater monitoring wells on the licensee site and confirmed that the wells were identified on the NRC License Application SNM-1107 and the AECOM 60302740 groundwater analysis report that was subcontracted by the licensee. All monitoring wells were photographed with their assigned identification numbers. The inspectors evaluated if the licensee was performing periodic sampling of monitoring wells that were applicable to the location and movement of an underground plume of groundwater and whether the well locations were in reasonable agreement with the AECOM 60302740 groundwater analysis report.

b. Conclusion

No violations of NRC requirements were identified.

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

a. Inspection Scope and Observations

The inspectors evaluated whether the licensee had established and maintained adequate procedures and a quality assurance program to ensure compliance with the requirements of 10 CFR Part 20 and 10 CFR Part 61, 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 chemical operator processing combustible radioactive trash in the incinerator. The inspectors verified that the operators were familiar with their responsibilities as they performed their tasks in accordance with the on-site procedures.

The inspectors reviewed the quality assurance program for radioactive waste management and verified that the licensee was performing the required audits and presenting the annual audit results to the management team. The findings from these audits were entered into the licensee's CAP for resolution. The inspectors verified that the licensee continued to implement the radioactive waste management program in accordance with the license and regulations.

The inspectors reviewed the licensee's program for classifying low-level radioactive waste. The inspectors reviewed the procedure 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 to ensure that the waste form met the requirements of 10 CFR 61.56. The inspectors performed visual examinations of the waste storage areas both inside the chemical 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 procedures were adequate to ensure that radioactive waste was properly labeled and specified actions to be taken should the shipments not reach the intended destination in the time specified. In addition, the inspectors reviewed procedures for placement, inspection, and repackaging of radioactive waste and found them to be in accordance with the license application. 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 the production areas and the outside radioactive material storage areas. The storage areas had postings to ensure that the proper material was being stored in the designated areas and that the material was safely stored in accordance with the nuclear criticality safety requirements and the requirements of the regulation. The inspectors verified that 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, and ensuring that specific wastes were being added to the correct containers. Also, the inspectors observed a chemical production operator assaying wet waste for incineration as required by the procedure and performing daily checks and calibrations of the dry and wet trash

collection scales as required for IROFS Trash-101, 102, 103, 106, 107, and IROFS Wet-104, 105, 106, 107, and 108. The inspectors observed the Chief Chemical Operator charging the incinerator with dry trash and verifying that it was conducted in accordance with facility procedures.

b. Conclusion

No violations of NRC requirements were identified.

4. Plant Modifications (Inspection Procedure 88070)

a. Inspection Scope and Observations

The inspectors interviewed managers, supervisors, and staff to verify that the licensee maintained a configuration management system to evaluate, implement, and track facility modifications as required by 10 CFR 70 and the License. The inspectors also verified that the licensee assessed the potential impact of modifications as it related to the ISA Summary, and other safety program information (e.g. sketches and controls flow-down) developed in accordance with 10 CFR 70.62. The inspectors reviewed select plant modifications to verify that the modifications were in compliance with the requirements of 10 CFR 70.72. The inspectors also reviewed changes to the configuration control program and procedures since the last plant modifications inspection to verify that changes made were consistent with license requirements. The inspectors reviewed the licensee's work control program to determine whether it included pre-job planning and preparation of plant modification design packages as required by procedure.

Specifically, the inspectors reviewed seven modification packages that were implemented since the last plant modifications inspection. The inspectors conducted walk downs to review modified or implemented controls and to verify that field installations associated with the selected modification packages matched as-built design drawings as required. The inspectors reviewed applicable post installation testing and personnel training requirements to determine compliance with change control processes and other related procedures (e.g. maintenance procedures).

The inspectors reviewed modifications involving IROFS to determine if the IROFS were designed and implemented as required, and that associated assumptions were validated as applicable. The inspectors also reviewed implemented management measures such as procedures, configuration management, audits and assessments, and training to determine whether modified IROFS were maintained available and reliable to perform their intended safety function when needed. The inspectors reviewed corrective actions associated with the configuration management program to verify that corrective actions were being identified, assigned, and tracked as required by procedure.

b. Conclusion

No violations of NRC requirements were identified.

