



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

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

May 7, 2021

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

SUBJECT: COLUMBIA GENERATING STATION – INTEGRATED INSPECTION REPORT  
05000397/2021001

Dear Mr. Sawatzke:

On March 31, 2021, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Columbia Generating Station. On April 15, 2021, the NRC inspectors discussed the results of this inspection with Mr. A. Javorik, Site Vice President, Engineering Projects, and other members of your staff. The results of this inspection are documented in the enclosed report.

Two findings of very low safety significance (Green) are documented in this report. Both of these findings involved violations of NRC requirements. We are treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violations or the significance or severity of the violations documented in this inspection report, 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 Inspectors at 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 Inspectors at 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 Title 10 of the *Code of Federal Regulations* (10CFR) 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

Jeffrey E. Josey, Chief  
Reactor Projects Branch A  
Division of Reactor Projects

Docket No. 05000397  
License No. NPF-21

Enclosure: As stated

cc w/ encl: Distribution via LISTSERV®

COLUMBIA GENERATING STATION – INTEGRATED INSPECTION REPORT  
05000397/2021001 - DATED MAY 7, 2021

**DISTRIBUTION:**

SMorris, RA  
JMonninger, DRA  
RLantz, DRP  
MHay, DRP  
GMiller, DRS  
GWarnick, DRS  
DCylkowski, RC  
MHaire, RIV/OEDO  
VDricks, ORA  
LWilkins, OCA  
MChawla, NRR  
AMoreno, RIV/OCA  
BMaier, RSLO  
AAgrawal, IPAT  
JJosey, DRP  
JReynoso, DRP  
HFreeman, DRP  
SLichvar, DRP  
DBryen, DRP  
LMerker, DRP  
NHernandez, DRP  
MBennett, DRP  
BCorrell, IPAT  
LFlores, IPAT  
R4Enforcement

ADAMS ACCESSION NUMBER: ML21113A195

<input checked="" type="checkbox"/> SUNSI Review By: haf	ADAMS: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Sensitive <input checked="" type="checkbox"/> Non-Sensitive	<input type="checkbox"/> Non-Publicly Available <input checked="" type="checkbox"/> Publicly Available	Keyword NRC-002	
OFFICE	SRI:DRP/A	SRI:DRP/A	TL:DRS/IPAT	C:DRS/EB1	C:DRS/EB2
NAME	LMerker	NHernandez	AAgrawal	VGaddy	NTaylor
SIGNATURE	<i>LNM</i>	<i>NAH</i>	<i>ANA</i>	<i>vgg</i>	<i>nht</i>
DATE	04/19/2021	04/21/2021	4/21/21	4/19/2021	04/16/2021
OFFICE	AC:DRS/RCB	C:DRS/OB	AC:DNMS/RxIB	SPE/DRP/A	BC:DRP/A
NAME	JRollins	GWerner	NGreene	HFreeman	JJosey
SIGNATURE	<i>jmr</i>	<i>GEW</i>	<i>NAG</i>	<i>haf</i>	<i>JEJ</i>
DATE	04/19/2021	04/16/2021	04/19/2021	04/16/2021	05/07/2021

OFFICIAL RECORD COPY

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

Docket Number: 05000397

License Number: NPF-21

Report Number: 05000397/2021001

Enterprise Identifier: I-2021-001-0004

Licensee: Energy Northwest

Facility: Columbia Generating Station

Location: Richland, Washington

Inspection Dates: January 1, 2021 to March 31, 2021

Inspectors: N. Hernandez, Senior Resident Inspector  
L. Merker, Senior Resident Inspector  
W. Cullum, Reactor Inspector  
L. Flores, Reactor Inspector  
J. Melfi, Project Engineer  
W. Sifre, Senior Reactor Inspector

Approved By: Jeffrey E. Josey, Chief  
Reactor Projects Branch A  
Division of Reactor Projects

Enclosure

## SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee’s performance by conducting an integrated inspection at Columbia Generating Station, in accordance with the Reactor Oversight Process (ROP). The ROP 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

Inadequate Operability Evaluations for American Society of Mechanical Engineers (ASME) Code Pipe			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000397/2021001-01 Open/Closed	[H.1] - Resources	71111.15
<p>The inspectors identified a Green, non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” associated with the licensee’s failure to establish adequate procedural guidance for operability determinations. Specifically, Plant Procedures Manual (PPM) 1.3.66, “Operability Determination,” Revisions 35 and 36, failed to include guidance identifying the need to also evaluate structural integrity in accordance with the ASME Code for code class piping systems when flaws are identified. This resulted in an incomplete operability determination on September 18, 2020, and loss of the presumption of operability of the reactor core isolation cooling (RCIC) system on December 11, 2020.</p>			

Failure to Perform Preservice Testing as Required by American Society of Mechanical Engineers (ASME) Code			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Barrier Integrity	Green NCV 05000397/2021001-02 Open/Closed	[H.1] - Resources	71152
<p>The team identified a Green, non-cited violation (NCV) of 10 CFR 50.55a(f), “Preservice and inservice testing requirements,” subsection (4), “Inservice testing standards requirement for operating plants,” because the licensee did not implement the Inservice Test (IST) Program in accordance with the ASME <i>Code for Operation and Maintenance of Nuclear Power Plants</i> (OM) of Record for the control room chilled water system 1A and 1B pumps. Specifically, the licensee did not perform preservice testing of the 1A and 1B control room chilled water (CCH) pumps as required by ASME OM Code, Paragraph ISTB-3100 Preservice Testing, before scoping the pumps into their IST program. This resulted in CCH operability surveillance procedures with inaccurate IST information that could not be used to determine the pumps met technical specification requirements.</p>			

### Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
URI	05000397/2020004-02	Reactor Core Isolation Cooling Drainpipe Steam Leak	71111.15	Closed

## PLANT STATUS

Columbia Generating Station began the inspection period at 100 percent power. On January 16, 2021, reactor power was reduced to 80 percent to perform a control rod sequence exchange before returning to rated thermal power. On February 20, 2021, reactor power was reduced to 65 percent to perform a control rod pattern adjustment and repair a leak on condensate booster pump 2C before returning to 100 percent power. On February 27, 2021, reactor power was reduced to 80 percent to perform a control rod pattern adjustment and turbine bypass valve testing before returning to 100 percent power. On March 23, 2021, the plant began power coastdown for refueling outage R25 and ended the inspection period at approximately 96 percent power.

