



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
612 EAST LAMAR BLVD, SUITE 400  
ARLINGTON, TEXAS 76011-4125

November 3, 2010

EA 2010-137

Mr. Mark E. Reddemann  
Chief Executive Officer  
Energy Northwest  
P.O. Box 968 (Mail Drop 1023)  
Richland, WA 99352-0968

Subject: COLUMBIA GENERATING STATION - NRC INTEGRATED INSPECTION REPORT  
05000397/2010004 AND EXERCISE OF ENFORCEMENT DISCRETION

Dear Mr. Reddemann:

On September 25, 2010, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Columbia Generating Station. The enclosed integrated inspection report documents the inspection findings, which were discussed on October 4, 2010, with you and other members of your staff.

The inspections 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.

Two violations of the licensees' approved fire protection program were identified. Because the violations were associated with multiple fire induced circuit faults and were identified during the discretion period as described in Enforcement Guidance Memorandum (EGM) 09-002, the NRC is exercising enforcement discretion in accordance with EGM-09-002.

This report documents one NRC-identified finding of very low safety significance (Green). This finding was determined to involve a violation of NRC requirements. Additionally, one licensee-identified violation, which was determined to be of very low safety significance, is listed in this report. However, because of the very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings as noncited violations, consistent with Section 2.3.2.a of the NRC Enforcement Policy. If you contest the violations or the significance of the noncited violations, 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, D.C. 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 612 E. Lamar Blvd, Suite 400, Arlington, Texas, 76011-4125; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the Columbia Generating Station facility. In addition, if you disagree with the crosscutting aspect

assigned to any 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 Regional Administrator, Region IV, and the NRC Resident Inspector at the Columbia Generating Station.

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

Sincerely,

**/RA/**

Wayne Walker, Chief  
Project Branch A  
Division of Reactor Projects

Docket: 50-397  
License: NPF-21

Enclosure:  
NRC Inspection Report 05000397/2010004  
w/Attachment: Supplemental Information

cc w/Enclosure:

Chairman  
Energy Facility Site Evaluation Council  
P.O. Box 43172  
Olympia, WA 98504-3172

Douglas W. Coleman  
Manager, Regulatory Programs  
Energy Northwest  
P.O. Box 968, Mail Drop PE20  
Richland, WA 99352-0968

Chairman  
Benton County Board of Commissioners  
P.O. Box 190  
Prosser, WA 99350-0190

Energy Northwest

- 3 -

Richard Cowley  
Washington State Department of Health  
111 Israel Road, SE  
Tumwater, WA 98504-7827

William A. Horin, Esq  
Winston and Strawn  
1700 K Street, NW  
Washington, DC 20006-3817

Lynn Albin  
Washington State Department of Health  
P.O. Box 7827  
Olympia, WA 98504-7827

Ken Niles  
Assistant Director  
Nuclear Safety and Energy Siting Division  
Oregon Department of Energy  
625 Marion Street NE  
Salem, OR 97301-3737

Special Hazards Program Manager  
Washington Emergency Management Division  
127 W. Clark Street  
Pasco, WA 99301

Chief, Technological Hazards Branch  
FEMA Region X  
Federal Regional Center  
130 228<sup>th</sup> Street, SW  
Bothell, WA 98021-9796

William Webb  
Chairperson, Radiological Assistance Committee  
Region X  
Federal Emergency Management Agency  
Department of Homeland Security  
Federal Regional Center  
130 228<sup>th</sup> Street, SW  
Bothell, WA 98021-9796