C. 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 17, 2016, with M. Annacone, V.P. Columbia Fuel Operations, and other members of the licensee's staff. No dissenting comments were received from the licensee. Proprietary information was discussed but not included in the report.

SUPPLEMENTAL INFORMATION

1. KEY PERSONS CONTACTED

M. Annacone	Sr. Vice-president
P. Bartman	QA Lead
G. Byrd	Licensing Engineer
E. Cauley	Chemical Manager
G. Cannan	Chemical Operator
B. Crout	Sr. Manufacture Engineer, URRS
K. Drafts	Chief, Chemical Operator
T. Gregg	URRS Manager
A. Hansen	Process Engineer
R. Meddaugh	Chief, Chemical Operator
C. Miller	Senior NCS Engineer
A. McGehee	Senior NCS Engineer
N. Parr	Licensing Manager
A. Pearson	HP OPS Manager
T. Ross	Manager, Transportation
J. Vining	Senior NCS Engineer
D. Wagoner	Radiation Safety Engineer

2. ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

70-1151/2016-005-01	VIO	Failure to Reestablish Process Water Flow to the Spray Nozzles for the Front of the S-1030 Packing Section (Paragraph A.1)
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3. INSPECTION PROCEDURES USED

88015	Nuclear Criticality Safety
88030	Radioactive Waste Management
88035	Radiation Protection
88045	Effluent Controls and Environmental Protection
88070	Plant Modifications

4. DOCUMENTS REVIEWED

Records:

CCF 12456
CCF 15219
CCF 15292
CCF 15401
CCF 15534
CCF 15371
CCF15391
CSE-16-F, Floor Storage of Special Nuclear Material, Revs. 4 and 5
CSE-16-I, Ventilation Clean-out Containers, Revs. 0 and 1
CSE-18-C, Metallurgical Laboratory, Revs. 1 and 2

CN-CRI-06-24, Rev. 0
 CN-CRI-06-27, Rev. 1
 CN-CRI-06-29, Rev. 1
 CN-CRI-06-30, Rev. 1
 CN-CRI-07-3, Rev. 1
 CN-CRI-08-24, Rev. 0
 CN-CRI-08-7, Rev. 0
 CN-CRI-08-9, Rev. 0
 CN-CRI-09-16, Rev. 0
 CN-CRI-11-4, Rev. 1
 00263324-254, dated January 7, 2016
 00263704-290, dated January 19, 2016
 00264067-2783, dated January 27, 2016
 00272906-670, dated September 16, 2016
 00267794-2784, dated May 2, 2016
 263408-104904, dated January 22, 2014
 EHS-AUDIT-14-14, Environmental Health & Safety Audit for Radiation Safety, dated October 9, 2014
 EHS-AUDIT-15-12, Environmental Health & Safety Audit for Radiation Safety, dated October 12, 2015
 EHS-AUDIT-16-4, Formal Compliance Audit, dated March 15, 2016
 EHS-AUDIT-16-7, EH&S Audit for Audits & Assessments, Incident Investigations, and Corrective Action Program, dated April 28, 2016
 LTR-EHS-15-47, CY 2015 1st Quarter ALARA Report, dated May 20, 2015
 LTR-EHS-15-64, CY 2015 2nd Quarter ALARA Report, dated September 1, 2015
 LTR-EHS-15-81, CY 2015 3rd Quarter ALARA Report, dated November 3, 2015
 LTR-EHS-16-16, CY 2015 4th Quarter ALARA Report, dated February 11, 2016
 LTR-EHS-16-35, Annual ALARA Committee Meeting Minutes, dated March 31, 2016
 LTR-EHS-16-46, CY 2016 1st Quarter ALARA Report, dated May 16, 2016
 LTR-EHS-16-74, CY 2016 2nd Quarter ALARA Report, dated September 2, 2016
 LTR-EHS-16-88, UN Calibration Report, dated October 24, 2016
 RAF-125-14, Environmental Health and Safety Operations HP Technician Radiation Protection Training Checklist, Various
 RAF-125-21, Environmental Health and Safety Health Physics Operations Manager Training Checklist, Various
 ROF-01-040-1, iMatic Calibration Record, Rev. 1, dated August 25, 2016
 ROF-01-040-1, iMatic Calibration Record, Rev. 1, dated November 3, 2016
 ROF-01-061-1, iSolo Calibration Record, Rev. 2, dated November 1, 2016
 RWP-2016-01, re-issued November 17, 2016
 RWP-2016-19, dated November 17, 2016
 TRN-066, Configuration Control Training, Rev. 9

