UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 EAST LAMAR BOULEVARD
ARLINGTON, TEXAS 76011-4511

October 25, 2017

Mr. Mark E. Reddemann
Chief Executive Officer
Energy Northwest
P.O. Box 968, Mail Drop 1023
Richland, WA 99352-0968

SUBJECT: COLUMBIA GENERATING STATION – NRC RADIATION SAFETY INSPECTION REPORT 05000397/2017010

Dear Mr. Reddemann:

On September 14, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Columbia Generating Station and discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

The NRC inspectors documented two findings of very low safety significance (Green) in this report. Both of these findings involved violations of NRC requirements. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the NRC Enforcement Policy. The inspectors did not document any licensee-identified violations.

If you contest the violations or significance of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region IV; the Director, Office of Enforcement; and the NRC resident inspector at the Columbia Generating Station.

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region IV; and the NRC resident inspector at the Columbia Generating Station.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at http://www.nrc.gov/reading-rm/adams.html and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Heather J. Gepford, Ph.D., CHP
Chief, Plant Support Branch 2
Division of Reactor Safety

Docket No. 50-397
License No. NPF-21

Enclosure:
Inspection Report 05000397/2017010
w/ Attachments:
1. Supplemental Information
2. Information Request for the Public Radiation Safety Inspection

cc: Electronic Distribution

U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket:	05000397
Report:	05000397/2017010
Facility:	Columbia Generating Station
Dates:	September 11–14, 2017
Inspectors:	N. Greene, Ph.D., Health Physicist J. Furia, NRC Region I, Sr. Health Physicist J. O'Donnell, CHP, Health Physicist C. Alldredge, Health Physicist
Approved By:	Heather Gepford, Ph.D., CHP Chief, Plant Support Branch 2 Division of Reactor Safety

Enclosure

SUMMARY

IR 05000397/2017010; 09/11/2017 – 09/14/2017; Columbia Generating Station; Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation.

Cornerstone: Occupational Radiation Safety

- Green. The inspectors identified a non-cited violation of Technical Specification 5.7.2 for the failure to control a high radiation area with dose rates greater than 1000 millirem per hour at 30 centimeters. Specifically, equipment boxes placed adjacent to high radiation area barrier fencing in the reactor building 471' elevation, which created a natural ladder into the area, resulted in an uncontrolled entryway to a high radiation area with dose rates greater than 2500 millirem per hour. Once informed, the licensee immediately removed the equipment boxes from the barrier and added signage that restricted the placement of any items adjacent to the fencing forming the high radiation area barrier. This issue was documented in the licensee's corrective action program as Action Request AR 00355646.

  The failure to properly control and barricade an entryway to a locked high radiation area in the reactor building, 471' elevation, was a performance deficiency. The performance deficiency was more than minor because it was associated with the program and process (exposure control) attribute of the Occupational Radiation Safety Cornerstone and adversely affected the cornerstone objective to ensure the adequate protection of the worker health and safety from exposure to radiation from radioactive material. Using NRC Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," the inspectors determined that the finding had very low safety significance (Green) because the finding was not an as low as reasonably achievable planning or work control issue, there was no overexposure or potential for an overexposure, and the licensee's ability to assess dose was not compromised. The finding had a cross-cutting aspect in the area of Human Performance, Field Presence, because leaders were not commonly seen in the work areas of the plant observing, coaching, and reinforcing standards and expectations, resulting in a lack of oversight of work activities, to include contractors and supplemental personnel (H.2). (Section 4OA5)

Cornerstone: Public Radiation Safety

- Green. The inspectors reviewed a self-revealed non-cited violation of 10 CFR 30.41(b)(5) for the failure to transfer byproduct material to an authorized waste disposal facility in accordance with the terms of the facility's license. Specifically, License Condition No. 21.C of the US Ecology license requires that all radwaste shall be packaged in such a manner that waste containers received at the facility do not show an increase in the external radiation levels as recorded on the manifest, within instrument tolerances. On July 20, 2017, Columbia Generating Station personnel transferred byproduct material to US Ecology for disposal (Shipment 17-51). The disposal facility's surveys identified that the dose rate on contact with the waste liner was 1100 millirem per hour, whereas the manifest for this shipment recorded a dose rate of 12 millirem per hour. The licensee's corrective actions included providing a corrected shipment manifest to US Ecology and proposed enhancements to the Columbia Generating Station procedures for shipping. This issue was documented in the licensee's corrective action program as Action Request AR 00369215.

The failure to transfer byproduct material to a low-level radwaste disposal facility in accordance with the facility's license was a performance deficiency. The performance deficiency was more than minor because it was associated with the program and process attribute of the Public Radiation Safety Cornerstone and adversely affected the associated cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive materials released into the public domain as a result of routine civilian nuclear reactor operation. Using NRC Inspection Manual Chapter 0609, Appendix D, "Public Radiation Safety Significance Determination Process," the inspectors determined that the finding had very low safety significance (Green) because it was a low-level burial ground nonconformance; however, it was not Class C waste or greater and the waste did conform to the waste characteristics of 10 CFR 61.56. The finding has a cross-cutting aspect in the area of Human Performance, Resources, because licensee leaders failed to ensure that personnel, equipment, procedures, and other resources were available and adequate to support nuclear safety (H.1). (Section 2RS8)

REPORT DETAILS

2. RADIATION SAFETY

Cornerstones: Public Radiation Safety and Occupational Radiation Safety

2RS5 Radiation Monitoring Instrumentation (71124.05)

a. Inspection Scope

The inspectors evaluated the accuracy and operability of the radiation monitoring equipment used by the licensee to monitor areas, materials, and workers to ensure a radiologically safe work environment. This evaluation included equipment used to monitor radiological conditions related to normal plant operations, anticipated operational occurrences, and conditions resulting from postulated accidents. The inspectors interviewed licensee personnel, walked down various portions of the plant, and reviewed licensee performance associated with radiation monitoring instrumentation, as described below:

- The inspectors performed walk downs and observations of selected plant radiation monitoring equipment and instrumentation, including portable survey instruments, area radiation monitors, continuous air monitors, personnel contamination monitors, portal monitors, and small article monitors. The inspectors assessed material condition and operability, evaluated positioning of instruments relative to the radiation sources or areas they were intended to monitor, and verified performance of source checks and calibrations.

