



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION IV  
1600 EAST LAMAR BOULEVARD  
ARLINGTON, TEXAS 76011-4511

July 20, 2021

Mr. Brad Sawatzke, Chief Executive Officer  
Energy Northwest  
MD 1023  
P. O. Box 968  
Richland, WA 99352

SUBJECT: COLUMBIA GENERATING STATION – NRC POST - APPROVAL SITE  
INSPECTION FOR LICENSE RENEWAL (PHASE I) INSPECTION REPORT  
05000397/2021013

Dear Mr. Sawatzke:

On June 10, 2021, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Columbia Generating Station and discussed the results of this inspection with R. Schuetz, Site Vice President and other members of your staff. The results of this inspection are documented in the enclosed report.

No findings or violations of more than minor significance were identified during this inspection.

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 Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

Nicholas H. Taylor, Chief  
Engineering Branch 2  
Division of Reactor Safety

Docket No. 05000397  
License No. NPF-21

Enclosure:  
As stated

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SUBJECT: COLUMBIA GENERATING STATION – NRC POST-APPROVAL SITE  
 INSPECTION FOR LICENSE RENEWAL (PHASE I) INSPECTION REPORT  
 05000397/2021013 - DATED July 19, 2021

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**U.S. NUCLEAR REGULATORY COMMISSION  
Inspection Report**

Docket Number: 05000397

License Number: NPF-21

Report Number: 05000397/2021013

Enterprise Identifier: I-2021-013-0015

Licensee: Energy Northwest

Facility: Columbia Generating Station

Location: Richland, Washington

Inspection Dates: May 16, 2021 to June 10, 2021

Inspectors: J. Lee, Reactor Inspector  
N. Okonkwo, Reactor Inspector  
G. Pick, Senior Reactor Inspector

Approved By: Nicholas H. Taylor, Chief  
Engineering Branch 2  
Division of Reactor Safety

Enclosure

## **SUMMARY**

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a NRC Post-Approval Site Inspection for License Renewal (Phase I) Inspection at Columbia Generating Station, in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information.

### **List of Findings and Violations**

No findings or violations of more than minor significance were identified.

### **Additional Tracking Items**

None.

## **INSPECTION SCOPES**

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase."

The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards. Starting on March 20, 2020, in response to the National Emergency declared by the President of the United States on the public health risks of the coronavirus (COVID-19), inspectors were directed to begin telework. In addition, regional baseline inspections were evaluated to determine if all or a portion of the objectives and requirements stated in the IP could be performed remotely. If the inspections could be performed remotely, they were conducted per the applicable IP. In some cases, portions of an IP were completed remotely and on site. The inspections documented below met the objectives and requirements for completion of the inspection procedure.

## **OTHER ACTIVITIES – TEMPORARY INSTRUCTIONS, INFREQUENT AND ABNORMAL**

### 71003 - Post-Approval Site Inspection for License Renewal

The inspectors evaluated the material condition of the facility in the spring 2021 while the plant was shut down for Refueling Outage R25. This period allowed an opportunity to evaluate inaccessible areas prior to entry into the period of extended operation and to evaluate the licensee conducting aging management reviews. The period of extended operation is the additional 20 years beyond the original 40-year licensed term and begins after midnight on December 20, 2023. The specific areas walked down during the inspection are listed in Section (1).3.

In addition, the inspectors performed this inspection to evaluate whether the licensee: (1) completed the necessary actions to comply with the license condition and commitments that are a part of the renewed operating license; (2) implemented the aging management programs as described in the updated final safety analysis report; and (3) implemented programs that agreed with those approved in the safety evaluation report and described in the updated final safety analysis report. Specific activities evaluated during this inspection are described in the following paragraphs.

The inspectors evaluated whether the licensee implemented the aging management programs described in NUREG-2123, "Safety Evaluation Report (SER) Related to the License Renewal of Columbia Generating Station." The inspectors verified that the licensee implemented procedures, documented inspection results, and initiated corrective action documents.

