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

January 28, 2019

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

SUBJECT: COLUMBIA GENERATING STATION – NRC INTEGRATED INSPECTION REPORT 05000397/2018004

Dear Mr. Sawatzke:

On December 31, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Columbia Generating Station. On January 10, 2019, the NRC inspectors discussed the results of this inspection with Mr. W. Grover Hettel, Chief Nuclear Officer/Vice President Nuclear Generation, and other members of your staff. The results of this inspection are documented in the enclosed report.

NRC inspectors documented two findings of very low safety significance (Green) in this report. One of these findings involved a violation of NRC requirements. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violation or significance of the NCV, 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 or a finding 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/

Mark S. Haire, Branch Chief
Project Branch A
Division of Reactor Projects

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

Enclosure:
Inspection Report 05000397/2018004
w/attachment: Documents Reviewed

U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Number(s):	05000397
License Number(s):	NPF-21
Report Number(s):	05000397/2018004
Enterprise Identifier:	I-2018-004-0040
Licensee:	Energy Northwest
Facility:	Columbia Generating Station
Location:	Richland, Washington
Inspection Dates:	October 1, 2018 to December 31, 2018
Inspectors:	G. Kolcum, Senior Resident Inspector L. Merker, Resident Inspector J. Braisted, Reactor Inspector M. Hayes, Operations Engineer N. Hernandez, Operations Engineer C. Smith, Reactor Inspector
Approved By:	M. Haire, Branch Chief Project 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. 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. NRC-identified and self-revealed findings, violations, and additional items are summarized in the tables below.

List of Findings and Violations

Licensed Operator Failure Rate			
Cornerstone	Significance	Cross-cutting Aspect	Inspection Procedure
Mitigating Systems	Green FIN 05000397/2018004-01 Closed	H.1 – Resources	71111.11
The inspectors reviewed a self-revealed, Green finding associated with licensed operator performance on the biennial requalification exam. Specifically, 15 of 51 operators failed at least one portion of the biennial requalification examinations and 2 of 8 crews failed the simulator scenarios. Based on the licensee's successful remediation and subsequent retesting of individuals who failed a portion of the biennial requalification examination prior to returning to shift, no violation of regulatory requirements occurred.			

Failure to Perform Hourly Fire Tours as Required by the Fire Protection Program			
Cornerstone	Significance	Cross-cutting Aspect	Inspection Procedure
Mitigating Systems	Green NCV 05000397/2018004-02 Closed	H.4 – Teamwork	71152
The inspectors identified a Green, non-cited violation of Columbia Generating Station Operating License Condition 2.C(14), "Fire Protection Program (Generic Letter 86-10)," because the licensee failed to perform hourly compensatory fire tours as required by the Licensee Controlled Specifications (LCS). Specifically, while the essential fire detection for the residual heat removal 2B pump room was out of service, the licensee did not conduct an hourly fire tour of the residual heat removal 2B pump room area.			

Additional Tracking Items

Type	Issue number	Title	Inspection Procedure	Status
URI	05000397/2014002-02	Unresolved Discrepancies in the Licensing Basis of the Tower Makeup System	71152	Closed

PLANT STATUS

The plant began the inspection period at 100 percent rated thermal power.

On December 6, 2018, condensate booster pump 2A tripped due to low section pressure. Reactor feedwater pump 1B tripped due to the condensate booster pump 2A trip and caused a recirculation pump runback to 69 percent power. On December 7, 2018, operators returned reactor feedwater pump 1B and condensate booster pump 2A to service and restored power to 74 percent. On December 11, 2018, power ascension to 85 percent power was halted at 77 percent power due to a lockup of the rod drive control system. On December 12, 2018, the licensee increased reactor power to 92 percent by increasing recirculation flow. The unit was returned to rated thermal power on December 13, 2018.

On December 15, 2018, the unit was down powered to 62 percent to perform control rod sequence exchanges, turbine valve testing, and planned repairs to condensate booster pump 2B. The unit was returned to rated thermal power on December 16, 2018.

On December 23, 2018, the unit was down powered to 98 percent to perform main steam bypass valve testing. The unit was returned to rated thermal power on December 23, 2018, and remained at or near rated thermal power for the remainder of the inspection period.

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 performed plant status activities described in IMC 2515 Appendix D, "Plant Status" and conducted routine reviews using IP 71152, "Problem Identification and Resolution." 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.

REACTOR SAFETY

71111.01—Adverse Weather Protection

Impending Severe Weather (1 Sample)

The inspectors evaluated readiness for impending adverse weather conditions for high winds on October 2 - 3, 2018.