Regional Administrator (Elmo.Collins@nrc.gov)  
 Deputy Regional Administrator (Chuck.Casto@nrc.gov)  
 DRP Director (Kriss.Kennedy@nrc.gov)  
 DRP Deputy Director (Anton.Vegel@nrc.gov)  
 DRS Director (Roy.Caniano@nrc.gov)  
 DRS Deputy Director (Troy.Pruett@nrc.gov)  
 Senior Resident Inspector (Ronald.Cohen@nrc.gov)  
 Resident Inspector (Mahdi.Hayes@nrc.gov)  
 Branch Chief, DRP/A (Wayne.Walker@nrc.gov)  
 Senior Project Engineer, DRP/A (David.Proulx@nrc.gov)  
 Project Engineer, DRP/A (Laura.Micewski@nrc.gov)  
 Administrative Assistant (Crystal.Myers@nrc.gov)  
 Public Affairs Officer (Victor.Dricks@nrc.gov)  
 Public Affairs Officer (Lara.Uselding@nrc.gov)  
 Project Manager (Fred.Lyon@nrc.gov)  
 Branch Chief, DRS/TSB (Michael.Hay@nrc.gov)  
 RITS Coordinator (Marisa.Herrera@nrc.gov)  
 Regional Counsel (Karla.Fuller@nrc.gov)  
 Acting Regional Counsel (David.Roth@nrc.gov)  
 Congressional Affairs Officer (Jenny.Weil@nrc.gov)  
 Regional State Liaison Officer (Bill.Maier@nrc.gov)  
 Senior Enforcement Specialist (Ray.Kellar@nrc.gov)  
 NSIR/DRP/EP (Eric.Schrader@nrc.gov)  
 OEmail Resource  
 ROPreports  
 OEDO RIV Coordinator (Geoffrey.Miller@nrc.gov)  
 Executive Technical Assistant (John.Giessner@nrc.gov)

File located: R:\\_REACTORS\COL\CGS IR2010004 RP-RBC.docx

SUNSI Rev Complete	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	ADAMS	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Reviewer Initials	WW
Publicly Avail	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sensitive	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sens. Type Initials	WW
RI:DRP/A	SRI:DRP/A	SPE:DRP/A	C:DRS/EB1	OE:ACES	
MHayes	RCohen	DProulx	TFarnholtz	RKellar	
<b>/RA/E</b>		<b>/RA/</b>	<b>/RA/R.Latta for</b>	<b>/RA/</b>	
10/29/10		10/26/10	11/2/10	11/2/10	
C:DRS/OB	C:DRS/PSB1	C:DRS/PSB2	C:DRS/TSB	C:DRP/A	
MHaire	MShannon	GWerner	MHay	WWalker	
<b>/RA/</b>	<b>/RA/</b>	<b>/RA/</b>	<b>/RA/</b>	<b>/RA/</b>	
11/2/2010	11/2/10	10/27/10	10/28/10	11/3/10	

OFFICIAL RECORD COPY

T=Telephone

E=E-mail

F=Fax

**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION IV**

Docket: 05000397

License: NPF-21

Report: 05000397/2010004

Licensee: Energy Northwest

Facility: Columbia Generating Station

Location: Richland, WA

Dates: June 27, 2010 through September 25, 2010

Inspectors: R. Cohen, Senior Resident Inspector  
M. Hayes, Resident Inspector  
L. Ricketson, PE, Senior Health Physicist,  
C. Graves, Health Physicist  
G. Pick, Senior Reactor Inspector  
P. Elkman, Senior Emergency Preparedness Inspector  
G. Guerra, CHP, Emergency Preparedness Inspector  
L. Carson II, Senior Health Physicist  
D. Stearns, Health Physicist

Approved By: W. Walker, Chief, Project Branch A  
Division of Reactor Projects

## SUMMARY OF FINDINGS

IR 05000397/2010004; 06/27/2010 – 09/25/2010; Columbia Generating Station, Integrated Resident and Regional Report; Maintenance Risk Assessments and Emergent Work Control

The report covered a 3-month period of inspection by resident inspectors and announced baseline inspections by region-based inspectors. One Green noncited violation of significance was identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609, "Significance Determination Process." The crosscutting aspect is determined using Inspection Manual Chapter 0310, "Components Within the Crosscutting Areas." Findings for which the significance determination process does not apply may be Green or be assigned a severity level after NRC management review. 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 Findings and Self-Revealing Findings**

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Green noncited violation of 10 CFR 50.65(a)(4) for the licensee's failure to perform an adequate risk assessment during surveillance testing. Specifically, licensee personnel failed to input the appropriate variable for the reactor core isolation cooling system being unavailable during surveillance testing. When the correct variable was used the risk profile for the day increased one level of significance. This violation has been placed in the licensee's corrective action program as Action Request 224294.