- The inspectors evaluated the calibration and testing program, including laboratory instrumentation, whole body counters, post-accident monitoring instrumentation, portal monitors, personnel contamination monitors, small article monitors, portable survey instruments, area radiation monitors, electronic dosimetry, air samplers, and continuous air monitors.

- The inspectors assessed problem identification and resolution for radiation monitoring instrumentation. The inspectors reviewed audits, self-assessments, and corrective action program documents to verify problems were being identified and properly addressed for resolution.

These activities constitute completion of the three required samples of radiation monitoring instrumentation, as defined in Inspection Procedure 71124.05.

b. Findings

No findings were identified.

2RS6 Radioactive Gaseous and Liquid Effluent Treatment (71124.06)

a. Inspection Scope

The inspectors evaluated whether the licensee maintained gaseous and liquid effluent processing systems and properly mitigated, monitored, and evaluated radiological

discharges with respect to public exposure. The inspectors verified that abnormal radioactive gaseous or liquid discharges and conditions, when effluent radiation monitors are out-of-service, were controlled in accordance with the applicable regulatory requirements and licensee procedures. The inspectors verified that the licensee's quality control program ensured radioactive effluent sampling and analysis adequately quantified and evaluated discharges of radioactive materials. The inspectors verified the adequacy of public dose projections resulting from radioactive effluent discharges. The inspectors interviewed licensee personnel and reviewed licensee performance in the following areas:

- During walk downs and observations of selected portions of the radioactive gaseous and liquid effluent equipment, the inspectors evaluated routine processing and discharge of effluents, including sample collection and analysis. The inspectors observed equipment configuration and flow paths of selected gaseous and liquid discharge system components, effluent monitoring systems, filtered ventilation system material condition, and significant changes to effluent release points.

- Calibration and testing program for process and effluent monitors, including National Institute of Standards and Technology traceability of sources, primary and secondary calibration data, channel calibrations, set-point determination bases, and surveillance test results.

- Sampling and analysis controls used to ensure representative sampling and appropriate compensatory sampling. Reviews included results of the inter-laboratory comparison program,

- Instrumentation and equipment, including effluent flow measuring instruments, air cleaning systems, and post-accident effluent monitoring instruments.

- Dose calculations for effluent releases. The inspectors reviewed a selection of radioactive liquid and gaseous waste discharge permits and abnormal gaseous or liquid tank discharges, and verified the projected doses were accurate. The inspectors also reviewed 10 CFR Part 61 analyses and methods used to determine which isotopes were included in the source term. The inspectors reviewed land use census results, offsite dose calculation manual changes, and significant changes in reported dose values from previous years.

- Problem identification and resolution for radioactive gaseous and liquid effluent treatment. The inspectors reviewed audits, self-assessments, and corrective action program documents to verify problems were being identified and properly addressed for resolution.

These activities constitute completion of the six required samples of radioactive gaseous and liquid effluent treatment program, as defined in Inspection Procedure 71124.06.

b. Findings

No findings were identified.

2RS7 Radiological Environmental Monitoring Program (71124.07)

a. Inspection Scope

The inspectors evaluated whether the licensee's radiological environmental monitoring program quantified the impact of radioactive effluent releases to the environment and sufficiently validated the integrity of the radioactive gaseous and liquid effluent release program. The inspectors also verified that the licensee continued to implement the voluntary Nuclear Energy Institute (NEI)/Industry Ground Water Protection Initiative. The inspectors reviewed or observed the following items:

- The inspectors observed selected air sampling and dosimeter monitoring stations, sampler station modifications, and the collection and preparation of environmental samples. The inspectors reviewed calibration and maintenance records for selected air samplers, composite water samplers, and environmental sample radiation measurement instrumentation, and inter-laboratory comparison program results. The inspectors reviewed selected events documented in the annual environmental monitoring report and significant changes made by the licensee to the offsite dose calculation manual as the result of changes to the land census. The inspectors evaluated the operability, calibration, and maintenance of meteorological instruments and assessed the meteorological dispersion and deposition factors. The inspectors verified the licensee had implemented sampling and monitoring program sufficient to detect leakage from structures, systems, or components with credible mechanism for licensed material to reach ground water and reviewed changes to the licensee's written program for identifying and controlling contaminated spills/leaks to groundwater.

- Groundwater protection initiative implementation, including assessment of groundwater monitoring results, identified leakage or spill events and entries made into 10 CFR 50.75 (g) records, licensee evaluations of the extent of the contamination and the radiological source term, and reports of events associated with spills, leaks, and groundwater monitoring results.

- Problem identification and resolution for the radiological environmental monitoring program. The inspectors reviewed audits, self-assessments, and corrective action program documents to verify problems were being identified and properly addressed for resolution.

These activities constitute completion of the three required samples of radiological environmental monitoring program, as defined in Inspection Procedure 71124.07.

b. Findings

No findings were identified.

2RS8 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation (71124.08)

a. Inspection Scope

The inspectors evaluated the effectiveness of the licensee's programs for processing, handling, storage, and transportation of radioactive material. The inspectors interviewed licensee personnel and reviewed the following items:

- Radioactive material storage, including waste storage areas including container labeling/marking and monitoring containers for deformation or signs of waste decomposition.

- Radioactive waste system, including walk-downs of the accessible portions of the radioactive waste processing systems and handling equipment. The inspectors also reviewed or observed changes made to the radioactive waste processing systems, methods for dewatering and waste stabilization, waste stream mixing methodology, and waste processing equipment that was not operational or abandoned in place.

