



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION IV
612 EAST LAMAR BLVD, SUITE 400
ARLINGTON, TEXAS 76011-4125

November 22, 2009

J. V. Parrish
Chief Executive Officer
Energy Northwest
P.O. Box 968 (Mail Drop 1023)
Richland, WA 99352-0968

SUBJECT: COLUMBIA GENERATING STATION - NRC TRIENNIAL FIRE PROTECTION
INSPECTION REPORT 05000397/2009006

Dear Mr. Parrish:

On October 8, 2009, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the Columbia Generating Station. The enclosed inspection report documents the inspection results, which were discussed in an exit meeting on October 8, 2009, with Mr. W. Scott Oxenford, Vice President Nuclear Generation/Chief Nuclear Officer, and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, no findings of significance were identified.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

A handwritten signature in black ink, appearing to read "N. O'Keefe".

Neil O'Keefe, Chief
Engineering Branch 2
Division of Reactor Safety

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

Enclosure: Inspection Report No. 05000397/2009006
w/Attachment:
1 - Supplemental Information

cc w/Enclosure:
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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket: 50-397

License: NPF-21

Report No.: 05000397/2009006

Licensee: Energy Northwest

Facility: Columbia Generating Station

Location: Richland, Washington

Dates: September 21 through October 9, 2009

Team Leader: S. Graves, Senior Reactor Inspector

Inspectors: J. Mateychick, Senior Reactor Inspector
S. Alferink, Reactor Inspector
E. Uribe, Reactor Inspector

Accompanying Personnel: F. Gonzalez, Risk and Reliability Engineer
J. Watkins, Reactor Inspector

Approved By: Neil O'Keefe, Branch Chief
Engineering Branch 2
Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000397/2009006; 09/21/2009–10/8/2009; Energy Northwest; Columbia Generating Station; Triennial Fire Protection Inspection.

The NRC conducted a two-week triennial fire protection team inspection. The inspection was performed by specialist inspectors from Region IV. No findings of significance were identified. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

No findings of significance were identified.

B. Licensee-Identified Violations

None

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R05 Fire Protection (71111.05T)

This report presents the results of a triennial fire protection inspection conducted in accordance with NRC Inspection Procedure 71111.05T, "Fire Protection (Triennial)," at Columbia Generating Station. The inspection team evaluated the implementation of the approved fire protection program in selected risk-significant areas, with an emphasis on the procedures, equipment, fire barriers, and systems that ensure the post fire capability to safely shut down the plant.

Inspection Procedure 71111.05T requires the selection of three to five fire areas for review. The inspection team used the fire hazards analysis section of the Columbia Generating Station Individual Plant Examination of External Events and walkdowns of plant areas to select the following five risk-significant fire areas (inspection samples) for review:

- R-11 South West Reactor Building 501' Elevation
- R-1J Reactor Building 522' Elevation
- RC-2 Cable Spreading Room
- RC-3 Cable Chase
- RC-10 Control Room

The inspection team evaluated the licensee's fire protection program using the applicable requirements, which included plant technical specifications; Operating License Condition 2.C(14); NRC safety evaluations; 10 CFR 50.48; Branch Technical Position 9.5-1, Appendix A; and 10 CFR Part 50, Appendix R. The team also reviewed related documents that included the Final Safety Analysis Report (FSAR) Appendix F and Section 9.5, the fire hazards analysis, and the post fire safe shutdown analysis.

Specific documents reviewed by the team are listed in the attachment. Five inspection samples were completed.

.01 Shutdown From Outside Main Control Room

a. Inspection Scope

Columbia Generating Station uses the automatic depressurization system (ADS) and low pressure coolant injection (LPCI) method of shutdown in the event of a fire requiring evacuation of the control room, which allows the licensee to go directly to cold shutdown. This methodology is considered to be an acceptable alternative shutdown capability as documented in NRC safety evaluation report dated December 4, 1986, for Columbia Generating Station.

The team reviewed the safe shutdown analysis contained in Calculation NE-02-85-19, "Calculation for Post Fire Safe Shutdown Analysis," Revision 6; the control room evacuation procedure ABN-CR-EVAC, "Control Room Evacuation and Remote Cooldown," Revision 16; piping and instrumentation drawings; electrical drawings; the Final Safety Analysis Report and other supporting documents to verify that cold shutdown could be achieved and maintained for fires in areas where the licensee's post fire safe shutdown strategy relies on manipulating shutdown equipment from outside the control room after it has been evacuated. The team verified that cold shutdown could be achieved and maintained, with or without offsite power available. The team also verified that the safe shutdown analysis properly identified the components and systems needed to achieve and maintain safe shutdown conditions.

b. Findings

No findings of significance were identified.