71111.04—Equipment Alignment

Partial Walkdown (2 Samples)

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

(1) fuel pool cooling component check, system A, on November 21, 2018
(2) fuel pool cooling component check, system B, on November 21, 2018

71111.05AQ—Fire Protection Annual/Quarterly

Quarterly Inspection (6 Samples)

The inspectors evaluated fire protection program implementation in the following selected areas:

(1) Fire Area DG-2/1, diesel generator 1, on October 15, 2018
(2) Fire Area R-18/2, motor control center room, Division 2, on October 17, 2018
(3) Fire Area RE-3/1, cable chase, on October 17, 2018
(4) Fire Area DG-3/2, diesel generator 2, on October 22, 2018
(5) Fire Area DG-1/1, diesel generator 3, on October 29, 2018
(6) Fire Area R-1/1, general floor area, reactor building, on October 29, 2018

71111.07—Heat Sink Performance

Heat Sink (Triennial) (4 Samples)

The inspectors evaluated exchanger/sink performance on the following components from December 10, 2018, to December 13, 2018:

(1) control room chiller condenser CCH-CU-1B, Section 02.02b
(2) diesel cooling water heat exchanger DCW-HX-1A1, Section 02.02b
(3) residual heat removal pump seal cooler RHR-HX-2A, Section 02.02b
(4) residual heat removal pump room cooling Coil RRA-CC-3, Section 02.02b

71111.11—Licensed Operator Requalification Program and Licensed Operator Performance

Operator Requalification (1 Sample)

The inspectors observed and evaluated a licensed operator requalification evaluated scenario on October 9, 2018.

Operator Performance (1 Sample)

The inspectors observed and evaluated licensed operator performance associated with the following:

(1) standby liquid control, system A and B testing, on October 18, 2018
(2) tower makeup pump 1C trip, on November 25, 2018

Operator Exams (1 Sample)

The inspectors reviewed and evaluated requalification examination results on December 28, 2018, with the exception of three outstanding exams which will be administered the first week of January 2019.

Operator Requalification Program (1 Sample)

The inspectors evaluated the operator requalification program from October 15, 2018 to December 28, 2018.

71111.13—Maintenance Risk Assessments and Emergent Work Control (5 Samples)

The inspectors evaluated the risk assessments for the following planned and emergent work activities:

(1) yellow risk for diesel generator 1 maintenance, week of October 1-5, 2018

(2) yellow risk for reactor core isolation cooling surveillances, on October 10-12, 2018

(3) orange risk during high pressure core spray battery charger C1-1 maintenance, on October 12, 2018

(4) yellow risk for residual heat removal system B maintenance, on October 15-16, 2018

(5) yellow risk for residual heat removal system A maintenance, on December 13, 2018

71111.15—Operability Determinations and Functionality Assessments (3 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

(1) high pressure core spray battery charger low voltage, on October 11, 2018
(2) reactor building stack monitor fault, PRM-SR-1, on November 14, 2018
(3) reactor core isolation cooling system surveillance results, on December 13, 2018

71111.19—Post Maintenance Testing (5 Samples)

The inspectors evaluated the following post-maintenance tests:

(1) standby diesel generator 1 load testing, on October 3, 2018

(2) high pressure core spray battery charger testing, on October 12, 2018

(3) fuel pool cooling tank 1B high level control indication switch replacement, FPC-LIS-2B, on October 31, 2018

(4) fuel pool cooling system A maintenance, on November 9, 2018

(5) fuel pool cooling system B maintenance, on November 28, 2018

71111.22—Surveillance Testing

The inspectors evaluated the following surveillance tests:

Routine (2 Samples)

(1) ISP-RCIC-Q903, reactor core isolation cooling surveillances, on October 10, 2018
(2) ISP-RCIC-Q901, reactor core isolation cooling surveillances, on October 11, 2018

In-service (1 Sample)

(1) OSP-CCH/IST-M702, control room emergency chiller system B, on October 18, 2018

Reactor Coolant System Leak Detection (1 Sample)

(1) SOP-FDR-OPS, floor drain system operation, on November 9, 2018

Containment Isolation Valve (1 Sample)

(1) OSP-RCIC/IST-Q701, reactor core isolation cooling valve V-19, on December 13, 2018

OTHER ACTIVITIES – BASELINE

71151—Performance Indicator Verification (2 Samples)

The inspectors verified licensee performance indicators submittals listed below:

(1) BI01: Reactor Coolant System (RCS) Specific Activity Sample (10/01/2017–09/30/2018)

(2) BI02: RCS Leak Rate Sample (10/01/2017–09/30/2018)

71152—Problem Identification and Resolution

Semiannual Trend Review (1 Sample)

The inspectors reviewed the licensee's corrective action program for trends that might be indicative of a more significant safety issue. The inspectors reviewed a potential trend of missed fire tours and documented one observation and an NRC-identified violation (NCV 05000397/2018004-02, "Failure to Perform Hourly Fire Tours as Required by the Fire Protection Program") on December 13, 2018.

Annual Follow-up of Selected Issues (3 Samples)

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

(1) hourly fire tours of residual heat removal pump 2B, pump room, on October 26, 2018
(2) low standby service water flow alarms, on December 18, 2018
(3) discrepancies in the licensing basis of the tower makeup system, on December 14, 2018

71153—Follow-up of Events and Notices of Enforcement Discretion

Events (2 Samples)

(1) The inspectors evaluated the functionality assessment of reactor building stack monitor, PRM-SR-1, and the licensee's response on November 14, 2018.

(2) The inspectors evaluated the recirculation pump runback to 69 percent reactor power and the licensee's response on December 6, 2018.