- Waste characterization and classification, including radio-chemical sample analysis results for radioactive waste streams and use of scaling factors and calculations to account for difficult-to-measure radionuclides, and processes for waste classification including use of scaling factors and 10 CFR Part 61 analyses.

- Shipment preparation, including packaging, surveying, labeling, marking, placarding, vehicle checking, driver instructing, and preparation of the disposal manifests.

- Shipping records for LSA I, II, III, SCOI, II, Type A, or Type B radioactive material or radioactive waste shipments.

- Problem identification and resolution for radioactive solid waste processing and radioactive material handling, storage, and transportation. The inspectors reviewed audits, self-assessments, and corrective action program documents to verify problems were being identified and properly addressed for resolution.

These activities constitute completion of the six required samples of radioactive solid waste processing, and radioactive material handling, storage, and transportation program, as defined in Inspection Procedure 71124.08.

b. Findings

Introduction: The inspectors reviewed a self-revealed Green non-cited violation of 10 CFR 30.41(b)(5) for the failure to transfer byproduct material to an authorized waste disposal facility in accordance with the terms of the facility's license.

Description: License Condition No. 21.C of the US Ecology license, WN-I019-2, requires that all radwaste shall be packaged in such a manner that waste containers received at the facility do not show an increase in the external radiation levels as recorded on the manifest, within instrument tolerances. On July 20, 2017, the licensee transferred byproduct material to US Ecology for disposal (shipment 17-51). The disposal facility's

surveys revealed that the dose rate on contact with the waste liner (#17-084-OT) was 1100 millirem per hour, whereas the manifest (NRC Form 541, Block 9) recorded a dose rate of 12 millirem per hour.

The licensee determined that a change made to the draft shipment manifest, which had previously been sent to US Ecology and indicated the correct liner contact dose rate, contained an error in Block 8 of NRC Form 541 (Waste and Container Weight). Upon correction of this item, a final manifest was generated and signed, without identifying that other data had changed on the shipping manifest, including the entry in Block 9 of NRC Form 541, Surface Radiation Level for the Disposal Container. The licensee's measured waste container contact dose rate had changed from the correct value of 1350 millirem per hour to 12 millirem per hour on the shipment manifest sent with the liner to US Ecology. Review of the issue determined the licensee's procedures did not require a full review of the revised shipment manifest prior to shipment, and neither the shipper, reviewer, or manager identified the error regarding the liner dose rate.

Analysis: The failure to transfer byproduct material to a low-level radwaste disposal facility in accordance with the facility's license was a performance deficiency within the licensee's ability to foresee and correct. The performance deficiency was more than minor because it was associated with the program and process attribute of the Public Radiation Safety Cornerstone and adversely affected the associated cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive materials released into the public domain as a result of routine civilian nuclear reactor operation. Using NRC Inspection Manual Chapter (IMC) 0609, Appendix D, "Public Radiation Safety Significance Determination Process," the finding was determined to be of very low safety significance (Green) because it was a low-level burial ground nonconformance; however, it was not Class C waste or greater and the waste did conform to the waste characteristics of 10 CFR 61.56. The finding has a cross-cutting aspect in the area of Human Performance, Resources, because licensee leaders failed to ensure that personnel, equipment, procedures, and other resources were available and adequate to support nuclear safety (H.1).

Enforcement: Title 10 CFR 30.41(b)(5) states, in part, that any licensee may transfer byproduct material to any person authorized to receive such byproduct material under terms of a specific license or a general license or their equivalents issued by the Commission or an Agreement State. Contrary to the above, on July 20, 2017, the licensee transferred byproduct material to US Ecology (an Agreement State licensee) that was not in accordance with the terms of the US Ecology's license, WN-I019-2. Specifically, US Ecology's license condition 21.C requires that all radioactive waste be packaged in such a manner that waste containers received at the facility do not show an increase in the external radiation levels as recorded on the manifest. However, the licensee shipped a waste container to the US Ecology disposal facility that showed external radiation levels as high as 1100 millirem per hour on contact with the waste container, whereas the highest external radiation level on contact with the liner recorded on the shipping manifest was 12 millirem per hour. Corrective actions include providing a corrected shipment manifest to US Ecology, and proposed enhancements to the Columbia Generating Station procedures for shipping.

Because this violation was determined to be of very low safety significance and was entered into the licensee's corrective action program as Action Request AR 00369215, this violation is being treated as a non-cited violation consistent with the Enforcement

Policy: NCV 05000397/2017010-01, “Failure to Transfer Byproduct Material to a Disposal Facility in Accordance with the Terms of the Facility’s License.”

4. OTHER ACTIVITIES

4OA5 Other Activities

Introduction: The inspectors identified a Green, non-cited violation of Technical Specification 5.7.2 for the failure to control and barricade an entryway to a high radiation area (HRA) with dose rates greater than 1.0 rem/hour (1000 millirem per hour) at 30 centimeters from the radiation sources.

Description: On July 25, 2017, while walking down the reactor building 471’ elevation, the inspectors noted a locked HRA barrier in place at a temporary chemical decontamination skid and equipment storage area (CDSESA). The barrier was constructed of chain link fencing secured to a scaffold frame. There was also a chain link fence-scaffold door built as an access point into the CDSESA. The barrier fencing was originally constructed to measure approximately eight feet in height. Measured dose rates inside the CDSESA were up to a nominal 2500 millirem per hour at 30 centimeters from the various sources of the radiation. Dose rates varied with proximity to the various equipment, as documented in radiation survey 20170720-7.

Licensee Procedures 11.2.7.1, “Area Posting,” and 11.2.7.3, “High Radiation Area, Locked High Radiation Area, and Very High Radiation Area,” specify that all locked HRAs should be designed with barriers greater than six feet in height. The inspectors also noted that licensees are required to provide reasonable assurance that locked HRAs are secured against unauthorized access and that the physical controls cannot be easily circumvented.