The performance deficiency was more than minor because it involved a failure to include all maintenance activities ongoing in the plant. The performance deficiency affected the equipment performance attribute of the Mitigating Systems Cornerstone objective to ensure the availability of systems that respond to an initiating event in that the risk profile did not adequately show system availability. The inspectors evaluated the performance deficiency using Manual Chapter 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process", and determined the performance deficiency to be of very low safety significance (Green) because the risk deficit during the time of the surveillance was calculated to be less than 1.0E-6. This performance deficiency has a crosscutting aspect in the area of human performance, resources, for the failure to provide an up to date work package with the correct input variable for assessing risk [H.2.c] (Section 1R13).

**B. Licensee-Identified Violations**

A Violation of very low safety significance, which was identified by the licensee, and reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. This violation and corrective action tracking number (condition report number) is listed in Section 4OA7.

## REPORT DETAILS

### Summary of Plant Status

The plant began the inspection period at 85 percent power for economic dispatch and returned to 100 percent power on June 28, 2010. Daily reductions in power to 85 percent power continued until July 6, 2010, for economic dispatch. Operators reduced power to 74 percent power on July 1, 2010, to facilitate repairs on the adjustable speed drive system. The plant remained at 100 percent power for the remainder of the inspection period except for planned power reductions to support maintenance and testing.

### 1. REACTOR SAFETY

#### Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness

#### 1R01 Adverse Weather Protection (71111.01)

##### Summer Readiness for Offsite and Alternate-ac Power

##### a. Inspection Scope

The inspectors performed a review of preparations for summer weather for selected systems, including conditions that could lead to loss-of-offsite power and conditions that could result from high temperatures. The inspectors reviewed the procedures affecting these areas and the communications protocols between the transmission system operator and the plant to verify that the appropriate information was being exchanged when issues arose that could affect the offsite power system. Examples of aspects considered in the inspectors' review included:

- The coordination between the transmission system operator and the plant's operations personnel during off-normal or emergency events
- The explanations for the events
- The estimates of when the offsite power system would be returned to a normal state
- The notifications from the transmission system operator to the plant when the offsite power system was returned to normal

During the inspection, the inspectors focused on plant-specific design features and the procedures used by plant personnel to mitigate or respond to adverse weather conditions. Additionally, the inspectors reviewed the FSAR and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant-specific procedures. Specific documents reviewed during this inspection are listed in the attachment. The inspectors also reviewed



corrective action program items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their corrective action program in accordance with station corrective action procedures. The inspectors' reviews focused specifically on the following plant systems:

- August 9, 2010, offsite power and standby service water

These activities constitute completion of one readiness for summer weather affect on offsite and alternate-ac power sample as defined in Inspection Procedure 71111.01-05.

b. Findings

No findings were identified.

**1R04 Equipment Alignments (71111.04)**

.1 Partial Walkdown

a. Inspection Scope

The inspectors performed partial system walkdowns of the following risk-significant systems:

- July 15, 2010, SM-7 safety related 4160 VAC
- August 26, 2010, reactor core isolation cooling system
- September 14, 2010, residual heat removal system train C

The inspectors selected these systems based on their risk significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could affect the function of the system, and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, FSAR, technical specification requirements, administrative technical specifications, outstanding work orders, condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also inspected accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of three partial system walkdown samples as defined in Inspection Procedure 71111.04-05.

b. Findings

No findings were identified.