The inspectors reviewed supporting documents including implementing procedures, work orders, inspection reports, engineering evaluations, and condition reports; conducted interviews with licensee staff; and visually inspected structures, systems, and components including those not accessible during power operation to verify that the licensee completed the necessary actions to comply with the license conditions stipulated in the renewed facility operating license.

## Post-Approval Site Inspection for License Renewal (1 Sample)

(1) The inspectors conducted the Phase 1 license renewal inspection activities described below:

- A.2.1.32 Inaccessible Power Cables Not Subject to 10 CFR 50.49 EQ Requirements Program and Commitment 32

This program will manage the effects of aging of energized, nonenvironmentally qualified power cables ( $\geq 400\text{V}$ ) with the potential for exposure to significant moisture. Energized power cables exposed to standing water or condensation are vulnerable to loss of dielectric strength and water treeing. The licensee will conduct the first tests of the cables and first inspections of the manholes prior to entering the period of extended operation. These cables will be tested at least once every 6 years to provide an indication of the condition of the conductor insulation.

Commitment 32 specified:

“The Inaccessible Power Cables Not Subject to 10 CFR 50.49 EQ Requirements Program is a new program.

The Inaccessible Power Cables Not Subject to 10 CFR 50.49 EQ Requirements Program manages the aging of inaccessible medium-voltage and lower service voltage cables that are not environmentally qualified and are within the scope of license renewal. The program provides for testing to identify the conditions of the conductor insulation and provides for periodic inspection and drainage (if necessary) of electrical manholes. The frequency of the cable testing portion of the program will be once every 6 years, with the first test to be performed prior to the period of extended operation. The frequency of the manhole inspections will be at least annually, with the first inspections to be performed prior to the period of extended operation.

The scope of the aging management program will be enhanced to include inaccessible power cables (400V to 2kV), in response to industry and plant-specific operating experience.”

The inspectors reviewed program documents, model work orders, completed work orders, testing of medium voltage and lower service voltage cables. The inspectors interviewed license renewal personnel and the program owner. The inspectors determined that the licensee had established the program requirements related to testing of the cables and inspection of the manholes. Commitment 32 remains open because the inspectors did not verify that all cables had received their initial aging management evaluations. The inspectors confirmed that the licensee had appropriately inspected the manholes and established criteria for the presence of water. This commitment will be reviewed during the Phase 2 inspection.

- A.2.1.54 Boron Carbide Monitoring Program and Commitment 61

This program will manage the effects of aging related to loss of neutron absorbing material in the spent fuel storage racks. The program implemented the following actions to detect degradation of the Boron Carbide (B<sub>4</sub>C) neutron absorbers: (1) testing the spent fuel racks for potential off-gassing, (2) in situ testing of the spent fuel racks, and (3) inspecting the B<sub>4</sub>C coupons.

The inspectors interviewed the program owner and reviewed procedures, work orders, licensing documents, and condition reports related to neutron absorber condition assessments. The inspectors determined that the licensee maintained an appropriate boron carbide monitoring program. The inspectors verified that the baseline inspections had been completed for this program during prior outages. The inspectors determined that Aging Management Program Basis Document AMPBD-B4C, "Boron Carbide Monitoring Program," Revision 2, provided a detailed outline of the program.

Commitment 61 specified:

"The Boron Carbide Monitoring Program is an existing program that will be continued for the period of extended operation.

Initial in situ testing of the spent fuel rack neutron absorbing material will be performed prior to the period of extended operation to determine the current state of the racks. Additional in situ testing will be based on the results of this initial testing, but at an interval not to exceed ten years."

The program implemented the recommendations of NRC Generic Letter 2016-01, "Monitoring of Neutron-Absorbing Materials in Spent Fuels Pools" and adopted LR-ISG-2009-001, "Aging Management of Spent Fuel Pool Neutron-Absorbing Materials Other Than Boraflex." The licensee had established the Boron Carbide Monitoring Program 35 years earlier in response to industry operating experience.

The inspectors reviewed completed work orders for: (1) venting spent fuel racks, (2) removing and examining the boron carbide coupons in 2010, 2013, and 2017, and (3) performance of Boron 10 areal density testing of the boron carbide in 2019. The inspectors determined that the licensee satisfactorily addressed the commitment through their inspections and procedures.