## 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 Disease 2019 (COVID-19), resident inspectors were directed to begin telework and to remotely access licensee information using available technology. During this time, the resident inspectors performed periodic site visits each week; conducted plant status activities as described in IMC 2515, Appendix D, "Plant Status"; observed risk-significant activities; and completed on-site portions of IPs. In addition, resident and regional baseline inspections were evaluated to determine if all or portions 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 IP.

## REACTOR SAFETY

### 71111.01 - Adverse Weather Protection

#### Seasonal Extreme Weather Sample (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated readiness for seasonal extreme weather conditions prior to the onset of seasonal extreme cold temperatures for standby service water system A, standby service water system B, diesel generator 1, and diesel generator 2 on February 3, 2021.

Impending Severe Weather Sample (IP Section 03.02) (1 Sample)

- (1) The inspectors verified the adequacy of the overall preparations to protect risk-significant systems from impending severe weather during sustained high wind conditions on January 13, 2021.

External Flooding Sample (IP Section 03.03) (1 Sample)

- (1) The inspectors evaluated that flood protection barriers, mitigation plans, procedures, and equipment are consistent with the licensee's design requirements and risk analysis assumptions for coping with external flooding on March 3, 2021.

71111.04 - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (3 Samples)

The inspectors evaluated system configurations during partial walkdowns of the following systems/trains:

- (1) control room emergency chilled water system B during planned maintenance on January 12, 2021
- (2) control room emergency chilled water system A during planned maintenance on January 25, 2021
- (3) diesel generator 3 during planned maintenance, week of January 25, 2021

Complete Walkdown Sample (IP Section 03.02) (1 Sample)

- (1) The inspectors performed a complete system alignment of diesel generator 2 on March 26, 2021.

71111.05 - Fire Protection

Fire Area Walkdown and Inspection Sample (IP Section 03.01) (5 Samples)

The inspectors evaluated the implementation of the fire protection program by conducting a walkdown and performing a review to verify program compliance, equipment functionality, material condition, and operational readiness of the following fire areas:

- (1) Fire Area RC-13/2; chiller, communications, instrumentation and control area; on January 11, 2021
- (2) Fire Areas RC-11/1 and RC-12/2; heating, ventilation, and air conditioning equipment rooms A and B; on January 22, 2021
- (3) Fire Areas DG-1/4, DG-6/#, and DG-7/#; high-pressure core spray diesel generator room, storage tank access area, and day tank room; on January 25, 2021
- (4) Fire Area R-3, high-pressure core spray pump room, on March 11, 2021
- (5) Fire Areas DG-3, DG-5, and DG-9; diesel generator 2, diesel oil tank pump room, and diesel day tank room; on March 16, 2021



71111.06 - Flood Protection Measures

Cable Degradation (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated manholes E-MH-E11, E-MH-E13, and E-MH-E15 for cable submergence protection in the protected area on March 31, 2021.

71111.07T - Heat Sink Performance

Triennial Review (IP Section 03.02) (4 Samples)

- (1) RHR-HX-1A, Residual Heat Removal Train A
- (2) RHR-HX-2A, RHR-P-2A Seal Injection Water Cooler
- (3) DCW-HX-1C, Cooling Water to Division 3 Diesel
- (4) RRA-CC-12, Division I Motor Control Center Room Cooler

71111.11Q - Licensed Operator Regualification Program and Licensed Operator Performance

Licensed Operator Performance in the Actual Plant/Main Control Room (IP Section 03.01) (1 Sample)

- (1) The inspectors observed and evaluated licensed operator performance in the control room during a reactor downpower to perform maintenance on condensate pump C on February 20, 2021.

Licensed Operator Regualification Training/Examinations (IP Section 03.02) (1 Sample)

- (1) The inspectors observed and evaluated the licensed operator regualification training drill (Crew B) on February 1, 2021.

71111.12 - Maintenance Effectiveness

Maintenance Effectiveness (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated the effectiveness of diesel generator 2 maintenance on March 25, 2021 to ensure structures, systems, and components remained capable of performing their intended function.

Quality Control (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated the effectiveness of maintenance and quality control activities to ensure the commercial dedication of the control room emergency chiller 1A rupture disk remained capable of performing its intended function on January 15, 2021.