.02 Protection of Safe Shutdown Capabilities

a. Inspection Scope

The team reviewed piping and instrumentation diagrams, the safe shutdown equipment list, safe shutdown design basis documents, and the post fire safe shutdown analysis to verify that the licensee properly identified the components and systems necessary to achieve and maintain safe shutdown conditions for fires in the selected fire areas. The team observed walkdowns of the procedures used for achieving and maintaining safe shutdown in the event of a fire to verify that the procedures properly implemented the safe shutdown analysis provisions.

For each of the selected fire areas, the team reviewed the separation of redundant safe shutdown cables, equipment, and components located within the same fire area. The team also reviewed the licensee's method for meeting the requirements of 10 CFR 50.48; Branch Technical Position 9.5-1, Appendix A; and 10 CFR Part 50, Appendix R, Section III.G. Specifically, the team evaluated whether at least one post fire safe shutdown success path remained free of fire damage in the event of a fire. In addition, the team verified that the licensee met applicable license commitments.

b. Findings

No findings of significance were identified.

.03 Passive Fire Protection

a. Inspection Scope

The team walked down accessible portions of the selected fire areas to observe the material condition and configuration of the installed fire area boundaries (including walls, fire doors, and fire dampers) and to verify that the electrical raceway fire barriers and

fire rated cables were appropriate for the fire hazards in the area. The team compared the installed configurations to the approved construction details, supporting fire tests, and applicable license commitments.

The team reviewed installation, repair, and qualification records for a sample of penetration seals to ensure the fill material possessed an appropriate fire rating and that the installation met the engineering design. The team reviewed records for the rated cable raceway fire wraps to ensure the material possessed an appropriate fire rating and that the installation met the engineering design. The team reviewed records for fire rated cables being used to support post fire safe shutdown functions to ensure the cables possessed an appropriate fire rating and that the installation met the engineering design requirements for physical routing and electrical characteristics for continued circuit operation.

The team reviewed license basis documentation, such as NRC safety evaluation reports and deviations from NRC regulations and the National Fire Protection Association codes, to verify that fire protection features met license commitments

b. Findings

No findings of significance were identified.

.04 Active Fire Protection

a. Inspection Scope

The team reviewed the design, maintenance, testing, and operation of the fire detection and suppression systems in the selected fire areas. The team verified the manual and automatic detection and suppression systems were installed, tested, and maintained in accordance with the National Fire Protection Association codes of record or approved deviations and that each suppression system was appropriate for the hazards in the selected fire areas.

The team performed a walkdown of accessible portions of the detection and suppression systems in the selected fire areas. The team also performed a walkdown of major system support equipment in other areas (e.g., fire pumps) to assess the material condition of these systems and components.

The team reviewed the electric- and diesel-driven fire pump flow and pressure tests to verify that the pumps met their design requirements. The team also reviewed the fire main hydraulic testing to verify that the fire water system capability met the design requirements.

The team assessed the fire brigade capabilities by reviewing training, qualification, and drill critique records. The team also reviewed prefire plans and smoke removal plans for the selected fire areas to determine if appropriate information was provided to fire brigade members and plant operators to identify safe shutdown equipment and

instrumentation, and to facilitate suppression of a fire that could impact post fire safe shutdown capability. In addition, the team inspected fire brigade equipment to determine operational readiness for fire fighting.

The team observed an unannounced fire drill, conducted on October 7, 2009, and the subsequent drill critique using the guidance contained in Inspection Procedure 71111.05AQ, "Fire Protection Annual/Quarterly." The team observed fire brigade members fight a simulated fire in Fire Area RC-7, Division 2 Electrical Equipment Rooms (Battery Charger Room 2 and Reactor Protection System B Motor Generator Room), located in the Radwaste Building at elevation 467'. The team verified that the licensee properly identified problems; openly discussed them in a self-critical manner at the drill debrief, and identified appropriate corrective actions. Specific attributes evaluated were: (1) proper wearing of turnout gear and self-contained breathing apparatus; (2) proper use and layout of fire hoses; (3) employment of appropriate fire fighting techniques; (4) whether sufficient fire fighting equipment was brought to the scene; (5) effectiveness of fire brigade leader communications, command, and control; (6) search for victims and propagation of the fire into other areas; (7) smoke removal operations; (8) utilization of pre-planned strategies; (9) adherence to the pre-planned drill scenario; and (10) drill objectives.

b. Findings

No findings of significance were identified.

