



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

May 9, 2018

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

SUBJECT: COLUMBIA GENERATING STATION - NRC TRIENNIAL FIRE  
PROTECTION BASELINE INSPECTION REPORT (NRC INSPECTION  
REPORT 05000397/2018007)

Dear Mr. Sawatzke:

On April 26, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the Columbia Generating Station and discussed the results of this inspection with Mr. Alex Javorik, Vice President of Engineering, and other members of your staff. The results of this inspection are documented in the enclosed report.

The NRC inspectors did not identify any finding or violation of more than minor significance.

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/*

James F. Drake, Acting Chief  
Engineering Branch 2  
Division of Reactor Safety

Docket: 50-397  
License: NPF-21

Enclosure:  
Inspection Report 05000397/2018007

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

Docket Number: 05000397

License Number: NPF-21

Report Number: 05000397/2018007

Enterprise Identifier: I-2018-007-0002

Licensee: Energy Northwest

Facility: Columbia Generating Station

Location: Richland, Washington

Inspection Dates: April 9, 2018, to April 26, 2018

Inspectors: J. Mateychick, Senior Reactor Inspector (Team Lead)  
B. Correll, Reactor Inspector  
S. Makor, Reactor Inspector  
G. Pick, Senior Reactor Inspector

Approved By: J. Drake, Chief  
Engineering Branch 2  
Division of Reactor Safety

## **SUMMARY**

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring licensee's performance by conducting a Triennial Fire Protection Baseline 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 and self-revealed findings, violations, and additional items are summarized in the table below.

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

The NRC inspectors did not identify any finding or violation of more than minor significance.

## 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."

## REACTOR SAFETY

### 71111.05T - Fire Protection (Triennial)

The inspectors evaluated the design, operational status, and material condition of the licensee's fire protection program, including assumptions made in plant and area specific fire protection analyses, by verifying that the licensee's program includes:

- (1) Adequate controls for combustibles and ignition sources inside the plant;
- (2) Adequate fire detection and suppression capability;
- (3) Passive fire protection features in good material condition;
- (4) Adequate compensatory measures for out-of-service, degraded or inoperable fire protection equipment, systems, or features;
- (5) Adequate protection to ensure the post-fire capability to safely shutdown the plant, including implementation of NRC/industry fire-induced circuit failure analysis guidance;
- (6) Feasible and reliable manual actions when appropriate to achieve safe shutdown; and
- (7) Adequate review and documentation of fire protection program changes.

### Fire Protection Inspection Requirements (Four Samples)

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

<b>Fire Area</b>	<b>Description</b>
R-1D	Reactor Building Northwest 471 Elevation
RC-3	Cable Chase
RC-4	Division 1 Electrical Equipment Room
RC-14	Division 1 Switchgear Room

The inspectors reviewed and evaluated the following fire protection inspection requirements:

- (1) Fire brigade drill performance

- (2) Protection of safe shutdown capabilities
- (3) Passive fire protection
- (4) Active fire protection
- (5) Protection from damage from fire suppression activities
- (6) Alternative shutdown capability
- (7) Circuit analysis
- (8) Communications
- (9) Emergency lighting (Fixed and Portable 8 hour units)
- (10) Cold shutdown repairs
- (11) Compensatory measures

- a. Compensatory measures for degraded fire protection components
- b. Compensatory measures for components necessary to achieve safe and stable conditions

- (12) Review and documentation of fire protection plan changes
- (13) Control of transient combustibles and ignition sources
- (14) Sample of fire protection corrective action documents

#### B.5.b Inspection Activities (One Sample)

The inspectors evaluated feasibility of the B.5.b mitigating strategies by determining the following:

- Procedures are being maintained and adequate
- Equipment is properly staged and is being maintained and tested
- Station personnel are knowledgeable and can implement the procedures

The inspectors evaluated feasibility of the following B.5.b Mitigating Strategies:

ABN-TSG-008	Initiation of Drywell or Wetwell Spray Through the Residual Heat Removal System
ABN-TSG-010	Spent Fuel Pool Makeup Through the Residual Heat Removal System Via Fire Water or Condensate Transfer

### **INSPECTION RESULTS**

The NRC inspectors did not identify any finding or violation of more than minor significance.