Based on review of the actions implemented related to the Boron Carbide Monitoring Program, the inspectors concluded the licensee would effectively manage the effects of aging by testing every 10 years during the period of extended operation. The inspectors concluded that the licensee met the conditions of Commitment 61. This commitment is considered closed.

- A.2.1.50 Structures Monitoring Program and Commitment 67

This aging management program implements the maintenance rule structures monitoring program. For this inspection, the inspectors performed the walk downs of inaccessible areas looking for signs of aging such as corrosion on piping and supports, corrosion of cable trays, water intrusion, cracking, and spalling of concrete.

Specific areas walked down and components evaluated during this inspection included:

- Drywell – multiple elevations
- Wetwell
- RHR HX A
- RHR HX B
- RWCU Pump Room A
- Numerous mechanical valve rooms in reactor building
- Circulating Water Basin

Commitment 67 specified:

“Perform a one-time boroscope inspection of the containment sand pocket drain lines to confirm the absence of clogged drain lines and that a flow path exists for identification of any potential leakage into the sand pocket region. Unexpected inspection results (clogged drain lines) will be documented under corrective action process.”

During the walk downs, the inspectors identified aging effects that did not affect the function of the structures, systems, or components. The licensee initiated condition reports and evaluated the impact of the aging effects on the structures, systems, and components, such as erosion on the circulating water basin walls.

The inspectors reviewed the work orders (02045942, 02059560, and 02059561) and videos related to the sand pocket drain inspections conducted in 2014 to verify that the sand pocket drains remained free flowing. Action Request 00420156 described a partial blockage in the drain line associated with Valve FD-V-33. The inspectors determined that the licensee appropriately concluded that the sand pocket drain would allow any water to flow freely and confirmed that none of the drains were blocked.

Based on review of the actions implemented related to the Structures Monitoring Program, the inspectors concluded that the licensee initiated corrective action documents at an appropriate level. The inspectors concluded that the licensee met the conditions of Commitment 67 and consider this commitment closed. This commitment is considered closed. The review of the aging management program is not complete since additional commitments remain open that will be reviewed during the Phase 2 inspection.



- Review of Specific Administrative Commitments

The inspectors confirmed that the licensee completed the following administrative commitments that did not apply to any specific aging management program. These commitments are considered closed.

- **Commitment 55:** “Energy Northwest will incorporate the FSAR Supplement into the Columbia FSAR as required by 10 CFR 54.21(d).”

The inspectors determined that the licensee included the Supplement in their updated final safety analysis report as well as the commitment table listed in Appendix B in NUREG-2123.

- **Commitment 56:** “The elements of corrective actions, confirmation process, and administrative controls in the OQAPD (operational quality assurance program description) will be applied to required aging management programs for both safety-related and non-safety related structures and components determined to require aging management during the period of extended operation.”

The inspectors verified that the licensee specified requirements in their operational quality assurance program description that related to documenting aging effects on safety-related and non-safety related structures, systems, and components.

- **Commitment 59:** “Energy Northwest will submit a licensing basis change request to implement the Boiling Water Reactor Vessel and Internals Project (BWRVIP) Integrated Surveillance Program (ISP) at least two years prior to the period of extended operation. Columbia will implement the ISP(E) as amended by the Boiling Water Reactor Vessel and Internals Project letter of January 11, 2005, including the new capsule test schedule in Table 1 of that letter.”

The inspectors verified that the licensee appropriately performed the change to their licensing basis and implemented the Boiling Water Reactor Vessel and Internals Project Integrated Surveillance Program prior to 2 years before entering the period of extended operation.

## **INSPECTION RESULTS**

No findings were identified.

## **EXIT MEETINGS AND DEBRIEFS**

The inspectors verified no proprietary information was retained or documented in this report.

- On June 10, 2021, the inspectors presented the NRC Post-Approval Site Inspection for License Renewal (Phase I) Inspection results to R. Schuetz, Site Vice President and other members of the licensee staff.