The inspectors observed equipment boxes being stored directly adjacent to and outside of the locked HRA barrier fencing. This equipment, together with the chain link fence and scaffold barrier, created a natural ladder into the CDSESA and decreased the effective height of the barrier to below six feet, thereby resulting in an uncontrolled entryway. Once inside the CDSESA, personnel would have had unencumbered access to the elevated dose rates. The inspectors determined that the natural ladder created by the stored equipment and barrier scaffold frame could be easily circumvented by an individual who assumed, for whatever reason, that he or she was authorized to enter the area.

Once informed, the licensee immediately removed the equipment boxes from along the barrier fencing and added signage that restricted the placement of items adjacent to the HRA barrier fencing. Applicable radiation protection procedures were revised to include guidance related to storing equipment near barriers. This issue was documented in the licensee’s corrective action program as Action Request AR 00355646.

Analysis: The failure to properly control and barricade entry into a locked high radiation area in the reactor building, 471' elevation, was a performance deficiency. The performance deficiency was more than minor because it was associated with the program and process (exposure control) attribute of the Occupational Radiation Safety Cornerstone and adversely affected the cornerstone objective to ensure the adequate protection of the worker health and safety from exposure to radiation from radioactive material. Specifically, the failure to properly barricade a locked HRA could result in unnecessary and unplanned radiation exposures to plant workers. Using NRC Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety

Significance Determination Process," the inspectors determined that the finding had very low safety significance (Green) because the finding was not an ALARA planning or work control issue, there was no overexposure or potential for an overexposure, and the licensee's ability to assess dose was not compromised.

The finding has a cross-cutting aspect in the area of Human Performance, Field Presence, because leaders were not commonly seen in the work areas of the plant observing, coaching, and reinforcing standards and expectations, resulting in a lack of oversight of work activities, to include contractors and supplemental personnel (H.2). The lack of oversight resulted in a failure to recognize that stacking the equipment boxes against the fence compromised the adequacy of the HRA barrier.

Enforcement: Technical Specification 5.7.2.a requires, in part, for high radiation areas with dose rates greater than 1.0 rem/hour, but less than 500 rads/hour, that each entryway to such an area shall be conspicuously posted as a high radiation area and shall be provided with a locked or continuously guarded door or gate that prevents unauthorized entry.

Contrary to the above, on July 25, 2017, the licensee failed to ensure, for a high radiation area with dose rates greater than 1.0 rem/hour, but less than 500 rads/hour, that each entryway to such an area was conspicuously posted as a high radiation area and was provided with a locked or continuously guarded door or gate that prevented unauthorized entry. Specifically, equipment boxes placed adjacent to high radiation area barrier fencing in the reactor building 471' elevation, which created a natural ladder into the area, resulted in an uncontrolled entryway to a high radiation area with dose rates greater than 2500 millirem per hour. This was corrected on July 27, 2017. Because this violation is of very low safety significance, and it was entered into the licensee's corrective action program as AR 00369479, this violation is being treated as an NCV consistent with Section 2.3.2 of the NRC Enforcement Policy:
NCV 05000397/2017010-02, "Failure to Control a High Radiation Area with Dose Rates Greater Than 1000 Millirem Per Hour at 30 Centimeters."

4OA6 Meetings, Including Exit

Exit Meeting Summary

On September 14, 2017, the inspectors presented the radiation safety inspection results to Mr. M. Reddemann, Chief Executive Officer, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

S. Beatty, Health Physics Supervisor, Radiation Protection
K. Clark, Environmental Scientist II, Radiation Protection
M. Davis, Manager, Chemistry and Radiological Services
K. Gillard, Analyst, Chemistry and Radiological Services
A. Hedges, Supervisor, Chemistry Radwaste Support
A. Jensen, Specialist, Chemistry
M. Kinmark, Staff Health Physicist, Radiation Protection
D. Mee, Environmental Scientist III, Radiation Protection
M. Nolan, Senior Radwaste Transportation Specialist, Chemistry
T. Parmelee, Compliance Engineer, Regulatory Affairs
M. Shobe, Specialist, Chemistry
J. Smith, Radiological Operations Supervisor, Radiation Protection
L. Stueder, Instrument Specialist, Radiation Protection
D. Wolfgramm, Supervisor, Regulatory Affairs
R. Wynegar, Compliance Engineer, Regulatory Affairs

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Opened and Closed

05000397/2017010-01	NCV	Failure to Transfer Byproduct Material to a Disposal Facility in Accordance with the Terms of the Facility's License (Section 2RS8)
05000397/2017010-02	NCV	Failure to Control a High Radiation Area with Dose Rates Greater Than 1000 Millirem Per Hour at 30 Centimeters (Section 4OA5)

Closed

None

LIST OF DOCUMENTS REVIEWED

Section 2RS5: Radiation Monitoring Instrumentation

Procedures

Number	Title	Revision
CI-12.24	Verification of Shepherd 81-8 Calibrator Source Strength	1
GEN-RPP-17	Health Physics Instrument Program Description	1
HPI-0.16	Radiation Protection Portable Instrumentation Use and Calibration Guidelines	7
HPI-12.100	Calibration of the SAM12 Small Article Monitor	3
HPI-12.23	Out of Tolerance Reporting	6
HSP-CMS-B301	Radiological Calibration of the Primary Containment Post-LOCA Monitor CMS-RIS 27E	1
HSP-CMS-B302	Radiological Calibration of the Primary Containment Post-LOCA Monitor CMS-RIS-27F	1
ICP-MS/PRM-X304	MSL High Radiation Chanel – D – CC	11
10.27.19	Containment LOCA Radiation Monitor (Channel A) – RC/CC	9
10.27.20	Containment LOCA Radiation Monitor (Channel B) – RC/CC	7
11.2.10.5	Area Radiation Monitor Calibration Checks	15
11.2.10.19	High Range Area Radiation Monitor Calibration Checks	2