### **EXIT MEETINGS AND DEBRIEFS**

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

On April 26, 2018, the inspectors presented the fire protection inspection results to Mr. A. Javorik, Vice President of Engineering, and other members of the licensee staff.

## DOCUMENTS REVIEWED

### Cable Routing Data Components

Residual Heat Removal System, Standby Service Water System  
(RHR-P-2B, RHR-V-6B, RHR-FCV-64B, RHR-V-4B, SW-P-1B, RHR-V-3B, SW-V-12B)

<u>Calculations Number</u>	<u>Title</u>	<u>Revision or Date</u>
FP-02-07-02	Hydraulic Analysis of Fire Water Supply System	2
FPF 2.11	Emergency Lighting Monthly Inspections and Appendix R Lamp Positioning	2
ME-02-02-23	Post-Fire Safe Shutdown Flooding Analysis – Radwaste Building	1
MSE-EJJ-10-01	Expert Panel Identification and Review of Multiple Spurious Operation Scenarios	April 23, 2010
NE-02-85-19	Post-Fire Safe Shutdown Analysis	12
NE-02-94-35	System Impact on Post-Fire Safe Shutdown	6
TM-2160	B.5.b Implementation	5

### Action Requests (AR-)

378859*	379297*	379315*	378806*	378968*	379317*	379319*	378940*
378989	379316*	379320*	335821	374802	377838	378937*	340250
377836	378917*	379403*	379349*	378917*			

\*Issued as a result of inspection activities.

<u>Drawings Number</u>	<u>Title</u>	<u>Revision</u>
02-217A-28	Cable Chase – Zone 2 System 66 (Preaction)	10
02-217A-29	Cable Chase – Zone 2 System 66 (Preaction)	5
02-217A-30	Cable Chase – Zone 2 System 66 (Preaction)	7
02-217A-31	Cable Chase – Zone 2 System 66 (Preaction)	6
A529	Reactor Building Stair No. A5	6
A530	Reactor Building Stair No. A6	6

<u>Drawings Number</u>	<u>Title</u>	<u>Revision</u>
C 896	FP-TK-110 Water Storage Tank Plan Sections and Details	3
D00292, Sheet 36	Fire Detection and Alarm System Installation Diagram – Radioactive Waste and Control Building El 467'	0
FM892-8	Sprinkler and Hose Station Plans EL 467'-0" and 471'-0" and Miscellaneous Floors	5
FM-892-12	Access-Egress for Post-Fire Safe Shutdown Activities	12
FM-892-13	Access-Egress for Post-Fire Safe Shutdown Activities	10
FM-892-14	Access-Egress for Post-Fire Safe Shutdown Activities	6
M521-1	Flow Diagram Residual Heat Removal Loop "A"	115
M521-2	Flow Diagram Residual Heat Removal Loop "B"	115
EWD-88-E-007	Electrical Wiring Diagram Diesel Generator (DG) Building H&V System DG2 Room Normal Supply Fan DMA-FN-22	10
EWD-88E-020A	Electrical Wiring Diagram Diesel Generator Building H&V System DG2 Room Normal Air Dampers DMA-AD-22/1 and DMA-AD-22/2	11
EWD-88E-029A	Electrical Wiring Diagram Diesel Generator Building H&V System DG2 Room Air Handling Unit DMA-AH-22 Outlet Heater DMA-EHC-22	2
EWD-88E-034	Electrical Wiring Diagram Diesel Generator Building H&V System Annunciator DMA-ANN-PNL/DGHV2	2
EWD-9E-019	Electrical Wiring Diagram Residual Heat Removal System Motor Operated Valve (MOV) RHR-V-4B (E12-F004B)	25
PFSS-2	Appendix R Post-Fire Safe Shutdown (PFSS) Division 2 Boundaries of Line Diagram	16
EWD-9E-097	Electrical Wiring Diagram Residual Heat Removal System Miscellaneous Relay Circuits (Division 2)	13