.2 Complete Walkdown

a. Inspection Scope

On August 4, 2010, the inspectors performed a complete system alignment inspection of the control room emergency chiller to verify the functional capability of the system. The inspectors selected this system because it was considered both safety significant and risk significant in the licensee's probabilistic risk assessment. The inspectors inspected the system to review mechanical and electrical equipment line ups, electrical power availability, system pressure and temperature indications, as appropriate, component labeling, component lubrication, component and equipment cooling, hangers and supports, operability of support systems, and to ensure that ancillary equipment or debris did not interfere with equipment operation. The inspectors reviewed a sample of past and outstanding work orders to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the corrective action program database to ensure that system equipment-alignment problems were being identified and appropriately resolved. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one complete system walkdown sample as defined in Inspection Procedure 71111.04-05.

b. Findings

No findings were identified.

**1R05 Fire Protection (71111.05)**

.1 Quarterly Fire Inspection Tours

a. Inspection Scope

The inspectors conducted fire protection walkdowns that were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- July 12, 2010, fire area DG-10; deluge valve equipment room
- July 15, 2010, fire area M-27, E-IR-H22/PO27, instrument rack room
- July 30, 2010, fire area R-6, reactor core isolation cooling room
- August 4, 2010, fire area RC-4, division one 125v DC battery room

The inspectors reviewed areas to assess if licensee personnel had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant; effectively maintained fire detection and suppression capability; maintained

passive fire protection features in good material condition; and had implemented adequate compensatory measures for out of service, degraded or inoperable fire protection equipment, systems, or features, in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to affect equipment that could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's corrective action program. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four quarterly fire-protection inspection samples as defined in Inspection Procedure 71111.05-05.

b. Findings

No findings were identified.

**1R11 Licensed Operator Qualification Program (71111.11)**

a. Inspection Scope

On August 2, 2010, the inspectors observed a crew of licensed operators in the plant's simulator to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- Licensed operator performance
- Crew's clarity and formality of communications
- Crew's ability to take timely actions in the conservative direction
- Crew's prioritization, interpretation, and verification of annunciator alarms
- Crew's correct use and implementation of abnormal and emergency procedures
- Control board manipulations
- Oversight and direction from supervisors
- Crew's ability to identify and implement appropriate technical specification actions and emergency plan actions and notifications

The inspectors compared the crew's performance in these areas to preestablished operator action expectations and successful critical task completion requirements. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one quarterly licensed-operator requalification program sample as defined in Inspection Procedure 71111.11.

b. Findings

No findings were identified.

**1R12 Maintenance Effectiveness (71111.12)**

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the following risk significant systems:

- July 7, 2010, Action Request/Condition Report 220785, "FDR-V-219 Flow Scan Indicates Valve is not Fully Closed"
- July 28, 2010, condensate pump 1C suction boot
- August 6, 2010, Work Order 01192092, "Control Room Emergency Chiller CCH-CR-1A Tripped due to Refrigerant Low Pressure Adjust Freon Trim and Perform Operability"

The inspectors reviewed events such as where ineffective equipment maintenance has resulted in valid or invalid automatic actuations of engineered safeguards systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- Implementing appropriate work practices
- Identifying and addressing common cause failures
- Scoping of systems in accordance with 10 CFR 50.65(b)
- Characterizing system reliability issues for performance
- Charging unavailability for performance
- Trending key parameters for condition monitoring
- Ensuring proper classification in accordance with 10 CFR 50.65(a)(1) or -(a)(2)

- Verifying appropriate performance criteria for structures, systems, and components classified as having an adequate demonstration of performance through preventive maintenance, as described in 10 CFR 50.65(a)(2), or as requiring the establishment of appropriate and adequate goals and corrective actions for systems classified as not having adequate performance, as described in 10 CFR 50.65(a)(1)

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of three quarterly maintenance effectiveness samples as defined in Inspection Procedure 71111.12-05.

b. Findings

No findings were identified.