**COMMITMENT STATUS**

During this inspection the inspectors closed the following commitments: 55, 56, 59, 61 and 67

During this inspection the inspectors reviewed but did not close the following commitment: 32

**DOCUMENTS REVIEWED**

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71003	Corrective Action Documents		AR-00305777, AR-00305841, AR-00305925, AR-00419520, AR-00419585, AR-00419721, AR-00420299, AR-00420301, AR-00420303, AR-00420304, AR-00420306, AR-00420308, AR-00420313, AR-00420314	
	Corrective Action Documents Resulting from Inspection		AR-00420066, AR-00420156, AR-00420534, AR-00420535, AR-00420539, AR-00420541, AR-00420543	
	Drawings	E 503-6	Auxiliary One line Diagram	116
		EC-RB-1173	Sand Drain Pipes - Reactor Building EL 443'-0"	3
	Engineering Changes	17537	Install Core Plate Wedges	0
	Miscellaneous		MS-RV-1D and MS-RV-2A Photographs of as-found condition	
			R24 Drywell Coatings Inspection Report - Columbia Generating Station	03/30/2020
			Drywell Structural and Suppression Chamber Structural Inspection Results for Refueling Outage R24 and R25	
			License Renewal Application Appendix C, Response to BWRVIP Applicant Action Items	01/2010
		Appendix A	Supplement - Aging Management Programs and Activities Credited for Columbia License Renewal	12/2013
BWRVIP-01		BWRVIP Program Plan	17	
	G02-17-097	Columbia Generating Station, Docket NO. 50-397 Submittal of the Fourth Ten-Year Interval In-service Inspection Program Plan Including Addition of Small-Bore Piping	1	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Program	
		GO2-13-174	Columbia Generating Station, Docket NO. 50-397, 10 CFR 50.71 Maintenance of Records Licensing Basis Document Update	12/30/2013
		GO2-17-009	Columbia Generating Station, Docket No. 50-397, License Amendment Request - Revise Technical Specification 5.5.12 for Permanent Extension of Type A Test and Type C Leak Rate Test Frequencies	03/27/2017
		ISI-4	Inservice Inspection Program Plan - Interval 4	7
		L-SW-V-12A/R25-001	Clearance order for Clearance Order for SW-V-12A (1)	5/19/2021
		LDCN-13-009	FSAR 5.3.1.6, Material Surveillance Update Reference Document Revision	0
		NET-28049-002-01	2018 BADGER Test Campaign at Columbia Generating Station	0
		NUC2019103-L-FER-001	Final Engineering Report for Columbia Generating Station RF-24 Outage Suppression Pool Coating Assessment/Suppression Pool Cleanliness Inspection/Foreign Material Inspection	0
		TR 1025262	EPRI Technical Report for Evaluation and Insights from Nuclear Power Plant Tan Delta Testing and Data Analysis	07/2012
	NDE Reports		Confirmation Videos for Core Plate Wedges	
		CDR CGS IVVI 21-01	Core Plate Wedges As-Left	05/25/2021
		CDR CGS IVVI 21-01	Core Plate Wedges As-Left	05/25/2021
	Procedures	AMPBD-B4C	Aging Management Program Basis Document – Boron Carbide Monitoring Program	2
		AMPBD-E3	Aging Management Program Basis Document -Inaccessible Power Cables Not Subject to 10 CFR 50.49 EQ Requirements Program	1
		CCMP-01-01	Power Cables Monitoring Program Guide	6
		ENG-PRG-03	License Renewal Implementation	1
		PPM 8.3.3	Suppression Chamber Protective Coatings Inspection	8

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		RPI-9.0	Regulatory Commitment Tracking	6
		SOP-Elec-Div1-Temppower	Div. 1 Outage Temporary Power Installation/Removal	20
		SWP-LIC-01	Regulatory Commitment Management	7
		SWP-SPS-03	Service Level 1 Protective Coatings Program	6
		SWP-VIP-02	Columbia's RPV Surveillance Program and Implementation of the BWRVIP Integrated Surveillance Program (ISP)	2
	Work Orders		02045942, 02059560, 02059561, 02140530, 02148191, 02148194, 02151532, 02151533, 02151534, 02164482,	