INSPECTION RESULTS

Observation	71152
The inspectors performed an in-depth review of the licensee's evaluation and corrective actions related to a potential trend in missed fire tours. Since July 1, 2018, the licensee initiated four Action Requests documenting missed fire tours: Action Requests 382646, 383676, 384338, and 385266. Three of the missed fire tours were of minor significance; however, one fire tour was of more than minor significance and is documented in this report as NCV 05000397/2018004-02, "Failure to Perform Hourly Fire Tours as Required by the Fire Protection Program." The inspectors assessed the licensee's problem identification threshold, evaluations, and corrective actions and noted that the licensee appropriately considered extent of condition and extent of cause for the planned corrective action assignments. The inspectors determined the cause of each missed fire tour was unique and not indicative of a negative trend.	

Unresolved Item (Closed)	Unresolved Discrepancies in the Licensing Basis of the Tower Makeup System 05000397/2014002-02	71152
Description: This item was opened to review the adequacy of several changes the licensee made to the Columbia Generating Station Final Safety Analysis Report that redefined the role of the tower makeup (TMU) system as the ultimate heat sink following a design-basis tornado and changed the system description from safety-related to nonsafety-related. Additional inspection was required to determine whether the licensee made the subject changes in full compliance with 10 CFR 50.59. By memorandum, dated November 10, 2014 (ADAMS Accession No. ML14316A634), the U.S. Nuclear Regulatory Commission Region IV, Division of Reactor Projects, requested assistance from the NRC Office of Nuclear Reactor Regulation (NRR) to conduct a technical assessment of the Columbia Generating Station design and licensing bases for the TMU system. Corrective Action Reference(s): Action Requests 302227, 304186, 308224, 312331, 346049 Closure Basis: The inspectors did not identify any findings during the follow-up inspection of this Unresolved Item. In a letter, dated October 17, 2018 (ADAMS Accession No. ML15191A2891), the NRR staff concluded that the TMU system is not part of the ultimate heat sink complex and that the requirement of Technical Specification 3.7.1, "Standby Service Water (SW) System and Ultimate Heat Sink (UHS)," is not applicable to the TMU system. The NRR staff also concluded that the TMU system piping and components were not designated as Safety Class components and are not subject to the quality assurance requirements pursuant to Appendix B to Part 50 of Title 10 of the *Code of Federal Regulations.* This Unresolved Item is closed.		

Licensed Operator Failure Rate			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green FIN 05000397/2018004-01 Closed	H.1 – Resources	71111.11

The inspectors reviewed a self-revealed, Green finding associated with licensed operator performance on the biennial requalification exam. Specifically, 15 of 51 operators failed at least one portion of the biennial requalification examinations, and 2 of 8 crews failed the simulator scenarios. Based on the licensee's successful remediation and subsequent retesting of individuals who failed a portion of the biennial requalification examination prior to returning to shift, no violation of regulatory requirements occurred.

Description:

During the facility-administered biennial requalification examination of licensed operators, the licensee training staff evaluated crew performance during dynamic simulator scenarios and individual operator performance during job performance measures and on the biennial written examination. Facility results of the biennial requalification examination showed that 15 of 51 licensed operators (29.4 percent) failed at least one portion of the biennial requalification examination and 2 of 8 crews (25 percent) failed the simulator scenarios, exceeding the threshold failure rate of 20 percent.

Corrective Actions: All individual and crew failures will be remediated and retested prior to performing licensed operator activities; and the licensee will perform an organizational and programmatic investigation (similar to a root cause investigation).

Corrective Action Reference: Action Request 387428

Performance Assessment:

Performance Deficiency: The inspectors determined that the high rate of licensed operator examination failures constituted a performance deficiency because licensed operators are expected to operate the plant within acceptable standards of knowledge and abilities demonstrated through periodic testing as required by 10 CFR 55.59(a)(2).

Screening: The inspectors determined the performance deficiency was more than minor because it adversely affected the human performance attribute of Mitigating Systems cornerstone. Specifically, 15 of 51 licensed operators and 2 of 8 crews, failed to demonstrate a satisfactory understanding of the required knowledge and abilities required to safely operate the facility under normal, abnormal, and emergency conditions.

Significance: The inspectors assessed the significance of the finding using Inspection Manual Chapter 0609, Appendix I, "Licensed Operator Requalification Human Performance Significance Determination Process," dated December 6, 2011. This finding was of very low safety significance (Green) because the finding was related to the requalification exam results with a failure rate greater than 20 percent, but less than 40 percent.

Cross-cutting Aspect: This finding has a cross-cutting aspect in the area of human performance associated with resources, because the licensee failed to ensure that personnel were adequately trained to assure nuclear safety. Specifically, the licensee failed to use sufficiently challenging training evolutions during the training cycle to train and assess licensed operator knowledge [H.1].

Enforcement:

This finding does not involve enforcement action because no violation of regulatory requirements was identified.

Failure to Perform Hourly Fire Tours as Required by the Fire Protection Program			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000397/2018004-02 Closed	H.4 – Teamwork	71152

The inspectors identified a Green, non-cited violation of Columbia Generating Station Operating License Condition 2.C(14), "Fire Protection Program (Generic Letter 86-10)," because the licensee failed to perform hourly compensatory fire tours as required by the LCS. Specifically, while the essential fire detection for the residual heat removal 2B pump room was out of service, the licensee did not conduct an hourly fire tour of the residual heat removal 2B pump room area.