### 71111.13 - Maintenance Risk Assessments and Emergent Work Control

#### Risk Assessment and Management Sample (IP Section 03.01) (5 Samples)

The inspectors evaluated the accuracy and completeness of risk assessments for the following planned and emergent work activities to ensure configuration changes and appropriate work controls were addressed:

- (1) high risk for transformer E-TR-8A/2 replacement on January 19, 2021
- (2) yellow risk for diesel generator 3 maintenance, week of January 25, 2021
- (3) yellow risk for standby service water system A, circuit breaker S/1, and turbine oil vapor extractors 1A and 1B maintenance, week of February 1, 2021
- (4) yellow risk for RCIC system surveillance testing, week of March 8, 2021
- (5) yellow risk for diesel generator 2 planned maintenance outage, week of March 15, 2021

### 71111.15 - Operability Determinations and Functionality Assessments

#### Operability Determination or Functionality Assessment (IP Section 03.01) (4 Samples)

The inspectors evaluated the licensee's justifications and actions associated with the following operability determinations and functionality assessments:

- (1) control room emergency chilled water pump 1B differential pressure beyond action range on February 12, 2021
- (2) aging effects on electrical contactors on February 24, 2021
- (3) diesel generator 3 high jacket water temperature shutdown switch out of calibration on March 9, 2021
- (4) standby service water pump 1B oil sample found elevated water level in the upper bearing oil reservoir on March 12, 2021

### 71111.18 - Plant Modifications

#### Temporary Modifications and/or Permanent Modifications (IP Section 03.01 and/or 03.02) (2 Samples)

The inspectors evaluated the following temporary or permanent modifications:

- (1) control room emergency chilled water system A check valve replacement on January 27, 2021
- (2) electrical bus SM-1 undervoltage relay E-RLY-27/1 removal on March 9, 2021

### 71111.19 - Post-Maintenance Testing

#### Post-Maintenance Test Sample (IP Section 03.01) (5 Samples)

The inspectors evaluated the following post-maintenance test activities to verify system operability and functionality:

- (1) control room emergency chiller system A on January 22, 2021
- (2) control room emergency chiller system B on January 29, 2021

- (3) diesel generator 3 maintenance on January 29, 2021
- (4) standby service water system A on February 8, 2021
- (5) diesel generator 2 on March 26, 2021

#### 71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

#### Surveillance Tests (other) (IP Section 03.01) (2 Samples)

- (1) ISP-SGT-B101, standby gas treatment system A flow and filter pressure drop test (once per 24 months), on January 7, 2021
- (2) OSP-CRD-C703, control rod settle time test, on February 20, 2021

#### Inservice Testing (IP Section 03.01) (1 Sample)

- (1) OST-SLC/IST-Q701, standby liquid control pump 1A quarterly, on March 4, 2021

#### FLEX Testing (IP Section 03.02) (1 Sample)

- (1) FLEX diesel quarterly testing on February 23, 2021

#### 71114.06 - Drill Evaluation

#### Select Emergency Preparedness Drills and/or Training for Observation (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated the emergency planning drill (Emergency Response Organization Team C) on March 9, 2021.

### **OTHER ACTIVITIES – BASELINE**

#### 71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

#### IE01: Unplanned Scrams per 7000 Critical Hours Sample (IP Section 03.01) (1 Sample)

- (1) January 1, 2020, through December 31, 2020

#### IE03: Unplanned Power Changes per 7000 Critical Hours Sample (IP Section 03.02) (1 Sample)

- (1) January 1, 2020, through December 31, 2020

#### IE04: Unplanned Scrams with Complications Sample (IP Section 03.03) (1 Sample)

- (1) January 1, 2020, through December 31, 2020

71152 - Problem Identification and Resolution

Annual Follow-up of Selected Issues (IP Section 02.03) (2 Samples)

The inspectors reviewed the licensee’s implementation of its corrective action program related to the following issues:

- (1) evaluation of the control room chilled water system addition to the IST program on March 9, 2021
- (2) evaluation of the electrical power panel E-PP-8AF low voltage on March 22, 2021

**INSPECTION RESULTS**

Inadequate Procedural Guidance for Operability Determinations for American Society of Mechanical Engineers (ASME) Code Pipe			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000397/2021001-01 Open	[H.1] - Resources	71111.15
<p>The inspectors identified a Green, non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” associated with the licensee’s failure to establish adequate procedural guidance for operability determinations. Specifically, Plant Procedures Manual (PPM) 1.3.66, “Operability Determination,” Revisions 35 and 36, failed to include guidance identifying the need to also evaluate structural integrity in accordance with the ASME Code for code class piping systems when flaws are identified. This resulted in an incomplete operability determination on September 18, 2020, and loss of the presumption of operability of the RCIC system on December 11, 2020.</p> <p><u>Description:</u> On September 18, 2020, the licensee discovered a steam leak on the RCIC system turbine steam inlet valve drain line during recovery from planned RCIC maintenance. This issue was entered into the corrective action program under Action Request (AR) 410929. The licensee performed an operability determination that stated the RCIC system was operable with the steam leak because the leak would not impact the required steam flow to the RCIC turbine. The licensee restored the RCIC system to the normal standby lineup (which isolated the steam leak) on September 18, 2020. On December 9, 2020, engineering entered a concern into the corrective action program (AR 414023) that the operability determination from AR 410929 failed to evaluate the steam leak against ASME Code requirements as the drain line was an ASME Section III, Class 2, high-energy pipe. Operations requested additional operability information from engineering to further evaluate operability of the RCIC system. Engineering provided the requested additional operability information on December 11, 2020. The inspectors identified weaknesses in the additional operability information and determined the licensee needed to perform an ASME Code repair on the pipe and submit an ASME Code relief request to the NRC. On December 17, 2020, the licensee declared the RCIC system inoperable. On December 19, 2020, the licensee declared the RCIC system unavailable in order to perform the ASME Code repair. The licensee restored the RCIC system to operable status on December 20, 2020.</p> <p>The licensee completed an event investigation and entered AR 414343 into the corrective action program to evaluate past operability of the RCIC system. The inspectors</p>			

independently reviewed the licensee's past operability analyses, evaluated the licensee's event investigation, and determined the licensee had demonstrated reasonable assurance of past operability of the RCIC system.