<u>Drawings Number</u>	<u>Title</u>	<u>Revision</u>
E948-1A	Appendix R Post-Fire Safe Shutdown Protected Raceways Whittaker Cable Support Diagram	0
E948-2A	Appendix R Post-Fire Safe Shutdown Protected Raceways Reactor Building Elevations 501'-0" and 522'-0"	8
E948-3	Appendix R Post-Fire Safe Shutdown Protected Raceways Radwaste Building – Elevations 467'-0" and 525'-0"	13
EWD-9E-004	Electrical Wiring Diagram Residual Heat Removal System Pump RHR-P-2B Breaker RHR-CB-P2B	19
EWD-9E-099	Electrical Wiring Diagram Residual Heat Removal System Miscellaneous Relay Circuits (Division 2)	10
EWD-9E-100	Electrical Wiring Diagram Residual Heat Removal System Miscellaneous Relay Circuits (Division 2)	8
E502-2	Main One Line Diagram	63
EWD-9E-003	Electrical Wiring Diagram Residual Heat Removal System Pump RHR-P-2B (E12-C002B)	22
EWD-7E-020	Electrical Wiring Diagram High Pressure Core Spray System MOV HPCS-V-15 (E22-F015)	16
EWD-7E-023	Electrical Wiring Diagram High Pressure Core Spray System Pump HPCS-P-1 (E-22-C001)	22
EWD-7E-022	Electrical Wiring Diagram High Pressure Core Spray System Pump HPCS-P-1 (E22-C001) Breaker HPCS-CB-P1	21
EWD-7E-003	Electrical Wiring Diagram High Pressure Core Spray System Standby Water Leg Pump HPCS-P-3 (E22-C003)	7
EWD-7E-018	Electrical Wiring Diagram High Pressure Core Spray System MOV HPCS-V-11 (E22-F011)	17
M520	Flow Diagram High Pressure Core Spray (HPCS) System and Low Pressure Core Spray Systems Reactor Building	104



<u>Drawings Number</u>	<u>Title</u>	<u>Revision</u>
EWD-7E-017	Electrical Wiring Diagram High Pressure Core Spray System MOV HPCS-V-10 (E22-F0101)	15
EWD-58E-022	Electrical Wiring Diagram Standby Service Water System MOV SW-V-12B	21
EWD-58E-021	Electrical Wiring Diagram Standby Service Water System, MOV-SW-V-12B	24
EWD-58E-004	Electrical Wiring Diagram Standby Service Water System SW-P-1B Breaker SW-CB-P1B	27
EWD-58E-004B	Electrical Wiring Diagram Standby Service Water System SW-P-1B Breaker SW-CB-P1B	3
M524-2	Flow Diagram Standby Service Water System Reactor, Radwaste, DG Buildings and Yard	120
EWD-9E-022	Electrical Wiring Diagram Residual Heat Removal System MOV RHR-V-6B (E12-F006B)	21
EWD-58E-014	Electrical Wiring Diagram Standby Service Water System MOV SW-V-2B	19
EWD-58E-015	Electrical Wiring Diagram Standby Service Water System MOV SW-V-2B	22
E542-22D	Connection Wiring Diagram Supervisory Panel E-CP-C2 (Division 2) Rear Sub-Panel Lower Half	2
E542-22E	Connection Wiring Diagram, Supervisory Panel E-CP-CS2 (Division 2) Right Sub-Panel	5
EWD-58E-004	Electrical Wiring Diagram Standby Service Water System W-P-1B Breaker SW-CB-P1B	27
EWD-58E-004B	Electrical Wiring Diagram Standby Service Water System SW-P-1B Breaker SW-CB-P1B	3
PFSS-2	Appendix R Post-Fire Safe Shutdown (PFSS) Division 2 Boundaries One Line Diagram	16
EWD-9E-006	Electrical Wiring Diagram Residual Heat Removal	14