.05 Protection From Damage From Fire Suppression Activities

a. Inspection Scope

The team performed plant walkdowns and document reviews to verify that redundant trains of systems required for safe shutdown, which are located in the same fire area, would not be subject to damage from fire suppression activities or from the rupture or inadvertent operation of fire suppression systems. Specifically, the team verified that:

- A fire in one of the selected fire areas would not directly, through production of smoke, heat, or hot gases, cause activation of suppression systems that could potentially damage all redundant safe shutdown trains.
- A fire in one of the selected fire areas or the inadvertent actuation or rupture of a fire suppression system would not directly cause damage to all redundant trains (e.g., sprinkler-caused flooding of other than the locally affected train).
- Adequate drainage is provided in areas protected by water suppression systems.

b. Findings

No findings of significance were identified.

.06 Alternative Shutdown Capability

a. Inspection Scope

Review of Methodology

The team reviewed the safe shutdown analysis contained in Calculation NE-02-85-19, "Calculation for Post Fire Safe Shutdown Analysis," Revision 6; the control room evacuation procedure ABN-CR-EVAC, "Control Room Evacuation and Remote Cooldown," Revision 16; piping and instrumentation drawings; electrical drawings; the fire hazards analysis; the Final Safety Analysis Report and other supporting documents to verify that cold shutdown could be achieved and maintained for fires in areas where the licensee's post fire safe shutdown strategy relies on manipulating shutdown equipment from outside the control room. The team verified that cold shutdown could be achieved and maintained, with or without offsite power available.

Plant walkdowns were conducted to verify that the plant configuration was consistent with the description contained in the safe shutdown analysis and fire hazards analysis. The team focused on ensuring the adequacy of systems selected for reactivity control, reactor coolant makeup, reactor decay heat removal, process monitoring instrumentation, and support systems functions.

The team also verified that the systems and components credited for shutdown would remain free from fire damage. Finally, the team verified that the transfer of control from the control room to the alternative shutdown location would not be affected by fire-induced circuit faults (e.g., by the provision of separate fuses and power supplies for alternative shutdown control circuits).

Review of Operational Implementation

The team verified that the licensed and non-licensed operators received training on alternative shutdown procedures. The team also verified that sufficient personnel to perform a safe shutdown are trained and available onsite at all times, exclusive of those assigned as fire brigade members.

A walkthrough of the post fire safe shutdown procedure with licensed and non-licensed operators was performed to determine the adequacy of the procedure, including implementation feasibility and the appropriate use of human factors considerations. The team verified that the operators could be reasonably expected to perform specific actions within the time required to maintain plant parameters within specified limits. The bases and requirements for the time critical actions were described in Calculations NE-02-85-19, "Calculation for Post Fire Safe Shutdown Analysis," Revision 6, and GEH-0000-0075-4920-R0, "GE14 Fuel Design Cycle-Independent Analyses for Energy Northwest Columbia Generating Station," Revision 0.

The team reviewed manual actions to ensure that they had been properly reviewed and approved and that the actions could be implemented in accordance with plant

procedures in the time necessary to support the safe shutdown method for each fire area.

The team reviewed periodic surveillance testing of the alternative shutdown transfer capability, including transfer and isolation of instrumentation and control functions, to verify that the tests were adequate to demonstrate the functionality of the alternative shutdown capability. The team also reviewed a sample of wiring diagrams, vendor manuals, connection drawings, and circuit diagrams for the remote transfer circuits, control circuits, and the remote shutdown panel to verify the field configurations matched the design documents.

b. Findings

No findings of significance were identified.

.07 Circuit Analysis

The team reviewed the post fire safe shutdown analysis to verify that the licensee identified the circuits that may impact the ability to achieve and maintain safe shutdown. The team verified, on a sample basis, that the licensee properly identified the cables for equipment required to achieve and maintain cold shutdown conditions in the event of a fire in the selected fire areas. The team verified that these cables were either adequately protected from the potential adverse effects of fire damage or were analyzed to show that fire-induced faults (e.g., hot shorts, open circuits, and shorts to ground) would not prevent safe shutdown.

The team's evaluation focused on the cables of selected components from the standby service water system, automatic depressurization system, and residual heat removal system. For the sample of components selected, the team reviewed electrical elementary and block diagrams and identified power, control, and instrument cables necessary to support their operation. In addition, the team reviewed cable routing information to verify that fire protection features were in place as needed to satisfy the separation requirements specified in the fire protection license basis. The team also reviewed routing and connection drawings for two grounded, armored, multiconductor cable assemblies in the residual heat removal system to verify proper connections and terminations of the grounding devices. Specific components reviewed by the team are listed in the attachment.

b. Findings

No findings of significance were identified.

.08 Communications

a. Inspection Scope

The team inspected the contents of designated emergency storage lockers and reviewed the alternative shutdown procedure to verify that both fixed and portable emergency communications systems were available, operable, and adequate for the performance of designated activities. The team verified the capability of the fixed private branch exchange (PBX) communication system to support the operators in the conduct and coordination of their required actions. The team also verified that the design and location of communications equipment would not cause a loss of communications during a fire. The team reviewed system design, testing, and maintenance of the emergency communication system with the system engineer.

b. Findings

No findings of significance were identified.