Audits and Self-Assessments

Number	Title	Date
AR 337264	Snapshot Self-Assessment – RP Readiness for NRC Inspection of Radiation Instruments (IP 71124.05)	April 27, 2017
AU-RP-RW-15	Quality Services Audit Report – Radiation Protection and Process Controls Program	November 5, 2015

Corrective Action Requests (ARs)

337629	344720	345748	347135	348812
349613	351052	357864	360467	363014

Radiation Monitoring System Calibration Records

W/O Number	Title	Date
2041177	HSP-CMS-B301 Rad Cal CMS-RIS-27E	June 11, 2015
2071631	ICP-MS/PRM-X304 MSL High Rad Channel D	January 22, 2016
2073104	HSP-CMS-B302 Rad Cal CMS-RIS-27F	June 2, 2017
2077096	ISP-CMS/PRM-B304 Accident Monitor Primary Containment Gross Radiation Monitor CMS-RIS-27F	June 1, 2017
2077097	ISP-CMS/PRM-B303 Accident Monitor Primary Containment Gross Radiation Monitor CMS-RIS-27E	May 31, 2017
2083530	Containment LOCA Radiation Monitor Channel B	May 19, 2016

Portable Radiation Instrument Calibration Records

Number	Title	Date
0067648-83	Calibration Data Sheet – Ludlum Model 2000/43-10	May 1, 2017
A022	Calibration Data Sheet – Ludlum Model 3/43-5	August 8, 2017
A027	Calibration Data Sheet – Ludlum Model 3/43-5	August 7, 2017
AD20	Calibration Data Sheet – DCA 3096	April 24, 2017
F158	Calibration Data Sheet – Ludlum Model 177	April 3, 2017
N023	Calibration Data Sheet – Eberline ASP-1/NRD	April 5, 2017
RM-40	Calibration Data Sheet – MGP Amp-100	May 27, 2017
RO71	Calibration Data Sheet – Eberline RO-2	May 16, 2017
T042	Calibration Data Sheet – Teletector Model 6112B	May 1, 2017

Stationary Radiation Instrument Calibration Records

Number	Title	Date
HP-EQ-42663	IPM8-M/IPM9 Calibration Data Sheet	April 19, 2017
HP-EQ-42737	Canberra GEM-5 Calibration Sheet	July 20, 2017
HP-EQ-42812	SAM 12 Small Article Monitor Calibration Sheet	March 16, 2017
HP-EQ-63088	NE Model CM-11/DP-11A Calibration Data Sheet	May 5, 2017
Ortec #3	Efficiency Verification – 500 cc Soil – 0	June 13, 2017
Ortec #3	Efficiency Verification – 4.3 liter Gas Marinelli	April 18, 2017
Ortec #4	Efficiency Verification - 1000 ml Liquid Marinelli – 0	April 18, 2017
Ortec #6	Efficiency Verification – 47 mm Filter – 1	May 24, 2017
W/O 2095200	Annual Tritium Quench Curve Calibration – LSC	April 10, 2017

Stationary Radiation Instrument Calibration Records

Number	Title	Date
W/O 2101847	Annual Efficiency Calibration – iSolo Alpha Detector	May 19, 2017
WBC#2	FastScan Calibration	August 14, 2017

Source Calibration Records

Number	Title	Date
7229	Source Calibration Certification, Model 81-8	April 17, 2009
W/O 2057577	Verify Irradiator Source Strength	November 17, 2014

Miscellaneous Documents

Number	Title	Date
	HP Out Of Tolerance Report	September 12, 2017
	Stationary Equipment Source Check Log	September 11, 2017
	Daily Frisker Check Log	September 6, 2017
	Daily Meter Check Log	September 7, 2017
EC 11373	50.59 Screen – Control Room Fresh Air Intake	May 15, 2014
F189	RP Instrument Failure Report – Model 2	August 16, 2015

Section 2RS6: Radioactive Gaseous and Liquid Effluent Treatment

Procedures

Number	Title	Revision
11.2.24.2	Surveillance and Response for Changing Plant Conditions	9
12.1.1	Laboratory Quality Assurance	21
16.10.1	Radioactive Liquid Waste Discharge to the River	8
16.11.1	Monthly Grab Gas Samples	12
16.11.6	Weekly Iodine, Particulate, and Tritium Analysis Results	21
16.12.1	Liquid Release Dose Assessments	6
16.12.2	Monthly Gaseous Release Dose Assessment	14

Corrective Action Requests (ARs)

00336881	00336940	00337182	00346412	00371328
00371329	00343675	00335290	00336024	00371237
00337184				

Results of Radiochemistry Cross Check Program

Title	Date
4th Quarter 2014	February 9, 2015
2nd Quarter 2015	August 24, 2015
3rd Quarter 2015	January 13, 2016
4th Quarter 2015	August 26, 2016
1st Quarter 2016	July 15, 2016
2nd Quarter 2016	August 26, 2016

Miscellaneous Documents

Number	Title	Revision/Date
EC 11288	50.59 Screening Review	6
	Quality Services Audit Report: Chemistry/REMP/Non-Rad & Rad Effluents/ODCM Program	October 18, 2016
	Quality Services Audit Report: Radiation Protection and Process Controls Programs	November 5, 2015
337265	Snapshot Self-Assessment Report	
WO 02073144	Work Order 02073144 01 WEA Low Range Noble Gas Monitor	February 25, 2016
WO 02087872	Work Order 02087872 14 PRM Reactor Building Stack Monitor – Low Range	February 23, 2016
WO 02093779	Work Order 02093779 01 TEA Low Range Noble Gas Monitor Channel 1	February 15, 2017
	2015 Annual Radioactive Effluent Release Report	April 28, 2016
	2016 Annual Radioactive Effluent Release Report	April 26, 2017