<u>Drawings Number</u>	<u>Title</u>	<u>Revision</u>
	System Pump RHR-P-2C Breaker RHR-CB-P2C	
EWD-6E-008	Electrical Wiring Diagram Reactor Core Isolation Cooling System MOV RCIC-V-45 (E51-F045)	23
EWD-6E-008A	Electrical Wiring Diagram Reactor Core Isolation Cooling System MOV RCIC-V-45 (E51-F045)	5
6E013	Reactor Core Isolation Cooling System Miscellaneous Relay Circuits Sheet 4	21
EWD-9E-057	Electrical Wiring Diagram Residual Heat Removal System MOV RHR-FCV-64B (E12-F064B)	20
EWD-9E-123	Electrical Wiring Diagram Residual Heat Removal System Annunciator	3
EWD-9E-004A	Electrical Wiring Diagram Residual Heat Removal System Pump RHR-P-2B Breaker RHR-CB-P2B	1
EWD-9E-004	Electrical Wiring Diagram Residual Heat Removal System Pump RHR-P-2B Breaker RHR-CB-P2B	19
EWD-41-003	Electrical Wiring Diagram Reactor Water Cleanup System RWCU-FT-37, RWCU-PT-5, and RWCU-TS-20	0
EWD-46E-252C	Electrical Wiring Diagram AC Electrical Distribution System Power Panel E-PP-8AF Circuit Details	4
EWD-9E-019	Electrical Wiring Diagram Residual Heat Removal System MOV-RHR-V-4B (E12-F004B)	25
EWD-58E-047	Electrical Wiring Diagram Standby Service Water System MOV RHR-V-68B (E12-F068B)	22
EWD-1E-038	Electrical Wiring Diagram Nuclear Boiler System Automatic Depressurization Safety Relief Valve MS-RV-3D (B22-F013V)	21
EWD-1E-038A	Electrical Wiring Diagram Nuclear Boiler System Automatic Depressurization Safety Relief Valve M-RV-3D (B22-F013V)	4

<u>Drawings Number</u>	<u>Title</u>	<u>Revision</u>
H-4649-D	Sections – 20” x 10’ Type “A” Head – 3 Stage	
H-4650-D	Fire Pump – Vertical Turbine Model EBA	2
M515-1	Flow Diagram – Fire Protection System	110
M515-2	Flow Diagram – Fire Protection System Details	18
M515-4	Flow Diagram – Fire Protection System General Services Building and Turbine Generator Building	2
M515-5	Flow Diagram – Fire Protection System Reactor Building, Diesel Generator Building, and Radwaste Building	6
M573-2	Flow Diagram – Potable Water Cold and Fire Protection Systems Pump houses	8
M585	General Arrangement Plans and Sections Circulating Water Pump House	27
M827	Heating Ventilation and Air Conditioning – Sections and Details Radwaste and Control Building	41
M932-1	Fire Main Ring Header	6
<u>Modification Number</u>	<u>Title</u>	<u>Revision</u>
16302-1	Disabled HPCS-V-10 and HPCS-V11 in Place	12
<u>Procedures Number</u>	<u>Title</u>	<u>Revision</u>
ABN-EDMG	Extensive Damage Mitigation Guidelines (EDMG)	020/002
ABN-CR-EVAC	Control Room Evacuation and Remote Cooldown	37
ABN-FIRE	Fire	40
ABN-RHR-SDC-ALT	Residual Heat Removal Alternate Shutdown Cooling	015
ABN-TSG-008	Initiation of Drywell or Wetwell Spray Through the Residual Heat Removal System	006

<u>Procedures Number</u>	<u>Title</u>	<u>Revision</u>
ABN-TSG-010	Spent Fuel Pool Makeup Through the Residual Heat Removal System Via Fire Water or Condensate Transfer	006
OI-18	Equipment Operator Rounds	014/001
PPF-RB-471	Reactor 471 Pre-fire Plans	5
PPF-RW-467	Radwaste (RW) 467 Pre-fire Plans	5
PPM 1.3.10	Plant Fire Protection Program Implementation	034/002
PPM 1.3.10A	Control of Ignition Sources	017/001
PPM 1.3.10B	Active Fire System Operability and Impairment Control	015/002
PPM 1.3.10C	Control of Transient Combustibles	020/001
PPM 1.3.85	On-Line Fire Risk Management	005/001
PPM 15.1.12	Fire Main Header Flush and Hydrant Inspection	19
PPM 15.1.29	B.5.b Pumper Truck and Monitor Nozzle Operability	10
PPM 15.2.2	Function and Sensitivity Check of Ionization Detectors	18
PPM 15.2.5	Zone 66 Ionization Detector Visual Inspections, Function and Sensitivity Tests	8
PPM 15.2.25	Manual Pull Stations - CFT	9
PPM 15.2.33	Power Generation Control Complex Halon Initiator Replacement	5
PPM 15.2.36	Power Generation Control Complex Halon System U679 Through U894 - Sensitivity Check, Actuation Test and CFT	10
PPM 15.2.39	Emergency Lighting 8-Hour EBU and Essential Fluorescent Lighting	003/003
PPM 15.2.40	Emergency Lighting 8-Hour EBU Discharge – Annual	007/002
PPM 15.2.41	Annual Surveillance of 8-Hour Portable Lanterns	005/003
PPM 15.3.2	Hose Station Inspection and Change out	13