Description:

The Columbia Fire Protection Plan is the combination of Final Safety Analysis Report, Appendix F, and Procedure SWP-FPP-01, "Nuclear Fire Protection Program," Revision 8. Step 3.6.5 of Procedure SWP-FPP-01 states, in part, that an hourly fire tour is a common compensatory measure for impaired fire systems and identifies fire hazards and incipient fire/smoke…and that a fire tour is performed in accordance with LCS 1.10, Plant Procedure Manual PPM 1.3.10B, PPM 1.3.57, and Fire Protection Program Procedure Manual FPP 1.7. Licensee Controlled Specification 1.10.6, "Essential Fire Detection," Revision 73, Table 1.10.6-1, "Area and Equipment Protected by Essential Fire Detection," lists the residual heat removal (RHR) 2B pump room as an area protected by essential fire detection that requires an hourly fire tour when the essential fire detection is inoperable.

On September 4, 2018, Fire Panel FP-CP-FCP1 was taken out of service for replacement per Work Order 02088112. The licensee activated fire protection system impairment (FPSI) 17-0367 and established an hourly fire tour of the affected areas in accordance with LCS 1.10.6, "Essential Fire Detection," Revision 73, action statements A.1 and A.2, respectively. The work affected detection zone 13 which, per Table 1.10.6-1, "Area and Equipment Protected by Essential Fire Detection," Revision 73, included the residual heat removal 2A pump room, residual heat removal 2B pump room, residual heat removal 2C pump room, and the reactor core isolation cooling pump room, among others.

Security officers perform the hourly fire tours in accordance with Procedure SFI-26, "Fire Tour," Revision 2. Step 4.3.7.b of Procedure SFI-26 states to complete and follow the Fire Tour Log as published, starting at the beginning of the first page. From September 4-6, 2018, the fire log listed "[RB] 422 All Rooms and 441 Truck Bay," which included the residual heat removal 2B pump room. At the time of the required tours, the residual heat removal room 2B

pump room was posted as a contaminated and high radiation area. Per plant procedures, entering a contaminated area and/or high radiation area during a fire tour is outside the scope for security personnel and as such, the security officers did not enter the residual heat removal 2B pump room as required. This was confirmed through interviews with plant personnel.

Multiple work groups are responsible for implementing the Columbia Fire Protection Plan when a fire protection system is impaired. Fire Protection personnel create the fire protection system impairments. Security personnel conduct the fire tours while Operations personnel provide oversight and ensure compliance with LCS 1.10.6. Meanwhile, radiation protection personnel maintain high radiation area, radiation area, and contamination area boundaries. Communication between the work groups is essential to ensure that the fire tours are conducted in accordance with the fire protection system impairment while following radiation protection guidelines.

Corrective Actions: The licensee's corrective actions included restoring functionality of the essential fire detection for the residual heat removal system 2B pump room by completing the maintenance on Fire Panel FP-CP-FCP1 and performing an apparent cause evaluation to identify the cause of the performance deficiency and implement further corrective actions.

Corrective Action Reference: Action Request 384338.

Performance Assessment:

Performance Deficiency: The failure to perform hourly compensatory fire tours in accordance with the LCS while a fire barrier component was out of service was a performance deficiency.

Screening: The performance deficiency was more than minor, and therefore a finding, because it was associated with the protection against external factors (i.e. internal fire) 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 (i.e., core damage). Specifically, while the essential fire detection for the residual heat removal 2B pump room was out of service, the licensee did not conduct a compensatory hourly fire tour of the residual heat removal 2B pump room area for a period of approximately 2 days. Not performing these tours led to a condition where a fire in the residual heat removal pump 2B room would go unrecognized for a longer than anticipated period of time leading to increased fire risk to safety related components and systems.

Significance: The inspectors assessed the significance of the finding using Inspection Manual Chapter 0609, Attachment 04, "Initial Characterization of Findings," and Appendix F, "Fire Protection Significance Determination Process," dated May 2, 2018. The inspectors assigned the finding to Fire Finding Category 1.4.2 using Inspection Manual Chapter 0609, Appendix F, Attachment 1, "Fire Protection Significance Determination Process Worksheet," dated May 2, 2018, because the finding involved a fire watch posted as a compensatory measure for a fixed fire protection system outage or degradation. The inspectors assigned the finding a high degradation rating using Inspection Manual Chapter 0609, Appendix F, Attachment 2, "Degradation Rating Guidance," dated May 2, 2018, because the smoke detectors and fire panel annunciator for the affected room were nonfunctional during the panel replacement. Further, the inspectors determined a Phase 2 evaluation was required because the non-functional detection system adversely affected the ability of the system to

protect equipment important to safe shutdown and the licensee did not have a fire PRA [probabilistic risk assessment] capable of adequately evaluating the risk associated with the finding.