On April 30, 2020, the licensee updated PPM 1.3.66 to Revision 35 to reflect updated industry guidance on operability determinations. ASME Code requirements and their relationship to operability of structures, systems, and components were unknown by licensee personnel throughout the organization and were not included in the operability determination process update. This omission was carried through in the August 18, 2020, update to Revision 36. The licensee updated PPM 1.3.66 to Revision 37 to include guidance identifying the need to also evaluate structural integrity in accordance with the ASME Code for code class piping systems when flaws are identified on March 4, 2021.

**Corrective Actions:** The licensee performed an ASME Code repair on the turbine steam inlet valve drain line, entered the condition into the corrective action program, performed a failure analysis of the drain line, conducted an event investigation, performed extensive past operability analyses, and updated the operability procedure to include guidance identifying the need to also evaluate structural integrity in accordance with the ASME Code for code class piping systems when flaws are identified.

**Corrective Action References:** ARs 410929, 414023, and 414343

Performance Assessment:

**Performance Deficiency:** The failure to establish adequate procedural guidance for operability determinations was a performance deficiency.

**Screening:** The inspectors determined the performance deficiency was more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, Plant Procedures Manual (PPM) 1.3.66, "Operability Determination," Revisions 35 and 36, failed to include guidance identifying to evaluate structural integrity in accordance with the ASME Code for code class piping system when flaws are identified. This resulted in an incomplete operability determination on September 18, 2020, and the loss of the presumption of operability of the RCIC system on December 11, 2020.

**Significance:** The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspectors determined this finding is of very low safety significance (Green) because all of the screening questions were answered in the negative.

**Cross-Cutting Aspect:** H.1 - Resources: Leaders ensure that personnel, equipment, procedures, and other resources are available and adequate to support nuclear safety. The finding has a cross-cutting aspect in the area of human performance, resources, in that the licensee did not ensure that personnel, equipment, procedures, and other resources were available and adequate to support nuclear safety. Specifically, ASME Code requirements and their relationship to operability of structures, systems, and components were unknown by licensee personnel throughout the organization and were not included in the operability determination process update on April 30, 2020.

Enforcement:

Violation: Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances. The licensee established PPM 1.3.66, "Operability Determination," as the implementing procedure for conducting operability determinations.

Contrary to the above, from April 30, 2020, through March 4, 2021, the licensee failed to ensure that operability determinations, activities affecting quality, were prescribed by a documented procedure of a type appropriate to the circumstances. Specifically, PPM 1.3.66, "Operability Determination," Revisions 35 and 36, failed to include guidance to evaluate structural integrity in accordance with the ASME Code for code class piping systems when flaws are identified. This resulted in an incomplete operability determination on September 18, 2020, and the loss of the presumption of operability of the RCIC system on December 11, 2020, due to a steam leak on the turbine steam inlet valve drain line.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

The disposition of this finding and associated violation closes URI: 05000397/2020004-02.

URI (Closed)	Reactor Core Isolation Cooling Drainpipe Steam Leak URI 05000397/2020004-02	71111.15
Description: This unresolved item (URI) is closed. The basis for the URI closure is discussed in this report under NCV 05000397/2021001-01 in the above Inspection Results associated with Report Section 71111.15.		

Failure to Perform Preservice Testing as Required by American Society of Mechanical Engineers (ASME) Code			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Barrier Integrity	Green NCV 05000397/2021001-02 Open	[H.1] - Resources	71152
The team identified a Green, non-cited violation (NCV) of 10 CFR 50.55a(f), "Preservice and inservice testing requirements," subsection (4), "Inservice testing standards requirement for operating plants," because the licensee did not implement the IST program in accordance with the ASME OM Code of Record for the control room chilled water system 1A and 1B pumps. Specifically, the licensee did not perform preservice testing of the 1A and 1B control room chilled water (CCH) pumps as required by ASME OM Code, Paragraph ISTB-3100 Preservice Testing, before scoping the pumps into their IST program. This resulted in CCH operability surveillance procedures with inaccurate IST information that could not be used to determine the pumps met technical specification requirements.			
<u>Description:</u> On February 6, 2020, Columbia Generating Station received approval from the NRC for a license amendment request (LAR) to allow the use of either the CCH system or the emergency service water system (SW) as acceptable cooling sources in support of the main control room (MCR) air conditioning (AC) system. The safety-related function of the MCR AC system is to maintain the MCR temperature less than or equal to the 104°F equipment			

qualification temperature limit during and following design basis events, and maintaining the long term, steady state MCR design condition temperature less than or equal to 85°F that supports 30 days continuous MCR occupancy. The change would utilize the CCH system as the preferred cooling source in support of the MCR AC system due to SW heat removal capability limitations. The LAR implementation included expanding the scope of the IST program to include applicable components in the CCH and SW systems utilized for CCH system operation not previously included in the program and updating all relevant documentation to reflect the change. On May 4, 2020, Columbia Generating Station received approval to extend the LAR implementation date to February 6, 2021, due to unforeseen circumstances associated with the COVID-19 pandemic. The licensee completed full implementation of the LAR on February 4, 2021.

The inspectors reviewed several ARs that documented issues with implementing the LAR and establishing required test conditions for the CCH pumps. On February 4, 2021, the licensee created AR 415919 to document that the newly updated CCH operability surveillance procedures contained inaccurate IST information that could not be used to determine the pumps met technical specification requirements; the inaccurate IST information would be corrected by March 12, 2021, after the licensee performed additional testing. The inspectors identified that this was not in compliance with the ASME OM Code.

Corrective Actions: The licensee entered the condition into the corrective action program, performed preservice testing of the 1A and 1B control room chilled water pumps and established initial sets of reference values in accordance with the ASME OM Code, and completed an investigation.