**1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)**

a. Inspection Scope

The inspectors reviewed licensee personnel's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- August 16, 2010, Bonneville Power Administration bypassing normal supply to startup transformer
- August 16, 2010, N1/X nonsegregated bus elevated temperatures
- August 26, 2010, Green risk while the reactor core isolation cooling system is unavailable during surveillance testing
- September 16, 2010, diesel generator 2 monthly run with lower monumental line out of service

The inspectors selected these activities based on potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that licensee personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. When licensee personnel performed emergent work, the inspectors verified that the licensee personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the

risk assessment. The inspectors also reviewed the technical specification requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four maintenance risk assessments and emergent work control inspection samples as defined in Inspection Procedure 71111.13-05.

b. Findings

Introduction: The inspectors identified a Green noncited violation of 10 CFR 50.65(a)(4) for the licensee's failure to perform an adequate risk assessment during surveillance testing on August 26, 2010. Specifically, the licensee failed to include the correct input variable for the reactor core isolation cooling system being unavailable during surveillance testing in the licensee's risk assessment program.

Description: On August 26, 2010, the inspectors were reviewing the daily work schedule and noticed the licensee was performing Procedure ISP-RCIC-Q901, "RCIC Isolation on RCIC Steam Supply Flow High Div 1 – CFT/CC". This surveillance renders the reactor core isolation cooling system inoperable and unavailable during testing. The inspectors questioned licensee staff on whether the surveillance was in progress or not. The staff stated that the surveillance was in progress. The inspectors questioned the staff whether reporting the risk profile as Green was appropriate considering the surveillance being performed. Licensee staff then re-performed the risk calculation and the risk profile changed from Green to Yellow. When questioned on why the risk changed, licensee staff stated that an incorrect variable had been used in the risk assessment software. The staff stated that a variable for isolating containment had been used instead of system unavailability. The work order that was used to input risk variables had been revised due to a change in how the surveillance is conducted. This change had not been communicated to the staff responsible for performing risk calculations. The licensee is currently reviewing all work orders used in assessing plant risk to ensure the correct input variables are used.

Analysis: The failure to perform an adequate risk assessment was a performance deficiency. The performance deficiency was more than minor because it involved a failure to include all maintenance activities ongoing in the plant. The performance deficiency affected the equipment performance attribute of the Mitigating Systems Cornerstone objective to ensure the availability of systems that respond to an initiating event in that, the risk profile did not adequately show system availability. The inspectors evaluated the performance deficiency using Inspection Manual Chapter 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process", and determined the performance deficiency to be of very low safety significance (Green) because the risk deficit during the time of the surveillance was calculated to be less than 1.0E-6. The inspectors determined the violation had a crosscutting aspect in the area of human performance, resources, for the failure to

provide an up to date work package with the correct input variable for assessing risk [H.2.c].

Enforcement: Title 10 CFR 50.65(a)(4), states, in part, that the licensee shall assess and manage the increase in risk that may result from proposed maintenance activities. Contrary to the above, on August 26, 2010, the licensee failed to assess the increase in risk from planned surveillance testing on the reactor core isolation cooling system. The risk assessment which was performed had not included the correct variable to be used with the licensee program for assessing risk. Because this violation was of very low safety significance (Green) and has been entered into the licensee's corrective action program as Action Request 224294, this violation is being treated as a noncited violation, consistent with Section 2.3.2.a of the NRC Enforcement Policy: NCV 05000397/2010004-01, Inadequate Risk Assessment Associated with Planned Surveillance Activities.