The senior reactor analyst performed a bounding risk evaluation for the performance deficiency and determined that the finding was of very low safety significance (Green). In the Washington Public Power Supply System Individual Plant Examination of External Events for the Washington Nuclear Plant 2, Revision 0, dated June 1995, Fire Zone R-4, RHR-B Room, was assigned a fire initiating event frequency of 5.0E-03/ year. The resulting baseline core damage frequency was calculated to be 2.57E-07. The performance deficiency existed for 2 days, from September 4 through 6, 2018. Applying the 2-day exposure period (5.48E-03), the resulting probability of a fire starting in the room over this period was calculated to be 2.74E-05. Because at least two trains of a multi-train injection system would be available following a postulated fire, the analyst assigned a bounding failure rate for a single multi-train system. Using Table 5, "Mitigation Capability Credits for Installed Equipment," from Inspection Manual Chapter 0609, Appendix G, Attachment 3, "Phase 2 Significance Determination Process Template for BWR during Shutdown," dated February 28, 2005, as best available information, the analyst assigned 1.0E-3 as the failure of the safe shutdown path failure probability. Therefore, the external events incremental conditional core damage probability from internal fire was 8.22E-08. The dominant sequence was a fire in the RHR-B Pump Room leading to a reactor trip followed by a failure of the following functions:

- main feedwater;
- high pressure core spray;
- reactor isolation core cooling;
- low pressure injection;
- condensate; and
- alternate low pressure injection.

Because this core damage frequency is below the green/white threshold for large, early release frequency, no additional evaluation was necessary to determine that the finding was of very low safety significance with respect to containment failures.

Cross-cutting Aspect: This finding had a cross-cutting aspect in the area of human performance, teamwork, in that the licensee individuals and work groups failed to communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety was maintained. Specifically, there was a lack of communication between the operations, radiation protection, fire protection, and security work groups when implementing FPSI 17-0367 [H.4].

Enforcement:

Violation: Columbia Generating Station License Condition 2.C(14), "Fire Protection Program (Generic Letter 86-10)," requires, in part, that the licensee shall implement and maintain in effect all provisions of the approved fire protection program as described in Section 9.5.1 and Appendix F of the Final Safety Analysis Report (FSAR) for the facility through Amendment #39 and as described in subsequent letters to the staff referenced in the May 22, 1989, safety evaluation and as approved in the Safety Evaluation Report issued in March 1982, and subsequent supplements and safety evaluations. The Columbia Fire Protection Plan is the

combination of Final Safety Analysis Report Appendix F and Procedure SWP-FPP-01, "Nuclear Fire Protection Program," Revision 8. Step 3.6.5 of Procedure SWP-FPP-01 states, in part, that an hourly fire tour is a common compensatory measure for impaired fire systems and identifies fire hazards and incipient fire/smoke…and that a fire tour is performed in accordance with LCS 1.10, Plant Procedure Manual PPM 1.3.10B, PPM 1.3.57, and Fire Protection Program Procedure Manual FPP 1.7. Licensee Controlled Specification 1.10.6, "Essential Fire Detection," Revision 73, Table 1.10.6-1, "Area and Equipment Protected by Essential Fire Detection," lists the residual heat removal 2B pump room as an area protected by essential fire detection that requires an hourly fire tour when the essential fire detection is inoperable. FPSI 17-0367 established an hourly fire tour of the affected areas in accordance with LCS 1.10.6. The work affected detection zone 13 which, per Table 1.10.6-1, "Area and Equipment Protected by Essential Fire Detection," Revision 73, included the residual heat removal 2A pump room, residual heat removal 2B pump room, residual heat removal 2C pump room, and the reactor core isolation cooling pump room, among others. Security officers perform the hourly fire tours in accordance with Procedure SFI-26, "Fire Tour," Revision 2. Step 4.3.7.b of Procedure SFI-26 states to complete and follow the Fire Tour Log as published, starting at the beginning of the first page. From September 4-6, 2018, the fire log listed "[RB] 422 All Rooms and 441 Truck Bay" which included the residual heat removal 2B pump room.

Contrary to the above, from September 4-6, 2018, the licensee failed to implement all provisions of the approved fire protection program as described in Section 9.5.1 and Appendix F of the Final Safety Analysis Report (FSAR) for the facility through Amendment #39 and as described in subsequent letters to the staff referenced in the May 22, 1989, safety evaluation and as approved in the Safety Evaluation Report issued in March 1982, and subsequent supplements and safety evaluations. Specifically, while the essential fire detection for the residual heat removal 2B pump room was out of service, the licensee did not conduct an hourly fire tour of the residual heat removal 2B pump room area for a period of approximately 2 days.

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

EXIT MEETINGS AND DEBRIEFS

On December 13, 2018, the inspectors presented the triennial heat sink inspection results to Mr. B. Sawatzke, and other members of the licensee staff. The inspectors verified no proprietary information was retained or documented in this report.

On December 28, 2018, the inspector presented the licensed operator requalification inspection results to Mr. G. Pierce, Acting Chief Nuclear Officer, and other members of the licensee staff. The inspectors verified no proprietary information was retained or documented in this report.

On January 10, 2019, the inspectors presented the quarterly resident inspector inspection results to Mr. W. Grover Hettel, and other members of the licensee staff. The inspectors verified no proprietary information was retained or documented in this report.