Corrective Action References: ARs 415619, 415919, and 417741

Performance Assessment:

Performance Deficiency: The failure to perform required testing set forth in the ASME OM Code for the control room chilled water system 1A and 1B pumps was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Procedure Quality attribute of the Barrier Integrity cornerstone and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, the licensee did not perform preservice testing of the 1A and 1B CCH pumps as required by ASME OM Code, Paragraph ISTB-3100 Preservice Testing, before scoping the pumps into their IST program. This resulted in CCH operability surveillance procedures with inaccurate IST information that could not be used to determine the pumps met technical specification requirements.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspectors determined this finding is of very low safety significance (Green) because the finding did not represent a degradation of the radiological barrier function provided for the control room, auxiliary building, spent fuel pool, SBGT system (BWR), or EGTS system (PWR ice condenser) and did not represent a degradation of the barrier function of the control room against smoke or a toxic atmosphere.

Cross-Cutting Aspect: H.1 - Resources: Leaders ensure that personnel, equipment, procedures, and other resources are available and adequate to support nuclear safety. This finding had a cross-cutting aspect in the area of human performance, resources, in that the licensee did not ensure that personnel, equipment, procedures, and other resources are available and adequate to support nuclear safety. Specifically, the licensee did not understand the full scope of testing requirements required by the ASME Code and did not have adequate testing procedures available to support preservice testing.

Enforcement:

Violation: Title 10 CFR 50.55a(f), "Preservice and inservice testing requirements," states, in part, that systems and components of boiling and pressurized water-cooled nuclear power reactors must meet the requirements for preservice and inservice testing (referred to in this paragraph (f) collectively as inservice testing) of the ASME BPV Code and ASME OM Code. Subsection (4), "Inservice testing standards requirement for operating plants," further states, in part, that "throughout the service life of a boiling or pressurized water-cooled nuclear power facility, pumps and valves that are within the scope of the ASME OM Code must meet the inservice test requirements ... set forth in the ASME OM Code and addenda." Paragraph ISTB-3100 of ASME OM Code 2004, 2006 Addenda, states, in part, "...before implementing inservice testing, an initial set of reference values shall be established for each pump. These tests shall be conducted under conditions as near as practicable to those expected during subsequent inservice testing..."

Contrary to the above, the licensee did not meet the requirements for preservice and inservice testing of the ASME OM Code, in that they did not establish an initial set of reference values for each pump before implementing inservice testing, and did not conduct these tests under conditions as near as practicable to those expected during subsequent inservice testing. Specifically, the licensee did not perform preservice testing of the 1A and 1B control room chilled water (CCH) pumps as required by ASME OM Code, Paragraph ISTB-3100 Preservice Testing, before scoping the pumps into their IST program. This resulted in CCH operability surveillance procedures with inaccurate IST information that could not be used to determine the pumps met technical specification requirements.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.



## **EXIT MEETINGS AND DEBRIEFS**

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

- On February 18, 2021, the inspectors presented the triennial heat sink inspection results to R. Shultz, Site Vice President and other members of the licensee staff.
- On April 15, 2021, the inspectors presented the integrated inspection results to Mr. A. Javorik, Site Vice President, Engineering Projects, and other members of the licensee staff.

**DOCUMENTS REVIEWED**

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.01	Calculations	CE-02-13-18	Probable Maximum Flood Analysis for Columbia Generating Station	000
		CE-02-13-22	Effects of Local Intense Probable Maximum Precipitation Analysis for Columbia Generating Station	000
		ME-02-92-41	Calculation for Ultimate Heat Sink Analysis	008
		ME-02-92-43	Room Temperature Calculation for DG Building, Reactor Building, Radwaste Building and Service Water	013
	Corrective Action Documents	Action Requests (ARs)	403246, 404534, 415728, 396990, 025319, 400176, 389796	
	Miscellaneous	G02-16-143, Columbia Generating Station, Docket No. 50-397 Flooding Hazard Reevaluation Report	Response to NRC Request for Information Pursuant to 10 CFR 50.54(f) Regarding Recommendation 2.1 of the Near-term Task Force Review of Insights from the Fukushima Dai-ichi Accident	
		MOT-HT-1-1	Freeze Protection Heat Trace	004
	Procedures	4.840.A5	840.A5 Annunciator Panel Alarms	029
		ABN-FLOODING	Flooding	022
		ABN-WIND	Tornado/High Winds	034
		SOP-COLDWEATHER-OPS	Cold Weather Operations	034, 035
		SOP-HOTWEATHER-OPS	Hot Weather Operations	007
		SOP-WARMWEATHER-OPS	Warm Weather Operations	016

71111.01	Work Orders		02135244	
71111.04	Corrective Action Documents	Action Requests (ARs)	0415611	
	Drawings	M512-1	Flow Diagram Diesel Oil and Miscellaneous Systems Diesel Generator Building	048
		M512-4	Flow Diagram Diesel Oil and Miscellaneous Systems Diesel Generator Building	015
		M775	Flow Diagram Emergency Chilled Water Piping System Control Room	029
	Procedures	1.3.29	Locked Valve Checklist	087
		OSP-CCH/IST-M701	Control Room Emergency Chiller System A Operability	049
		OSP-CCH/IST-M702	Control Room Emergency Chiller System B Operability	047, 048
		SOP-DG2-LU	Emergency Diesel Generator (Div 2) Valve and Power Supply Lineup	007
		SOP-DG2-START	Emergency Diesel Generator (Div 2) Start	031
		SOP-DG2-STBY	Emergency Diesel Generator (Div 2) Standby Lineup	023
		SOP-DG3-LU	High Pressure Core Spray Diesel Generator Valve and Power Supply Lineup	009
		SOP-DG3-STBY	High Pressure Core Spray Diesel Generator Standby Lineup	020
		SOP-HVAC/CR-LU	Control, Cable, and Critical Switchgear Rooms HVAC Lineup	001
	SOP-SW-LU	Standby Service Water System Valve and Breaker Lineup	014	
Work Orders		02172385		
71111.05	Calculations	FP-02-85-03	Combustible Loading Calculation	011
	Fire Plans	PFP-DG-BUILDING	Diesel Generator Building	004
		PFP-RW-525	Radwaste 525	006
	Procedures	1.3.10	Plant Fire Protection Program Implementation	036
		1.3.10A	Control of Ignition Sources	017
1.3.10C		Control of Combustibles	022	
71111.06	Corrective Action Documents	Action Requests (ARs)	417530, 417568, 417604, 417615, 417852	
	Drawings	E823	Manhole Print Underground Duct Banks Plans and Profiles	027