.09 Emergency Lighting

a. Inspection Scope

Columbia Generating Station was approved for and used portable 8-hour lanterns in addition to 8-hour capacity fixed emergency lighting. The team reviewed the portion of the emergency lighting system required for alternative shutdown to verify that it was adequate to support the performance of manual actions required to achieve and maintain safe shutdown conditions and to illuminate access and egress routes to the areas where manual actions would be required. The team evaluated the locations and positioning of the fixed emergency lights and the availability and operability of the 8-hour portable lanterns during walkthroughs of the alternative shutdown procedure and the procedure for fire in areas other than the control room.

The team verified that the licensee installed emergency lights with an 8-hour capacity, maintained the emergency light batteries in both fixed and portable configurations in accordance with manufacturer recommendations, and tested and performed maintenance in accordance with plant procedures and industry practices.

b. Findings

No findings of significance were identified.

.10 Cold Shutdown Repairs

a. Inspection Scope

The team reviewed documentation to determine if any repairs were required in order to achieve and maintain cold shutdown. The team noted that the licensee did not require or credit the repair of equipment to reach cold shutdown based on the safe shutdown methodology implemented.

b. Findings

No findings of significance were identified.

.11 Compensatory Measures

a. Inspection Scope

The team verified that compensatory measures were implemented for out-of-service, degraded, or inoperable fire protection and post fire safe shutdown equipment, systems, or features (e.g., detection and suppression systems and equipment; passive fire barriers; pumps, valves, or electrical devices providing safe shutdown functions). The team also verified that the short-term compensatory measures compensated for the degraded function or feature until appropriate corrective action could be taken and that the licensee was effective in returning the equipment to service in a reasonable period of time.

The team reviewed Procedure PPM 1.3.10, "Plant Fire Protection Program Implementation", Revision 30; Procedure PPM 1.3.10B, "Active Fire System Operability and Impairment Control," Revision 14; Procedure PPM 1.3.57, "Barrier Impairment," Revision 25; licensee controlled specifications related to fire protection; and a sample of fire impairments to determine whether the procedures adequately controlled compensatory measures for fire protection systems, equipment and features (e.g., detection and suppression systems and equipment, and passive fire barriers).

The team reviewed Procedure PPM 1.3.76, "Integrated Risk Management", Revision 16, and Procedure PPM 1.5.14, "Risk Assessment and Management for Maintenance/ Surveillance Activities", Revision 17, to determine whether the procedures adequately controlled compensatory measures for out-of-service, degraded, or inoperable equipment that could affect post fire safe shutdown equipment, systems or features.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES [OA]

4OA2 Identification and Resolution of Problems

Corrective Actions for Fire Protection Deficiencies

a. Inspection Scope

The team selected a sample of action request condition reports associated with the licensee's fire protection program to verify that the licensee had an appropriate threshold for identifying deficiencies. In addition, the team reviewed the corrective actions proposed and implemented to verify that they were effective in correcting identified deficiencies. The team also evaluated the quality of engineering evaluations through a review of action requests, calculations, and other documents during the inspection.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On October 8, 2009, the team presented the inspection results to Mr. W. Scott Oxenford, Vice President Nuclear Generation/Chief Nuclear Officer, and other members of the licensee staff at an exit meeting. The licensee acknowledged the findings presented.

The inspectors verified with the licensee that all proprietary information had been returned.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

W. Oxenford, Vice President, Nuclear Generation/Chief Nuclear Officer
S. Gambhir, Vice President, Technical Services
D. Atkinson, Vice President, Operational Support
G. Cullen, Manager, Regulatory Programs
C. King, Assistant Plant General Manager
J. Dittmer, Manager, Design Engineering
R. Burk, Supervisor, Plant Programs
C. Nordhaus, Operations Shift Manager
W. Harper, Fire Protection Program Owner
T. Collis, Post Fire Safe Shutdown Engineer
V. Cichocki, Design Engineer
F. Schill, Licensing Engineer
R. Olsen, Fire Protection Engineer
J. Derryberry, Fire Marshal