Procedures:

COP-815021, S-1030 Inspection and Clean-out
 QCI No 960110 (Quality Control Instructions), Scales Calibration, Rev. 45
 COP-836030, Ultrasonic Cleaning Station for Metallic Parts Free Release or Reuse, Rev. 9
 COP-830251, Standard and Replicate Checks for URRS NDA Systems, Rev. 24
 COP-836033, Combustible Trash Collection Scale System, Rev. 19
 COP-830210, Incinerator Operations, Rev. 43
 COCT-12, Chemical Hygiene Plan, Rev. 27
 RA-203, General HP Rules and Recommendations, Rev. 31
 RA-207, Radiation Work Permit, Rev. 23
 RA-219, ALARA Program, Rev. 3

RA-227, Airborne Radioactivity Monitoring and Control, Rev. 3
 ROP-03-002, Personnel Exposure System – Guide, Rev. 5
 ROP-05-067, Radiation Surveys for Radiation Producing Machines & General Plant,
 Rev. 23
 SYP-218, Respiratory Protection, Rev. 12

Condition Reports Written as a Result of the Inspection:

CAPALs 100430174, 100430202, 100430251

Condition Reports Reviewed:

CAPAL 100430068, 100429810, 100408611, 100408613, 100408612, 100408616,
 100360915, 100372507, 100384035, 100384095, 100405394, 100406599, 100410964,
 100411316, 100412312, 100412313
 Limited Cause Analysis Reports: 100384035 and 100412312
 Redbooks: 70045, 70412, 70922, 71168, 71541, 71722

Work Orders:

WO 744269 – Preventive Planned maintenance quarterly tank inspection for T-1148, IROFS
 WT-112, 160
 WO 744270 – Preventive Planned maintenance quarterly tank inspection for T-1149, IROFS
 WT-112, 160
 WO 740989 – Preventive Planned maintenance annual tank inspection for T-1147, IROFS
 WT-163, and 164
 WO 733630 – Waste Treatment Water Glass annual PM water backflow prevention
 verification, IROFS WT-122, 123, 125, 140, 141, and 142
 WO 739171 – Warm Caustic System in Water-glass annual vacuum break and passive
 overflow inspection, IROFS WCD-116, 117, 118, 119, 120, 121, 122, and 123
 WO 739165 – INCIN Upper and Lower Chambers annual verification of safety significant
 interlocks

Other Documents:

NCS Manual 008, Hetero UO2 SPLs, Rev. 3
 NCS Manual 008, Hetero UO2-Oil SPLs, Rev. 3
 NCS Manual 017, Categorization and SSCs, Rev. 4
 RAF-316-1, Rev. 1
 Current User Training Status, Various.
 Respirator Fit Test, Various.
 National Voluntary Laboratory Accreditation Program, Scope of Accreditation to ISO/IEC
 17025:2005
 TRN-002, Respirator Training Guide, Rev. 7

REDBOOK Entries:

71809 – Spray nozzle piping for the quench columns badly degraded (incinerator)
 71808 – Sump overflow to floor of incinerator due to plugged polishing filters