			Sheet 1	
	Miscellaneous		Video of E-MH-E15 Inspection	03/31/2021
		BIP 20-0559	Barrier Impairment Permit for E-MH-E11 30' east of bldg. 88 (north end)	03/25/2021
		BIP 20-0560	Barrier Impairment Permit for E-MH-E13 60' east of bldg. 88 (north end)	03/25/2021
		BIP 20-0561	Barrier Impairment Permit for E-MH-E15 east of bldg. 88	03/25/2021
		BIP 21-0097	Barrier Impairment Permit for E-MH-E15 east of bldg. 88	03/31/2021
	Procedures	1.3.57	Barrier Impairment	040
	Work Orders		02139272	
71111.07T	Calculations	ME-02-05-05	Calculation for Projecting RHR Heat Exchanger Thermal Performance	000
		ME-02-09-03	Test Data Evaluation and Uncertainty Analysis for the RHR Heat Exchangers	04/21/2009
		ME-02-85-70	Seal Coolers for RHR-P-2A, 2B, and 2C	000
		ME-02-92-41	Calculation for Ultimate Heat Sink Analysis	007
		ME-02-92-43	Room Temperature Calculation for DG Building, Reactor Building, Radwaste Building and Service Water	013
		ME-02-96-03	Potential Effect of SW Fouling on RHR Seal Cooler Performance	000
	Corrective Action Documents	Action Requests (ARs)	387462, 404282, 372892, 387484, 240323, 385702, 399102, 398565, 392171, 413335, 412987	
	Drawings	CVI DWG 215-11	Seal Injection Water Coolers	006
		M524-1	Flow Diagram Standby Service Water System Reactor, Radwaste, D.G. Buildings and Yard	140
		M587	General Arrangement Plan and Section Diesel Generator Building	040
		M777	Composite Piping Plans at EL.441'-0", 455'-0", 472'-9" Diesel Generator Building	054
		M778	Composite Piping Sections and Details Diesel Generator Building	041
	Engineering Changes	EC 17500	Minimum Wall Thickness Requirement for RHR-HX-2A	002
		EC14774	Replace RHR-P-2A	007
	Miscellaneous		Columbia Generating Station Service Water Reliability Program	004
		AED SPC 15F.2	Design Specification for Division 15 Section 15F.2 Essential	002

			Fan Coil Units	
		AED SPC 309	Design Basis Document Division 300 Section 309 - Standby Service Water System	018
		AED SPC 310	Design Basis Document Standby Power Systems	015
		DCW-HX-1C Plugged Tubes List	DCW-HX-1C Plugged Tubes List	000
		DCW-HX-1C Plugged Tubes Map	DCW-HX-1C Plugged Tubes Map	000
	Procedures	1.5.11	Maintenance Rule Program	015
		12.14.1	Chemical Treatment of Standby Service Water	020
		4.820.B1	820.B1 Annunciator Panel Alarms	041
		ABN-SW	Service Water Trouble	015
		SOP-SW-DRAIN	Standby Service Water Drain	008
		SOP-SW-FILL	Standby Service Water System Fill	007
		SOP-SW-OPS	Standby Service Water Operations	009
		SWP-CHE-02	Chemical Process Management and Control	030
		SYS-4-23	Maintenance Rule Structural Baseline Inspections	001
	Self-Assessments	404096	Self-assessment is to assess Columbia's performance in the area of Service Water Reliability and GL 89-13 in preparation for the triennial NRC ultimate heat sink inspection	10/01/2020
	Work Orders		02100975, 02117561, 02134259, 02131491, 02131518, 02103774, 02077068, 02111141, 02076064, 29135328, 02041703, 02076064, 02134638, 02134639, 02134640, 02143199, 02143200, 02143201, 02163358, 02136601, 02085391, 02085671, 02114521, 02134951, 02145562, 02165498, 02100975, 02117561, 02095968, 02135019, 02147556, 02147572, 02111141, 02128173, 01178727, 29135328, 29151758	
71111.11Q	Corrective Action Documents	Action Requests (ARs)	0415789	
	Miscellaneous	LR002510	Columbia Generating Station Simulator Cycle 21-1 Evaluated Scenario	
	Procedures	13.1.1	Classifying the Emergency	049