DOCUMENTS REVIEWED

71111.01—Adverse Weather Protection

Action Reports				
376979	376980	379000	379022	376079

Procedures Number	Title	Revision
ABN-WIND	Tornado / High Winds	029
ABN-WIND	Tornado / High Winds	030
ABN-WIND	Tornado / High Winds	031

71111.04—Equipment Alignment

Procedures Number	Title	Revision
ABN-FPC-LOSS	Loss of Fuel Pool Cooling	016
SOP-FPC-ASSIST	Alternate Fuel Pool Cooling Assist	011
SOP-FPC-LU	Fuel Pool Cooling and Cleanup System Valve and Breaker Lineup	006
SOP-FPC-OPS	Fuel Pool Cooling and Cleanup Operations	007
SOP-FPC-SHUTDOWN	FPC-Shutdown	003
SOP-FPC-SPC	FPC Suppression Pool Operations	011
SOP-FPC-SST	FPC Skimmer Surge Tank Operations	005
SOP-FPC-START	Fuel Pool Cooling Start	006

Drawings Number	Title	Revision
M526-1	Flow Diagram Fuel Pool Cooling and Clean-up System	103
M526-2	Flow Diagram Fuel Pool Cooling and Clean-up System	002
E519, Sheet 25	Motor Valve and Miscellaneous Control	
E519, Sheet 25A	Motor Valve and Miscellaneous Control	

Miscellaneous Documents Number	Title
	WNP-2 FSAR, Chapter 9

71111.05AQ—Fire Protection Annual/Quarterly

Procedures Number	Title	Revision
1.3.10	Plant Fire Protection Program Implementation	034
1.3.10A	Control of Ignition Sources	017
1.3.10C	Control of Transient Combustibles	020
FP-02-85-03	Combustible Loading Calculation	010
PFP-RW-467	Radwaste 467	005
PFP-RB-522	Reactor 522	005

71111.07—Heat Sink Performance

Action Requests (Reviewed)

350866	354191	343378	352608	364408
384466	384628	384953	382614	387552
387548	310795	358871		

Action Requests (Issued)

387786	387787	387825

Work Orders

02080963	02013391	02103028	02001311	02047406	02094831	02077068

Procedures Number	Title	Revision
	Service Water Reliability Program	003
ABN-HVAC	HVAC Trouble	013
HXP-01	Heat Exchanger Program	001
OSP-CCH/IST-M702	Control Room Emergency Chiller System B Operability	040
OSP-SW-M101	Standby Service Water Loop A Valve Position Verification	039
TSP-SW-A101	Service Water Loop A Cooling Coil Heat Load Capacity Test	003

Drawings Number	Title	Revision or Date
992C302FD	RHR Pump General Arrangement	November 23, 1971
CVI-215-11	Seal Injection Water Coolers	005
M521-1	Flow Diagram Residual Heat Removal System Loop “A”	117
RHR-4719-1	Seal Cooler Piping for RHR	001

Miscellaneous Documents Number	Title	Revision or Date
	Control Room Envelope Habitability Program	000
	Eddy Current Inspection Report, CCH-CR-1B	March 3, 2014
180734-01	Report of Analysis, Service Water Pond A Sediment	January 10, 2018
5059 SCREEN-16-0157	354191-02 Evaluate CM to isolate CCH-CR-1B AOP while in standby mode	000
AR-SA 332674	Focused Self-Assessment Report, GL 89-13 Service Water Self-Assessment for Ultimate Heat Sink Inspection	000
AR-SA 378472	Snapshot Self-Assessment Report	June 28, 2018
C94-0319	Component CER Summary Sheet, 2-CCH-P-1A and 2-CCH-P-1B	003
CCH-02	Function Basis Document, Control Room Chilled Water	000
DBD 309	Design Basis Document, Standby Service Water System	018
GI2-97-039	Issuance of Amendment for the Washington Public Power Supply System Nuclear Project No. 2 (TAC No. M94226)	March 4, 1997
LBD-IST-4	Inservice Testing Program Plan, Fourth Ten-Year Inspection Interval	001
LDCN-17-014	Revise FSAR Habitability Temperature Discussion	000
SD000201	System Description, Control Room, Cable Room and Critical Switchgear Rooms – HVAC (CR-HVAC)	015

Modifications Number	Title	Revision
EC 12326	Approve the Use of CID 8741 for RRA-CC-3 Replacement and Eliminate the Cooling Coil Zinc Anodes	002
EC 14954	CCH Bypass Line AR 224656	002

Calculations Number	Title	Revision
ME-02-85-70	Seal Coolers for RHR-P-2A,-2B, &-2C	000
ME-02-92-43	Room Temperature Calculation for DG Building, Reactor Building, Radwaste Building, and Service Water	012
ME-02-96-03	RHR Seal Cooler Performance Evaluation	000

71111.11—Licensed Operator Requalification Program and Licensed Operator Performance

Action Reports				
385920	358660	358602	358766	358890
362587	362548	362587	363586	366392