NRC personnel

M. Hayes, Resident Inspector

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Opened and Closed

None

Discussed

None

LIST OF DOCUMENTS REVIEWED

CALCULATIONS

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|-----------------------|--|-----------------|
| E/I-02-01-01 | Sizing Calculation for the Plant PBX System Replacement Battery | 1 |
| FP-02-07-02 | Hydraulic Analysis of fire Water Supply System | 0 |
| FPSA-1-RE-0001 | Fire Probabilistic Safety Assessment Quantification and Results | 2 |
| GEH-0000-0075-4920-R0 | GE14 Fuel Design Cycle-Independent Analyses for Energy Northwest Columbia Generating Station | 0 |
| ME-02-94-42 | Time Div 1 & 2 DG Engines Can Run without Service Water | 2 |
| NE-02-85-1 | Operator Actions by Fire Area | 6 |
| NE-02-85-19 | Calculation for Post Fire Safe Shutdown Analysis | 6 |
| NE-02-94-35 | System Impacts on Post Fire Safe Shutdown | 2 |

DRAWINGS

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|----------------|--|-----------------|
| 46E094 | AC Electrical Distribution Systems Aux Pwr XFMR E-TR-B Brkr E-CB-B/8 Sheet 1 | 21 |
| 46E095 | AC Electrical Distribution Systems Aux Pwr XFMR TR-B Brkr B-8 Sheet 2 | 19 |
| 537-IVA-1 | Internal Connection Diagram Board "RS" (H22-P100) Sheet 1 | 19 |
| 537-IVA-2 | Internal Connection Diagram Board "RS" (H22-P100) Sheet 2 | 10 |
| 537-IVA-3 | Internal Connection Diagram Board "RS" (H22-P100) Sheet 3 | 12 |
| CVI 217A-00,13 | Cable Spreading Room System #65 (Pre-action) | 8 |
| CVI 217A-00,14 | Cable Spreading Room System #65 (Pre-action) | 9 |
| CVI 217A-00,15 | Cable Spreading Room System #65 (Pre-action) | 6 |
| CVI 217A-00,28 | Cable Chase – Zone 2 System #66 (Pre-action) | 10 |

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|-------------------|---|-----------------|
| CVI 217A-00,29 | Cable Chase – Zone 2 System #66 (Pre-action) | 4 |
| CVI 217A-00,30 | Cable Chase – Zone 2 System #66 (Pre-action) | 7 |
| CVI 217A-00,31 | Cable Chase – Zone 2 System #66 (Pre-action) | 7 |
| CVI 217A-00,84,37 | Fire Detection & Alarm System Radwaste and Control Building Installation Diagram Elevation 487' | J |
| CVI 217A-00,84,39 | Fire Detection & Alarm System Radwaste and Control Building Installation Diagram Elevation 525' | J |
| CVI 217A-00,84,42 | Radwaste and Control Building Systems Wiring Diagram | 1 |
| CVI 217A-00,84,43 | Radwaste and Control Building FSP 7 and FSP 10 Wiring Diagrams | 1 |
| CVI 217A-00,84,46 | Fire Detection & Alarm System Reactor Building Installation Diagram Elevation 471'-0" and Elevation 501'-0" | C |
| CVI 217A-00,84,47 | Fire Detection & Alarm System Reactor Building Installation Diagram Elevation 606'-10" and Elevation 522'-0" | G |
| D-DM-101 | Fire Protection – PFSS 1 Hour Darmatt® Protected Cable Tray Typical Installation Details | 0 |
| D-DM-103 | Fire Protection – PFSS 1 Hour Darmatt® Protected Miscellaneous Typical Installation Details – Sheet 1 Hangers and Base Plates | 0 |
| D-DM-105 | Fire Protection – PFSS 1 Hour Darmatt® Protected Miscellaneous Typical Installation Details – Sheet 3 Miscellaneous Thermal Short and Bridge Sections | 0 |
| D-DM-109 | Fire Protection – PFSS 3 Hour Darmatt® Protected Conduit Typical Installation Details – Sheet 2 | 0 |
| D-DM-113 | Fire Protection – PFSS Miscellaneous Typical Installation Details for Darmatt® Protected Conduit and Junction Box and Ceramic Fiber Insulated SW Piping | 1 |
| E502-1 | Main One Line Diagram | 45 |
| E502-2 | Main One Line Diagram | 54 |
| E533-22B | Connection Wiring Diagram 4160 Switchgear SM-8 Cubicle SW1B (Unit 4) | 15 |