		3.2.6	Power Maneuvering	015
		3.3.1	Reactor Scram	066
		5.1.1	RPV Control	022
		5.1.2	RPV Control - ATWS	026
		5.5.11	Alternate Control Rod Insertions	010
		9.3.12	Plant Power Maneuvering	037
		9.3.9	Control Rod Withdrawal Sequence Development and Control	030
		ABN-CORE	Unplanned Core Operating Conditions	018
		OI-09	Operations Standards and Expectations	079
		OSP-CRD-M704	Control Rod Exercise (week 4)	000
		SOP-CR-MOVEMENT	Control Rod Movement	004, 005
	Work Orders		02146078	
71111.12	Corrective Action Documents	Action Requests (ARs)	404914, 415069, 415085, 415094, 415233, 415125, 417213, 417232, 417233, 417234, 417235, 417236, 417238, 417242, 417266, 417275, 417291, 417297, 417308, 417360, 417364, 417366, 417376, 417390, 417406, 417423, 417426, 417429, 417435, 417441, 417449, 417450, 417237, 417241	
	Miscellaneous		Commercial Grade Dedication Package for Continental Rupture Discs	01/11/2021
		ISP 20-0216	Ignition Source Permit for DG2 Room	03/17/2021
		ISP 20-0217	Ignition Source Permit for DG2	01/20/2021
		MOT-CHILL-1-1-9.1	MOT for Chillers	010
	Procedures	1.3.10A	Control of Ignition Sources	017
		1.3.56	Conduct of Maintenance	012
		1.3.64	Plant Clearance Order	044
		1.5.11	Maintenance Rule Program	016
		10.2.13	Approved Lubricants	077
		10.20.19	Diesel Generator Alternative Refuel Cycle (2 Year & 4 Year) Preventative Maintenance (Division 1 and 2)	010
		ECP-DG2/INSP-B101	Diesel Generator DG2 Electrical Inspection	020

		QQAPD-01	Operational Quality Assurance Program Description (EN-QA-004)	056
		SWP-ENV-01	Refrigerant Compliance Program	005
		SWP-INS-01	Quality Control Inspection and Peer Verification	008
		SYS-4-31	System and Equipment Performance Monitoring and Trending Program	012
		WCI-2	Standard Operating Cycle Schedule Development	006
	Work Orders		02136926, 02155988, 02165100, 02159685, 02152933, 02155807, 02128138, 02129026, 02127872, 02127930, 02127931, 02121189	
71111.13	Corrective Action Documents	Action Requests (ARs)	412066, 412131, 414328, 414384, 414642, 415479, 415528, 415781, 414350, 417009, 398152	
	Miscellaneous		Paragon Snapshot of week of March 8	03/09/2021
			Paragon Snapshot of week of March 15	03/15/2021
		BIP 20-0471	Barrier Impairment Permit: ISP-MS-Q923 (Calibrate MS-LIS-38A)	03/08/2021
	Procedures	1.3.76	Integrated Risk Management	060
		1.3.83	Protected Equipment Program	031, 032, 033
		1.5.14	Risk Assessment and Management for Maintenance/Surveillance Activities	043
		OSP-ELEC-W102	Electrical Distribution Subsystem Breaker Alignment and Power Availability Verification	032
		SOP-ELEC-AC-LU	AC Electrical Distribution System Breaker Lineup	077
		SOP-HPCS-INJECTION	HPCS RPV Injection	007
	Work Orders		02163349, 02160962, 02162477, 02171486, 02172898, 02169318, 02120074, 02157617, 02163796, 02164284, 02151273, 02168694, 02129026, 02107861, 02153181	
71111.15	Calculations	9.32.02	HVAC Control Room Emergency Chiller System	002
		E/I-02-91-1096	Setting Range Determination for Instrument Loop DCW-TS-4	000
		ME-02-92-43	Room Temperature Calculation for DG Building, Reactor Building, Radwaste Building and Service Water	013
	Corrective Action	Action Requests	415639, 415798, 415855, 415892, 415935, 416136,	

	Documents	(ARs)	415566, 413121, 414214, 396335	
	Drawings	EWD-7E-004C	High Pressure Core Spray System HPCS Diesel Engine DG-ENG-1C Controls	004
		EWD-7E-005C	High Pressure Core Spray System HPCS Diesel Engine DG-ENG-1C Controls	005
		M775	Flow Diagram: Emergency Chilled Water Piping System Control Room	029, 030
	Engineering Changes	16619	Credit CCH for MCR Equipment Operability	002
	Engineering Evaluations	Failure Evaluation	Failure Evaluation of Aux contact from WMA-42-8F2C	
	Miscellaneous	AED SPC 309	Design Basis Document Division 300 Section 309 - Standby Service Water System	018
	Procedures	1.10.11	Technical Assessments Supporting Reportability and Reportability Evaluations	002
		1.3.66	Operability Determination	036, 037
		OSP-CCH/IST-M701	Control Room Emergency Chiller System A Operability	047, 048, 049, 050, 051, 052
		OSP-CCH/IST-M702	Control Room Emergency Chiller System B Operability	045, 046, 047, 048, 049
		OSP-SW-M101	Standby Service Water Loop A Valve Position Verification	043, 044
		OSP-SW-M102	Standby Service Water Loop B Valve Position Verification	044, 045
	Work Orders		02159687, 02139086, 02120123, 02134259	
71111.18	Calculations	8.42.0241	Pipe Stress Analysis CCH A Piping	003
	Corrective Action Documents	Action Requests (ARs)	415249, 408430	
	Drawings	215-00,14008,1	Chilled Water Surge Pipe to CCH-P-1A	005
		M775	Flow Diagram Emergency Chilled Water Piping System Control Room	029
	Engineering Changes	16619	CCH-V-14A Replacement Check Valve	002A.FCR
		16619	Credit CCH for MCR Equipment Operability	002
		18415	TMOD Remove SM-1 UV Relay E-RLY-27/1	000
Miscellaneous	5059EVAL-18-0002	EC 16619	000	