Action Reports

359162	375090	383090	359162	385010
359064	362548			

Work Orders

02103901	02115120

Procedures Number	Title	Revision
4.603.A7	603.A7 Annunciator Panel Alarms	054
4.603.A8	603.A8 Annunciator Panel Alarms	039
OI-09	Operations Standards and Expectation	070
OSP-INST-H101	Shift and Daily Instrument Checks (modes 1, 2, 3)	
OSP-SLC-B703	SLC Pump Suction Flow Verification	009
SOP-RCIC-INJECTION-QC	RCIC RPV Injection – Quick Card	007
OI-69	Time Critical Operator Actions	010
TDI-06	Simulator Management	020
TDI-08	Licensed Operator Requalification Program	015
TDI-23	LORQ Annual Exam Development and Administration	009
TDI-24	Exam Security	006
1.3.1	Operating Policies, Programs and Practices	127
1.8.10	Administration of Medical Qualifications	011
1.8.11	Medical Examination Program for Licensed Operators	011

Drawings Number	Title	Revision
EWD-10E-003	Electrical Wiring Diagram Standby Liquid Control System Pump SLC-P-1A (C41-L001A) and Squib Valve SLC-V-4A (C41A-F004A) (Explosive Injection Valve)	018

Scenario Based Testing Number	Title
	Week 2 Simulator Scenario 1
	Week 2 Simulator Scenario 2
	Week 2 Simulator Scenario 3
	Week 2 Simulator Scenario 4

Miscellaneous Documents Number	Title
	2018 Operational Exam Week 2
	2017 Training Remediation Analysis
	OE 2017 LORQ

Miscellaneous Documents Number	Title
	OE 2018 LORQ
	SRB 2017-4-17 Minutes
	SRB 2017-9-05 Minutes
	SRB 2018-2-08 Minutes
	SRB 2018-6-27 Minutes

71111.13—Maintenance Risk Assessments and Emergent Work Control

Action Reports				
373410	373028	374072	378760	379507
382576	382706	385221	385048	

Procedures Number	Title	Revision
1.3.10	Plant Fire Protection Implementation	034
1.3.76	Integrated Risk Management	052
1.3.83	Protected Equipment Program	026
1.3.83	Protected Equipment Program	027
1.3.85	On-line Risk Management	005
ICP-RCIC-Q901	RCIC Isolation on RCIC Steam Supply Flow High DIV 2-CFT/CC	013
ISP-RCIC-Q901	RCIC Isolation on RCIC Steam Supply Flow High DIV 1-CFT/CC	024
ISP-RCIC-Q903	RCIC Isolation on RCIC Steam Supply Flow High DIV 2-CFT/CC	019

71111.15—Operability Determinations and Functionality Assessments

Action Reports				
385634	385654	385674	386750	386861
387833	387990	386956	387479	

Work Orders						
29146086	29146159	29146182	29146189	02049828	02137070	02105341

Procedures Number	Title	Revision
ESP-MOVTOL-B301	MOV Thermal Overload Testing – CC	022
OSP-RCIC/ IST-Q701	RCIC Operability Test	062

Procedures Number	Title	Revision
SOP-HOT WEATHER-OPS	Hot Weather Operations	006
SOP-HPCS-CST/SP	HPCS CST and Suppression Pool Operations	014
SOP-HPCS-DRAIN	HPCS Drain	007
SOP-HPCS-FILL	HPCS Fill and Vent	013
SOP-HPCS-INJECTION	HPCS RPV Injection	006
SOP-HPCS-INJECTION-QC	HPCS-RPV Injection-Quick Cards	004
SOP-HPCS-LU	HPCS Valve and Breaker Lineup	004
SOP-HPCS-STBY	Placing HPCS in Standby Status	003

Drawings Number	Title	Revision
250-00.47.1	Valve Assembly, 2 inch. Y Type, Globe Valve, Motor Operated, C.S	000
807EI72TC, Sheets 1 - 8	G.E. Elementary Drawings	
M520	High-Pressure Core Spray	

Miscellaneous Documents Number	Title	Revision
	Columbia Generating Station FSAR, Chapters 6, 7, and 15	
776-00.1.1	Stack Monitoring System Equipment, Instrumentation, Dual Sum, Amplifier, Power Supply, Modular System and Coaxicon Vendor Manual	002
RCIC-MO-19	MOV Master Data Sheet	013

Calculations Number	Title	Revision
NE-02-09-12	CGS Emergency Action Levels (EALs) Technical Bases	004
NE-02-13-10	Determination of Low Range Stack Monitor Xe-133 Equivalent Efficiency	000
NE-02-15-07	Setpoint Calculation for Reactor Building Elevated Discharge Radiation Monitor (Stack Monitor)	000

Modifications Number	Title	Revision
EC 11288	Replace Stack Monitors	008

71111.19—Post Maintenance Testing

Action Reports

386266	386407	383578	386511	386534
369412	375956	386788	387001	387128
387131	275278			

Work Orders

02066474	02084370	02012402	02093087	02105297	02066473	02085665
02117254	02117272	02134934	02118420	02119131	02103360	02117248
02117266	02117733	02118376	02036318	02025412	02125833	02103028
02066474	02102737	02102767				

Procedures

Number	Title	Revision
10.2.10	Fastener Torque and Tensioning	028
10.24.34	PM Calibration Test Barton Differential Indicating Switch	016
ESP-MOVTOL-B301	MOV Thermal Overload Testing - CC	021
OSP-FPC/IST-Q701	Fuel Pool Cooling System Operability Surveillance	037
TSP-DG1-B502	Standby Diesel Generator DG1 Load Testing	021