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| E535-55C | Connection Wiring Diagram Motor Control Centers | 21 |
| E536 | Connection Wiring Diagram Terminal Boards & Misc. Devices Sheet 2S | 12 |
| E536 | Connection Wiring Diagram Terminal Boards & Miscellaneous Devices Sheet 6B | 30 |
| E536-2U | Connection Diagram Term Boxes, Splice Boxes and Misc Devices | 3 |
| E537 | Connection Wiring Diagram Control Room Boards and Terminal Cabinets Sheet No. 18B | 39 |
| E538 | Connection Wiring Diagram Local Instrument Rack Sheet 40 | 25 |
| E560 | Turbine Generator Building Ground Floor Elevation 441'-0" Lighting Plan Sheet 1 | 16 |
| E561 | Turbine Generator Building Ground Floor Elevation 441'-0" Lighting Plan Sheet 2 | 9 |
| E562 | Turbine Generator Building Ground Floor Elevation 441'-0" Lighting Plan Sheet 3 | 13 |
| E563 | Turbine Generator Building Mezzanine Floor Elevation 471'-0" Lighting Plan Sheet 1 | 5 |
| E564 | Turbine Generator Building Mezzanine Floor Elevation 471'-0" Lighting Plan Sheet 2 | 7 |
| E565 | Turbine Generator Building Mezzanine Floor Elevation 471'-0" Lighting Plan Sheet 3 | 8 |
| E566 | Turbine Generator Building Operating Floor El. 501'-0" Lighting Plan Sheet 1 | 6 |
| E567 | Turbine Generator Building Operating Floor El. 501'-0" Lighting Plan Sheet 2 | 4 |
| E568 | Turbine Generator Building Operating Floor El. 501'-0" Lighting Plan Sheet 3 | 7 |
| E671 | Reactor Building El. 606'-10-1/2" Lighting Plan | 14 |
| E696 | Reactor Building El 471'-0" Instrumentation & Control Conduit & Tray Plan, Sheet 3 of 8 | 13 |

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| E697 | Reactor Building EI 501'-0" Instrumentation & Control Conduit & Tray Plan, Sheet 3 of 8 | 14 |
| E698 | Reactor Building EI 522'-0" Instrumentation & Control Conduit & Tray Plan, Sheet 2 of 9 | 13 |
| E698 | Reactor Building EI 522'-0" Instrumentation & Control Conduit & Tray Plan, Sheet 3 of 9 | 21 |
| E727 | Radwaste & Control Building Ground Floor Elevation 437'-0" Lighting Plan Sheet 1 | 19 |
| E728 | Radwaste & Control Building Ground Floor Elevation 437'-0" Lighting Plan Sheet 2 | 15 |
| E729 | Radwaste & Control Building Mezzanine Floor Elevation 467'-0" Lighting Plans Sheet 1 | 28 |
| E730 | Radwaste & Control Building Floor Elevation 467'-0" Lighting Plan Sheet 2 | 11 |
| E733 | Radwaste & Control Building Elevation 501'-0" & 507'-0" Lighting Plan | 25 |
| E735 | Radwaste & Control Building Elevation 525'-0" & Misc. Elevations Lighting Plan | 17 |
| E736 | Radwaste & Control Building Stairwell Lighting & Misc. Details | 11 |
| E756-1 | Radwaste & Control Building Communications System | 23 |
| E758-3 | Radwaste & Control Building Communications System | 35 |
| E784 | Diesel Generator Bldg. Lighting Plans And Details | 26 |
| E787 | Diesel Generator Building Communications System | 8 |
| E841 | Communications System Miscellaneous Details, Sheet 1 | 7 |
| E948-1 | Appendix R Post Fire Safe Shutdown (PFSS) Protected Raceways General Notes Legend and Drawing Index | 15 |
| E948-2 | Appendix R Post Fire Safe Shutdown (PFSS) Protected Raceways Reactor Building Elevations 441'-0" and 471'-0" | 15 |
| E948-2A | Appendix R Post Fire Safe Shutdown (PFSS) Protected Raceways Reactor Building Elevations 501'-0" and 522'-0" | 6 |

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| E948-2B | Appendix R Post Fire Safe Shutdown (PFSS) Protected Raceways Reactor Building Elevations 548'-0" and 572'-0" | 8 |
| E948-3 | Appendix R Post Fire Safe Shutdown (PFSS) Protected Raceways Radwaste Building Elevations 467'-0", 484'-0" and 525'-0" | 13 |
| E948-4 | Reactor Building Fire Protection Tray and conduit Barriers 3M™ Interam® Details | 6 |
| E964-3A | Security System, Elementary Wiring Diagram 125 Vdc Emergency Unlock Control and Alarms | 4 |
| EWD-46E-252 | Electrical Wiring Diagram AC Electrical Distribution System Power Panel E-PP-8AF | 19 |
| EWD-46E-317 | Electrical Wiring Diagram AC Electrical Distribution System Radwaste Building Power Panel E-PP-8A | 9 |
| EWD-49E-024 | Electrical Wiring Diagram Annunciator System Remote Shutdown Transfer Switch Alarm | 26 |
| EWD-50E-014B | Electrical Wiring Diagram DC Electrical Distribution Panel E-DP-S1/2D Circuit Details | 4 |
| EWD-58E-003 | Electrical Wiring Diagram Standby Service Water System SW-P-1B | 19 |
| EWD-58E-004 | Electrical Wiring Diagram Standby Service Water System SW-P-1B Breaker SW-CB-P1B | 27 |
| EWD-58E-004A | Electrical Wiring Diagram Standby Service Water system SW-P-1B Breaker SW-CB-P1B | 3 |
| EWD-58E-004B | Electrical Wiring Diagram Standby Service Water System SW-P-1B Breaker SW-CB-P1B | 3 |
| EWD-58E-004C | Electrical Wiring Diagram Standby Service Water System SW-P-1B Computers And Annunciators | 0 |
| EWD-58E-014 | Electrical Wiring Diagram Standby Service Water System MOV SW-V-2B | 17 |
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| EWD-62E-016 | Electrical Wiring Diagram, Fire Protection System, Radwaste and Control Building Pre-action Systems P65,66 – FSP-7 and FSP-10 | 4 |