Section 2RS7: Radiological Environmental Monitoring Program

Procedures

Number	Title	Revision
1.11.1	Radiological Environmental Monitoring Program (REMP) Implementation	13
16.13.1	Annual 5-Mile Land Use Census	3
SOP 08.06	REMP Samples Scheduling, Collection, and Shipping	4
SOP 10.06	REMP Radiological Data Handling	5
SOP 11.01	Milk Sampling	7
SOP 11.02	Soil and Sediment Sampling	4
SOP 11.07	REMP Water Sample Collection	6
SOP 11.08	Distribution and Collection of TLDs	10
SOP 11.09	REMP Air Sample Collection	6
SOP 12.06	Quality Assurance for the Radiological Laboratory	1
SOP 12.07	Radiological Inter-Laboratory and Intra-Laboratory Comparison Programs	1
SWP-CHE-01	Groundwater Protection Program	4
CI-6.0	Groundwater Protection Program – Risk Assessment	1

Audits and Self-Assessments

Number	Title	Date
337266	Energy Northwest Snapshot Self-Assessment Report: Radiological Environmental Monitoring Program (REMP)	June 7, 2017
AU-PC/EM/OD/RE/NR-16	Quality Services Audit Report: Chemistry/REMP/Non-Rad & Rad Effluents /ODCM Program	October 18, 2016

Corrective Action Requests (ARs)

00337266	00344711	00355448	00355646	00361609
00363129	00368051	00371156		

Miscellaneous Documents

Number	Title	Revision /Date
	Offsite Dose Calculation Manual	56
	Joint Frequency Distribution – CGS Meteorological Data 2012-2016 – 33' Elevation	September 11, 2017
G02-16-069	2015 Annual Radioactive Effluent Release Report	April 28, 2016
G02-17-087	2016 Annual Radioactive Effluent Release Report	April 26, 2017
	Meteorological Instrumentation Training Qualification Records	September 13, 2017
	2015 Annual Radiological Environmental Operating Report	May 10, 2016
	2016 Annual Radiological Environmental Operating Report	May 9, 2017
	Response to Open Item: Components observed leaking on Radwaste 437'	September 21, 2017

Section 2RS8: Radioactive Solid Waste Processing, and Radioactive Material Handling, Storage, and Transportation

Procedures

Number	Title	Revision
11.2.23.1	Shipping Radioactive Material and Waste	18
11.2.23.2	Computerized Radioactive Waste and Material Characterization	20
11.2.23.4	Packaging Radioactive Material and Waste	26
11.2.23.14	Sampling of Radioactive Waste Streams	13
11.2.23.36	Operation of the Radwaste Compactor	4
11.2.23.39	Operation of the Self-Engaging Dewatering System (SEDS)	1
11.2.23.44	Operation of the Self-Engaging Rapid Dewatering System (SERDS)	4
SWP-RMP-02	Radioactive Waste Process Control Program	7

Audits and Self-Assessments

Number	Title	Date
SR-17-12	Radwaste Program Assessment Report	April 27, 2017

Audits and Self-Assessments

Number	Title	Date
AU-RP-RW-15	Quality Services Audit Report, Radiation Protection and Process Control Programs	November 5, 2015

Corrective Action Requests (ARs)

00369215	000370038	00371111

Radioactive Material and Waste Shipments

Number	Title	Date
16-10	Resin Liner Waste Shipment	March 24, 2016
16-14	Irradiated Hardware Waste Shipment	April 26, 2016
16-39	Sludge Waste Shipment	October 6, 2016
17-24	CRD Boxes and Equipment	June 7, 2017
17-51	Dry Active Waste Shipment	July 20, 2017

Miscellaneous Documents

Number	Title	Date
DAC-0304	Scaling Factor Determinations at Columbia Generating Station	March 5, 2015
DAC-0337	Characterization of Control Rod Blades and Miscellaneous Hardware at Columbia Generating Station – February 2016	April 19, 2016
DAC-0374	Columbia Generating Station Irradiated Hardware Liner TNRM75EN2 Characterization	April 6, 2016
DAC-0375	Columbia Generating Station Irradiated Hardware Liner TNRM75EN1 Characterization	April 6, 2016
DAC-0378	Columbia Generating Station Cartridge Filter Characterization – 2016	April 21, 2016
DAC-0380	Columbia Generating Station Irradiated Hardware Liner TNRM75EN5 Characterization	May 18, 2016
DAC-0381	Columbia Generating Station Velocity Limiter Liner Characterization	May 26, 2016
DAC-0382	Columbia Generating Station Filter Liner Characterization	May 26, 2016
DAC-0405	Columbia Generating Station Liner 16-059-OT	January 13, 2017

Miscellaneous Documents

Number	Title	Date
DAC-0424	Characterization of Control Rod Drive Mechanisms (CRDMs) from Columbia Generating Station – 2017	June 1, 2017
RW000169	Training Module for Packaging Radioactive Material for Shipment	
	Apparent Cause Evaluation for Condition Report 00369215	

Section 4OA5: Other Activities

Procedures

Number	Title	Revision
11.2.7.1	Area Posting	42
11.2.7.3	High Radiation Area, Locked High Radiation Area, and Very High Radiation Area Controls	41

Corrective Action Requests (ARs)

00369479

The following items are requested for the
Occupational/Public Radiation Safety Inspection
at Columbia Generating Station
September 11 to 15, 2017
Integrated Report 2017010

Inspection areas are listed in the attachments below.

Please provide the requested information on or before August 22, 2017.

Please submit this information using the same lettering system as below. For example, all contacts and phone numbers for Inspection Procedure 71124.0**1** should be in a file/folder titled "**1**- A," applicable organization charts in file/folder "**1**- B," etc.