Drawings

Number	Title	Revision
EWD-69E-116	Condensate System Valve COND-SPV-42	010

Miscellaneous

Documents Number	Title	Revision
CVI 531-00, 1, 2	Barton Differential Pressure Indicating Switches, Unit, Calibration, and Parts List Manual	003

71111.22—Surveillance Testing

Action Reports

385817	386056	385829

Work Orders

02102754	02106212	02102737	02102767	02125833	02103028

Procedures

Number	Title	Revision
ABN-LEAKAGE	Reactor Coolant Leakage	006
CVI 02E31-03,4	Leak Detection System Design Specification	003
CVI 02E31-04,2,1	Leak Detection System Design Specification	018

Procedures Number	Title	Revision
CVI 02E31-04,2,2	Leak Detection System Design Specification	013
ICP-RCIC-Q901	RCIC Isolation on RCIC Steam Supply Flow High DIV 2-CFT/CC	013
ISP-RCIC-Q901	RCIC Isolation on RCIC Steam Supply Flow High DIV 1-CFT/CC	024
ISP-RCIC-Q903	RCIC Isolation on RCIC Steam Supply Flow High DIV 2-CFT/CC	019
ISP-FDR/ EDR-X301	Drywell Sump Flow Monitors – CC	011
OSP-CCH/ IST-M702	Control Room Emergency Chiller System B Operability	040
OSP-INST-H101	Shift and Daily Instrument Checks (Modes 1, 2, 3)	091
SOP-FDR-OPS	Floor Drain System Operation	003
SYS-2-19	Reactor Coolant System Leakage Best Practice	000

Drawings Number	Title	Revision
M539	Floor Drain System Reactor Building Flow Diagram	088
M775	Flow Diagram Emergency Chilled Water Piping System Control Room	028

Miscellaneous Documents Number	Title	Revision
EDR-FRS-623	Instrument Master Data Sheet for EDR-FRS-623	013
FDR-FT-38	Instrument Master Data Sheet for EDR-FRS-623	009
FDR-SQRT-38	Instrument Master Data Sheet for FDR-SQRT-38	011

71151—Performance Indicator Verification

Action Reports
372567

Work Orders	
02100685	02092836

Procedures Number	Title	Revision
CI-10.17	Iodine	012
CSP-I131-W101	Reactor Coolant Isotopic Analysis for I-131 Dose Equivalent	009
OSP-INST-H101	Shift and Daily Instrument Checks (Modes 1, 2, 3)	091

71152—Problem Identification and Resolution

Action Reports

383152	383417	385638	385266	384338
383676	382646	380257	384338	

Procedures

Number	Title	Revision
1.3.10	Plant Fire Protection Program Implementation	034
1.3.10B	Active Fire System Operability and Impairment Control	015
FPP-1.7	Fire Tour Implementation	006
PFP-RB-422	Reactor 422	006
SFI-26	Fire Tour	002
SWP-FPP-01	Nuclear Fire Protection Program	008

Modifications

Number	Title
EC 17375	

71153—Follow-up of Events and Notices of Enforcement Discretion

Action Reports

386750	387596	387597	387594	388087
387651	387598	387621	387623	387611
386956				

Work Orders

02136717

Procedures

Number	Title	Revision
ABN-CORE	Unplanned Core Operating Conditions	017
ABN-FWH-HI/LEVEL-TRIP	Feedwater Header High Level Trip	007
ABN-HWC	Hydrogen Water Chemistry System Trouble	004
ABN-POWER	Unplanned Reactor Power Change	016
SOP-FWH-SHUTDOWN	Extraction Steam and Heater Vents / Drains System Shutdown	004

Drawings

Number	Title	Revision
M504-1	Flow Diagram Condensate and Feed Water Systems	111

Miscellaneous Documents Number	Title	Revision
	Operations Logs 12/5-12/7	000
358.00,1,5	O/M Manual for Type 701 Basic Controller	001
776-00.1.1	Stack Monitoring System Equipment, Instrumentation, Dual Sum, Amplifier, Power Supply, Modular System and Coaxicon Vendor Manual	002

Calculations Number	Title	Revision
NE-02-09-12	CGS Emergency Action Levels (EALs) Technical Bases	004
NE-02-13-10	Determination of Low Range Stack Monitor Xe-133 Equivalent Efficiency	000
NE-02-15-07	Setpoint Calculation for Reactor Building Elevated Discharge Radiation Monitor (Stack Monitor)	000

Modifications Number	Title	Revision
EC 11288	Replace Stack Monitors	008

COLUMBIA GENERATING STATION – NRC INTEGRATED INSPECTION
REPORT 05000397/2018004 – January 28, 2019

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AAthar, DRP
LNewman, DRP
GKolcum, DRP
LMerker, DRP
MBennett, DRP
ARivera-Varona, RIV/OEDO
VDricks, ORA
JWeil, OCA
JKlos, NRR
AMoreno, RIV/CAO
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Electronic Distribution for Columbia Generating Station

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