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| 99-00024 | 99-0026 | 99-00045 | 99-0117 | 99-0227 | 09-0300 | 09-0234 |
| 01-0373 | 03-0077 | 03-0078 | 03-0175 | 04-0138 | 09-0311 | 09-0207 |
| 04-0139 | 05-0319 | 07-0001 | 07-0002 | 07-0082 | 09-0344 | 09-0169 |
| 07-0083 | 07-0189 | 07-0298 | 07-0410 | 07-0411 | 09-0347 | 09-0115 |
| 07-0412 | 07-0413 | 07-0414 | 08-0073 | 08-0128 | 09-0299 | |

WORK ORDERS

| | | |
|----------|----------|----------|
| 29053582 | 29077393 | 29077226 |
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CORRECTIVE ACTION DOCUMENTS

| | | | |
|-------------|-------------|--------------|--------------|
| AR 00039257 | AR 00057001 | AR 00182186 | AR 00205472* |
| AR 00047697 | AR 00176779 | AR 00204793* | AR 00205473* |
| AR 00048391 | AR 00177577 | AR 00204802* | AR 00205597* |
| AR 00049996 | AR 00181945 | AR 00204838* | AR 00205702* |

*Issued as a result of inspection activities.

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| PFP-RB-522 | Reactor 522 | 2 |
| PFP-RW-467 | Radwaste 467 | 3 |
| PFP-RW-484-487 | Radwaste 484–487 | 3 |
| PFP-RW-501-507 | Radwaste 501–507 | 3 |
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| PPM 15.2.39 | Emergency Lighting 8-Hour EBU and Essential Fluorescent Lighting Inspection - Monthly | 2 |
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| PPM 15.2.42 | 24 Month Operability Test Of Lighting Transfer Switches, E-RMS-7FDA and E-RMS-8FDA | 0 |
| PPM 15.2.43 | PBX Battery E-BO-PBX Monthly Testing | 1 |
| PPM 15.2.44 | PBX Battery E-BO-PBX Quarterly Testing | 1 |
| PPM 15.2.45 | PBX Battery E-BO-PBX Annual Testing | 5 |
| SOP-HVAC/CR-OPS | Control, Cable, and Critical Switchgear Rooms HVAC Operation | 2 |
| SOP-HVAC/RB-OPS | Reactor Building Ventilation Operation | 0 |
| SWP-FPP-01 | Nuclear Fire Protection Program | 6 |

MISCELLANEOUS DOCUMENTS

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|---|---|----------------------|
| Facility Operating License | Issuance Of Facility Operating License NPF-21 WPPSS Nuclear Project No. 2 | December 20, 1983 |
| FPF 1.12 Item 24 | Fire-Induced Boiling of Fluid in Instrument Sensing Lines | 0 |
| FPF 1.2.2 Item 1 | Fire Protection Engineering Evaluation – Raceway Fire Wraps – 3M™ Interam® | 1 |
| FPF 1.2.3 Item 1 | Fire Protection Engineering Evaluation – Raceway Fire Wraps | 1 |
| FPF 2.1 Item 34 | Compliance with NFPA 72E-1974 Smoke Detector Placement | 0 |
| FPF 3.6 Item 2 | Fire Brigade Training | 2 |
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| SD000177 | System Description - Fire Protection | 13 |
| DRD 209 | Design Specification for Division 200 Section 209 Post Fire Safe Shutdown Analysis Requirements | 3 |
| 0601441 | Dual-Lite Spectron® Series Emergency Lighting Equipment Instructions for Installation, Operation, Maintenance | 0 |