If information is placed on *ims.certrec.com*, please ensure the inspection exit date entered is at least 30 days later than the on-site inspection dates, so the inspectors will have access to the information while writing the report.

In addition to the corrective action document lists provided for each inspection procedure listed below, please provide updated lists of corrective action documents at the entrance meeting. The dates for these lists should range from the end dates of the original lists to the day of the entrance meeting.

If more than one inspection procedure is to be conducted and the information requests appear to be redundant, there is no need to provide duplicate copies. Enter a note explaining in which file the information can be found.

If you have any questions or comments, please contact Martin J. Phalen at (817) 200-1158 or martin.phalen@nrc.gov.

PAPERWORK REDUCTION ACT STATEMENT

This letter does not contain new or amended information collection requirements subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). Existing information collection requirements were approved by the Office of Management and Budget, control number 3150-0011.

5. Radiation Monitoring Instrumentation (71124.05)
Date of Last Inspection: September 21 to 25, 2015

A. List of contacts and telephone numbers for the following areas:

1. Effluent monitor calibration
2. Radiation protection instrument calibration
3. Installed instrument calibrations
4. Count room and Laboratory instrument calibrations

B. Applicable organization charts

C. Copies of audits, self-assessments, vendor or NUPIC audits for contractor support and LERs, written since date of last inspection, related to:

1. Area radiation monitors, continuous air monitors, criticality monitors, portable survey instruments, electronic dosimeters, teledosimetry, personnel contamination monitors, or whole body counters
2. Installed radiation monitors

D. Procedure index for:

1. Calibration, use and operation of continuous air monitors, criticality monitors, portable survey instruments, temporary area radiation monitors, electronic dosimeters, teledosimetry, personnel contamination monitors, and whole body counters.
2. Calibration of installed radiation monitors

E. Please provide specific procedures related to the following areas noted below. Additional Specific Procedures will be requested by number after the inspector reviews the procedure indexes.

1. Calibration of portable radiation detection instruments (for portable ion chambers)
2. Whole body counter calibration
3. Laboratory instrumentation quality control

F. A summary list of corrective action documents (including corporate and sub-tiered systems) written since date of last inspection, related to the following programs:

1. Area radiation monitors, continuous air monitors, criticality monitors, portable survey instruments, electronic dosimeters, teledosimetry, personnel contamination monitors, whole body counters,
2. Installed radiation monitors,
3. Effluent radiation monitors
4. Count room radiation instruments

NOTE: The lists should indicate the significance level of each issue and the search criteria used. Please provide in document formats which are “searchable” so that the inspector can perform word searches.

G. Offsite dose calculation manual, technical requirements manual, or licensee controlled specifications which lists the effluent monitors and calibration requirements.

H. Current calibration data for the whole body counters.

I. Primary to secondary source calibration correlation for effluent monitors.

J. A list of the point of discharge effluent monitors with the two most recent calibration dates and the work order numbers associated with the calibrations.

K. Radiation Monitoring System health report for the previous 12 months

6. Radioactive Gaseous and Liquid Effluent Treatment (71124.06)
Date of Last Inspection: September 21 to 25, 2015

A. List of contacts and telephone numbers for the following areas:

1. Radiological effluent control
2. Engineered safety feature air cleaning systems

B. Applicable organization charts

C. Audits, self-assessments, vendor or NUPIC audits of contractor support, and LERs written since date of last inspection, related to:

1. Radioactive effluents
2. Engineered Safety Feature Air cleaning systems

D. Procedure indexes for the following areas

1. Radioactive effluents
2. Engineered Safety Feature Air cleaning systems

E. Please provide specific procedures related to the following areas noted below. Additional Specific Procedures will be requested by number after the inspector reviews the procedure indexes.

1. Sampling of radioactive effluents
2. Sample analysis
3. Generating radioactive effluent release permits
4. Laboratory instrumentation quality control
5. In-place testing of HEPA filters and charcoal adsorbers
6. New or applicable procedures for effluent programs (e.g., including ground water monitoring programs)

F. List of corrective action documents (including corporate and sub-tiered systems) written since date of last inspection, associated with:

1. Radioactive effluents
2. Effluent radiation monitors
3. Engineered Safety Feature Air cleaning systems

NOTE: The lists should indicate the significance level of each issue and the search criteria used. Please provide in document formats which are “searchable” so that the inspector can perform word searches.

Also provide a listing of all Apparent Cause Evaluations (ACEs) and copies of all Root Cause Evaluations (RCEs) performed by or on the Radiation Protection Department from August 2015 to Present.

G. 2015 and 2016 Annual Radioactive Effluent Release Report or the two most recent reports.

H. Current Copy of the Offsite Dose Calculation Manual

I. Copy of the 2015 and 2016 inter-laboratory comparison results for laboratory quality control performance of effluent sample analysis or the two most recent results.

J. Effluent sampling schedule for the week of the inspection

K. New entries into 10 CFR 50.75(g) files since date of last inspection

L. Operations department (or other responsible dept.) log records for effluent monitors removed from service or out of service

M. Listing or log of liquid and gaseous release permits since date of last inspection

N. A list of the technical specification-required air cleaning systems with the two most recent surveillance test dates of in-place filter testing (of HEPA filters and charcoal adsorbers) and laboratory testing (of charcoal efficiency) and the work order numbers associated with the surveillances

O. System Health Report for radiation monitoring instrumentation. Also, please provide a specific list of all effluent radiation monitors that were considered inoperable for 7 days or more since November 2011. If applicable, please provide the relative Special Report and condition report(s).

P. A list of all radiation monitors that are considered § 50.65/Maintenance Rule equipment.

Q. A list of all significant changes made to the Gaseous and Liquid Effluent Process Monitoring System since the last inspection. If applicable, please provide the corresponding UFSAR section in which this change was documented.