<u>Procedures Number</u>	<u>Title</u>	<u>Revision</u>
PPM 15.3.5	Fire Damper Operational Inspection	15
PPM 15.3.6	Control Room Halon Pressure Check, Weight Check, Flow Test, and Power Generation Control Complex Barrier Inspection	9
PPM 15.3.9	Fire Pump Drive Inspection/Maintenance of FP-ENG-1 (FP-P-1)	17
PPM 15.3.10	Fire Pump Drive Inspection/Maintenance of FP-ENG-110 (FP-P-110)	20
PPM 15.3.17	Fire Door Operability – Semiannual, Annual, Biennial	9
PPM 15.4.2	Fire Main Hydraulic Data Acquisition	13
PPM 15.4.6	Essential Fire Rated Penetration Seal, and Essential Fire and Flood Barrier Operability Inspection	10
PPM 15.4.8	Fire Protection System Annual Functional Test	21
SWP-FPP-01	Nuclear Fire Protection Program (FPP)	8

<u>Vendor Documents Number</u>	<u>Title</u>	<u>Date</u>
CVI 02,02,01, Sheet 99	NEDO-10466-A, Power Generation Control Complex Design Criteria and Safety Evaluation	February 1979
CVI 29,00,36	Johnston Vertical Deep well Pumps – Installation, Operation, and Maintenance Manual	June 23, 1993

<u>Work Orders</u>				
02013384-01	02013384-01	02013384-01	02013384-01	02013384-01
02013384-01	02013398-01	02035208-01	02057483-01	02066673-01
02066673-17	02066673-32	02066673-45	02066678-01	02066678-04
02066678-05	02076515-01	02078563-01	02083090-09	02083772-01
02084026-01	02084026-01	02088624-01	02094033-01	02094034-01
02094035-01	02094036-01	02094037-01	02100740-01	02100771-01
02100855-01	02102264-01	02104060-01	02108154-01	02109260-21
02109260-22	02116464-01	02119050-01		

COLUMBIA GENERATING STATION - NRC TRIENNIAL FIRE PROTECTION BASELINE  
INSPECTION REPORT (NRC INSPECTION REPORT 05000397/2018007) – MAY 9, 2018

**DISTRIBUTION**

KKennedy, ORA  
 SMorris, ORA  
 TVegel, DRP  
 RLantz, DRP  
 MShaffer, DRS  
 JClark, DRS  
 GKolcum, DRP  
 LBrandt, DRP  
 MHaire, DRP  
 RAlexander, DRP  
 LNewman, DRP  
 MBennett, DRP  
 VDricks, ORA  
 JKlos, NRR  
 GGeorge, DRS  
 EUribe, DRS  
 MHerrera, DRMA  
 R4Enforcement  
 SKirkwood, OGC  
 JWeil, OWFN  
 AMoreno, OWFN  
 JBowen, OEDO  
 BMaier, ORA

ADAMS ACCESSION NUMBER: ML18129A382

SUNSI Review: ADAMS:  Non-Publicly Available  Non-Sensitive Keyword: NRC-002  
 By: JMM  Yes  No  Publicly Available  Sensitive

OFFICE	RI:EB2	RI:EB2	SRI:EB2	SRI:EB2	BC:DRP/A	ABC:DRS/EB2
NAME	BCorrell	SMakor	GPick	JMateychick	MHaire	JDrake
SIGNATURE	/RA/	/RA-E/	/RA/	/RA/	/RA/	/RA/
DATE	05/03/18	05/04/18	05/07/18	05/03/18	05/09/18	05/09/18

OFFICIAL RECORD COPY