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| 2051L/MDS14 | Washington Public Power Supply System WNP-2 Instrument Master Data Sheet | 5 |
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| Energy Northwest Interoffice Memorandum | Memorandum from AG Hosler, Manager WNP-2 Licensing, Record of Telecon – Proposed Use of Portable Lighting for Fire Protection | May 15, 1992 |
| FSAR | Appendix A – Technical Specifications | June, 2008 |
| FSAR Section 9.5.3, Amendment 59 | Plant Lighting System | December, 2007 |
| FSAR Appendix F Amendment 59 | Table F.3-1 | December, 2007 |
| FSAR Appendix F Amendment 58 | Table F.3-2 | December, 2005 |
| FSAR Appendix F Amendment 59 | Table F.4-1 | December, 2007 |
| FSAR Appendix F Amendment 60 | Paragraph F.4.3 | August, 2009 |
| GET-6169F | Section and Application Guide for SB Control and Transfer Switches | 0 |
| LCDN-FSAR-06-012 | Licensing Document Change Notice Form | May 11, 2006 |
| LE-06-005 | Licensing Basis Impact Evaluation | 0 |
| PER 207-0163 | Root Cause Analysis Unexpected Voltage Following Removal of E-TR-IN/2 Neutral Lead | May 10, 2007 |
| FSAR Appendix F Amendment 60 | Fire Protection Evaluation | August, 2009 |
| GI2-86-02 | Safety Evaluation Report, Appendix R Requirements - Noncompliance | March 14, 1986 |
| LI2-86-089 | Safety Evaluation Report, Evaluation Of WNP- 2 Fire Protection Analyses | December 4, 1986 |

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| LI2-87-025 | Safety Evaluation Report, WNP-2 FSAR Amendment 37 (TAC 63528) | November 11, 1987 |
| GI2-89-048 | Approved Fire Protection Program At WNP-2 (TAC 63528) | May 22, 1989 |
| GI2-89-051 | Safety Evaluation Report, Issuance Of Amendment No. 67 To Facility Operating License No. NPF-21 - WPPSS Nuclear Project No. 2 (TAC No. 64655) | May 25, 1989 |
| Fire Protection Engineering Evaluation | Qualification of Whittaker MI Cable as a 3-hour Raceway Fire Barrier | February 1, 2006 |
| Vendor Document | Installation and Standard Practices for SI 2400 Fire Cable | 0 |
| Vendor Document | SI Cable and Connector Systems for Nuclear Power Stations/SI 2400 Fireproof Cable | 0 |
| Vendor Document | Whittaker Electronic Resource for SI Fire Cable for MOV Operation | 0 |
| Vendor Document | Fire Cable Design Handbook Technical Report TR-9015, Pages 17 and 17a | 5 |
| Safety Evaluation 99-0039 | Safety Evaluation for Acceptability of Whittaker fire-rated mineral insulated cable as a 3-hour qualified raceway fire barrier | 0 |
| Safety Evaluation 97-068-1 | Safety Evaluation for initial Thermo-Lag® reduction | 1 |
| Safety Evaluation 98-103 | Safety Evaluation for elimination of Thermo-Lag® in fire areas R-1, RC-2, & RC-3 | 0 |
| Safety Evaluation 98-095-0 | Safety Evaluation documenting the electrical connections for various Whittaker fire rated cable assemblies | 0 |
| Memorandum from J. Harmon, Maintenance Manager to R. Webring, Plant Technical Manager – WPPSS | Self Contained Battery Powered Emergency Lighting Periodic Test Requirements | April 29, 1992 |

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| Memorandum from A. Hosler, Manager, WNP-2 Licensing to Distribution | Record of Telecon – Proposed Use of Portable Lighting for Fire Protection | May 15, 1992 |
| Fire Brigade Drill | Fire Brigade Drill 2009, NRC Unannounced Drill Critique Form | |
| GI2-95-125 | Procedures for Control Room Fires at Washington Public Power Supply System Nuclear Project No. 2 | May 25, 1995 |
| GO2-95-013 | WNP-2, Operating License NPF-21 Revision to Procedures for Control Room Fires | January 25, 1995 |
| Energy Northwest Interoffice Memorandum | Control Room Evacuation | September 24, 2009 |
| Lesson Plan EO000686 | Remote Shutdown and Alternate Remote Shutdown | 2008 |
| Lesson Plan LO000210 | Remote Shutdown and Alternate Remote Shutdown | 2008 |
| Lesson Plan LR000086 | Control Room Evacuation and Remote Cooldown | 6 |
| Technical Memorandum TM-2161 | Technical Evaluation of High Impedance Faults in Accordance with NEI-00-01 Revision 1 | 1 |
| Energy Northwest Self-Assessment Report No. 73510 | Fire Protection (FP) & Post-Fire Safe Shutdown (PFSS) Program Self Assessment | August 15, 2008 |
| Quality Services Audit Report AU-ENFP-08 | Engineering and Fire Protection Audit | February 21, 2008 |