R. A list of any occurrences in which a non-radioactive system was contaminated by a radioactive system. Please include any relative condition report(s).

7. Radiological Environmental Monitoring Program (71124.07)
Date of Last Inspection: September 21 to 25, 2015

A. List of contacts and telephone numbers for the following areas:

1. Radiological environmental monitoring
2. Meteorological monitoring

B. Applicable organization charts

C. Audits, self-assessments, vendor or NUPIC audits of contractor support, and LERs written since date of last inspection, related to:

1. Radiological environmental monitoring program (including contractor environmental laboratory audits, if used to perform environmental program functions)
2. Environmental TLD processing facility
3. Meteorological monitoring program

D. Procedure index for the following areas:

1. Radiological environmental monitoring program
2. Meteorological monitoring program

E. Please provide specific procedures related to the following areas noted below. Additional Specific Procedures will be requested by number after the inspector reviews the procedure indexes.

1. Environmental Program Description
2. Sampling, collection and preparation of environmental samples
3. Sample analysis (if applicable)
4. Laboratory instrumentation quality control
5. Procedures associated with the Offsite Dose Calculation Manual
6. Appropriate QA Audit and program procedures, and/or sections of the station's QA manual (which pertain to the REMP)

F. A summary list of corrective action documents (including corporate and sub-tiered systems) written since date of last inspection, related to the following programs:

1. Radiological environmental monitoring
2. Meteorological monitoring

NOTE: The lists should indicate the significance level of each issue and the search criteria used. Please provide in document formats which are "searchable" so that the inspector can perform word searches.

G. Wind Rose data and evaluations used for establishing environmental sampling locations

H. Copies of the 2 most recent calibration packages for the meteorological tower instruments

I. Copy of the 2015 and 2016 Annual Radiological Environmental Operating Report and Land Use Census, and current revision of the Offsite Dose Calculation Manual, or the two most recent reports.

J. Copy of the environmental laboratory's inter-laboratory comparison program results for 2015 and 2016, or the two most recent results, if not included in the annual radiological environmental operating report.

K. Data from the environmental laboratory documenting the analytical detection sensitivities for the various environmental sample media (i.e., air, water, soil, vegetation, and milk).

L. Quality Assurance audits (e.g., NUPIC) for contracted services.

M. Current NEI Groundwater Initiative Plan and status.

N. Technical requirements manual or licensee controlled specifications which lists the meteorological instruments calibration requirements.

O. A list of Regulatory Guides and/or NUREGs that you are currently committed to relative to the Radiological Environmental Monitoring Program. Please include the revision and/or date for the committed item and where this can be located in your current licensing basis/UFSAR.

P. If applicable, per NEI 07-07, provide any reports that document any spills/leaks to groundwater since the last inspection.

8. Radioactive Solid Waste Processing, and Radioactive Material Handling, Storage, and Transportation (71124.08)

Date of Last Inspection: September 21 to 25, 2015

A. List of contacts and telephone numbers for the following areas:

1. Solid Radioactive waste processing
2. Transportation of radioactive material/waste

B. Applicable organization charts (and list of personnel involved in solid radwaste processing, transferring, and transportation of radioactive waste/materials).

C. Copies of audits, department self-assessments, and LERs written since date of last inspection related to:

1. Solid radioactive waste management
2. Radioactive material/waste transportation program

D. Procedure index for the following areas:

1. Solid radioactive waste management
2. Radioactive material/waste transportation

E. Please provide specific procedures related to the following areas noted below. Additional Specific Procedures will be requested by number after the inspector reviews the procedure indexes.

1. Process control program
2. Solid and liquid radioactive waste processing
3. Radioactive material/waste shipping
4. Methodology used for waste concentration averaging, if applicable
5. Waste stream sampling and analysis

F. A summary list of corrective action documents (including corporate and sub-tiered systems) written since date of last inspection related to:

1. Solid radioactive waste
2. Transportation of radioactive material/waste

NOTE: The lists should indicate the significance level of each issue and the search criteria used. Please provide in document formats which are “searchable” so that the inspector can perform word searches.

G. Copies of training lesson plans for 49CFR172 subpart H, for radwaste processing, packaging, and shipping.

H. A summary of radioactive material and radioactive waste shipments made from date of last inspection to present.

I. Waste stream sample analyses results and resulting scaling factors for 20XX and 20YY, or the two most recent results.

J. Waste classification reports if performed by vendors (such as for irradiated hardware).

K. A listing of all on-site radwaste storage facilities. Please include a summary *or* listing of the items stored in each facility, including the *total* amount of radioactivity and the *highest* general area dose rate.

L. The Inspector will need hard copies of the following documents available for review when he arrives on September 11, 2017:

- Procedures for: Process Control Program (PCP); 10 CFR 61 sampling and analysis; package preparation & transportation;

- Quality assurance (QA) audits, surveillance, self-assessments and vendor audits in this area in the past two years;

- QA Program Approval from NRC and vendor audit for Type B packaging usage (if applicable) [10CFR71.17(b)];

- Radiochemical sample analysis results to support radioactive waste characterization for all waste streams used in the past two years [10CFR61.55(a)(8)];

- Training documents to meet requirements of NRC Bulletin 79-19, "Packaging of Low-Level Radioactive Waste for Transport and Burial," dated August 10, 1979, and 49 CFR Part 172 Subpart H, "Training," including copy of lesson plans;

- Five highest activity shipment records from 2016-17; and

- A listing of ALL corrective actions, copies of all apparent cause evaluations (ACEs) and root cause evaluations (RCEs) for transportation and radioactive waste management for past two years.

Although it is not necessary to compile the following information, the inspector will also review:

M. Training, and qualifications records of personnel responsible for the conduct of radioactive waste processing, package preparation, and shipping.

COLUMBIA GENERATING STATION – NRC RADIATION SAFETY INSPECTION REPORT 05000397/2017010 – October 25, 2017

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