		696-00,4	Vendor Manual Y-type Check Valve with Soft Mainseat	002
		SPC 1	Design Specification for Division 100, Section 1, ASME Piping Systems	024
	Procedures	1.3.30	Repair, Replacement, and Alteration of ASME Items	029
		1.3.9	Temporary Modifications	057
		10.2.28	Installation, Modification and Inspection of Piping Systems	023
		10.25.23	Testing and Setting Time Voltage Relays	016
		DES-2-15	Engineering Change Revisions	013
		ENG-DES-50	Interface Procedure for IP-ENG-001 Standard Design Process	002
		IP-ENG-001	Standard Design Process	002
Work Orders		02173116, 02164829		
71111.19	Corrective Action Documents	Action Requests (ARs)	415125, 415249, 415251, 415253, 415254, 415264, 415385, 415428, 415448, 415426, 415443, 415619, 415639, 415640, 415566, 415784, 417360, 417364	
	Procedures	1.3.16	Issue Management	002
		10.20.19	Diesel Generator Alternative Refuel Cycle (2 Year & 4 Year) Preventative Maintenance (Division 1 and 2)	010
		10.25.207	Testing and Setting Agastat 7000 Series and Agastat ETR Series Time Delay Relays	007
		ECP-DG2/INSP-B101	Diesel Generator DG2 Electrical Inspection	020
		MI-1.22	Maintenance Planning Program	025
		OSP-CCH/IST-M701	Control Room Emergency Chiller System A Operability	048, 049
		OSP-CCH/IST-M702	Control Room Emergency Chiller System B Operability	046, 047, 048
		OSP-DO-Q703	DO-P-2 Operability	001
		OSP-ELEC-M102	DO-TK-3B Operability Test	005
		OSP-ELEC-S703	HPCS Diesel Generator Semi-Annual Operability Test	064
		OSP-LPCS/IST-Q702	LPCS System Operability Test	045
		OSP-SW/IST-Q701	Standby Service Water Loop A Operability	032
		QAP-ASU-07	Peer Verification Program Planning	006

		SWP-TST-01	Post Maintenance Testing Program	017
		TSP-DG2-B502	Standby Diesel Generator DG2 Load Testing	026
	Work Orders		02163484, 02136926, 02159685, 02152933, 02159687, 02138414, 02160255, 02168523, 02153328, 02150242, 02152214, 02152211, 02139086, 02128619, 02143355, 02155806, 02157633, 02157844, 02153328, 02167414, 02153540, 02155511, 02165185, 02138671, 02129026, 02127872, 02121189, 02176181, 02168090	
71111.22	Corrective Action Documents	Action Requests (ARs)	414973, 416341, 416689, 416475, 416474	
	Miscellaneous		Reactivity Control Plan, Rod Set	02/13/2021
			Control Rod Withdrawal Deviation Sheet, pages 28, 29, 30 and 31	02/20/2021
		NRC Information Notice 2020-02	FLEX Diesel Generator Operational Challenges	09/15/2020
	Procedures	1.5.1	Surveillance Testing Program	045
		ISP-SGT-B101	Standby Gas Treatment - System A - Flow and Filter Pressure Drop Test	007
		OSP-CRD-C703	Control Rod Settle Time Test	002
		OSP-FLEX-Q704	Diesel Generator 4 Quarterly Surveillance	000
		OSP-SLC/IST-Q701	Standby Liquid Control Pumps Operability Test	029

71111.22	Procedures	SOP-DG4-SHUTDOWN	Diesel Generator 4 Shutdown	003
		SOP-DG4-START	Diesel Generator 4 Start	010
		SOP-DG4-STBY	Diesel Generator 4 Standby	002
	Work Orders		02136245, 02163210, 02163209, 02158719, 02126801, 02123201, 02168152	
71114.06	Corrective Action Documents	Action Requests (ARs)	416984, 416986, 416996	
	Miscellaneous		Columbia Generating Station ERO Team "C" Drill Report: March 9, 2021 After Action Report / Improvement Plan	000
	Procedures	13.1.1	Classifying the Emergency	049
		13.1.1A	Classifying the Emergency – Technical Bases	034
		13.10.2	TSC Manager Duties	035
		13.10.9	Operations Support Center Manager and Staff Duties	050
		13.11.1	EOF Manager Duties	044
		13.11.12	EOF Engineering Manager and Staff Duties	032
		13.11.2	Assistant EOF Manager Duties	010
13.11.3	Site Support Manager and Staff Duties	033		
71151	Corrective Action Documents	Action Requests (ARs)	403173, 404225, 404429, 407724, 412859, 416468	
	Miscellaneous		Operations Logs	01/01/2020 – 12/31/2020
			Operational Decision Making Issue Evaluation	002, 003, 004, 005
			Timeline and Discussion of Second Turbine Balance Shot in June 2020 White Paper	03/08/2021
	Procedures	1.10.10	Consolidated Data Entry Process Description	008
		ABN-FWH-HILEVEL/TRIP	Feedwater Heater High Level Trip	007
		ABN-POWER	Unplanned Reactor Power Change	016
	Work Orders		02147004, 02145898	

71152	Corrective Action Documents	Action Requests (ARs)	415619, 415795, 415640, 415892, 415919, 415955, 419957, 419958, 415999, 409590, 409591, 409937, 412066, 412131, 412465, 414328, 414384, 414642, 415308, 415383, 415384, 415575, 417741	
	Drawings	EWD-46E-252	Electrical Wiring Diagram AC Electrical Distribution System Power Panel E=PP-8AF	021
	Engineering Changes	16619	Credit CCH for MCR Equipment Operability	002
	Miscellaneous	FA-PR20001875-1	Failure Analysis Report for Regulating Transformers SOLA P/N 63-28-315-8	000
		IST-4	Inservice Testing Program Plan Fourth Ten-Year Inspection Interval	004, 005
	Procedures	18.1.19	CCH-P-1A Pre-service Test	000, 001
		18.1.21	CCH-P-1B Pre-service Test	000
		SOP-ELEC-AC-LU	AC Electrical Distribution System Breaker Lineup	077
	Work Orders		02167660, 02171486, 02157840	