## **1R15 Operability Evaluations (71111.15)**

### **a. Inspection Scope**

The inspectors reviewed the following issues:

- August 16, 2010, Action Request/Condition Report 223313, "DG-3 speed indicating high at rated speed"
- August 23, 2010, Action Request/Condition Report 223986, "SW-P-1B performance in the alert range"
- August 24, 2010, Action Request/Condition Report 223935, "RHR-P-2C has entered the alert range"
- September 8, 2010, Battery EB1-1 and EB2-1, 125VDC battery high resistance between inter-tier cable connection
- September 13, 2010, diesel generator head cracking extent of condition

The inspectors selected these potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that technical specification operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the technical specifications and FSAR to the licensee personnel's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors also reviewed a sampling of corrective action documents to verify that the licensee was

identifying and correcting any deficiencies associated with operability evaluations. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of five operability evaluations inspection samples as defined in Inspection Procedure 71111.15-04

b. Findings

No findings were identified.

**1R19 Postmaintenance Testing (71111.19)**

a. Inspection Scope

The inspectors reviewed the following postmaintenance activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- September 7, 2010, Work Order 01193637, "HPCS-P-3 Fill and Vent Post Maintenance"
- September 9, 2010, Work Order 01187882, "Diesel Generator 3 Monthly Operability Testing"
- September 23, 2010, Work Request 290848884, "CAS-MON-1A and C Reading High With CAS-C-1A Running"
- September 24, 2010, Work Request 29084416, "IN-5 Trouble due to E-CB-IN5/3 Breaker Trip"
- September 24, 2010, Work Request 29084928, "WOA-ECH-54B Measured Power Below Acceptable Limit"

The inspectors selected these activities based upon the structure, system, or component's ability to affect risk. The inspectors evaluated these activities for the following:

- The effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed
- Acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate

The inspectors evaluated the activities against the technical specifications, the FSAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with postmaintenance tests to determine



whether the licensee was identifying problems and entering them in the corrective action program and that the problems were being corrected commensurate with their importance to safety. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of five postmaintenance testing inspection samples as defined in Inspection Procedure 71111.19-05.

b. Findings

No findings were identified.

**1R22 Surveillance Testing (71111.22)**

a. Inspection Scope

The inspectors reviewed the FSAR, procedure requirements, and technical specifications to ensure that the surveillance activities listed below demonstrated that the systems, structures, and/or components tested were capable of performing their intended safety functions. The inspectors either witnessed or reviewed test data to verify that the significant surveillance test attributes were adequate to address the following:

- Preconditioning
- Evaluation of testing impact on the plant
- Acceptance criteria
- Test equipment
- Procedures
- Jumper/lifted lead controls
- Test data
- Testing frequency and method demonstrated technical specification operability
- Test equipment removal
- Restoration of plant systems
- Fulfillment of ASME Code requirements
- Updating of performance indicator data

- Engineering evaluations, root causes, and bases for returning tested systems, structures, and components not meeting the test acceptance criteria were correct
- Reference setting data
- Annunciators and alarms setpoints

The inspectors also verified that licensee personnel identified and implemented any needed corrective actions associated with the surveillance testing.

- July 6, 2010, seismic instrument response testing
- July 7, 2010, OSP-LPCS/IST-Q702, "LPCS System Operability Test"
- July 19, 2010, OSP-SW/IST-Q703, "HPCS Service Water Operability"

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of three surveillance testing inspection samples as defined in Inspection Procedure 71111.22-05.

b. Findings

No findings were identified.

**Cornerstone: Emergency Preparedness**

**1EP1 Exercise Evaluation (71114.01)**

a. Inspection Scope

The inspectors reviewed the objectives and scenario for the 2010 biennial emergency plan exercise to determine if the exercise would acceptably test major elements of the emergency plan. The scenario simulated a fire in the Service Water Pump House, a steam and water leak in the Reactor Building (loss of the Containment barrier), the failure of two Jet Pumps in the reactor vessel, a manual reactor scram because Reactor Building temperatures exceed maximum safe limits, failures of both trains of the Standby Gas Treatment System, a loss of offsite 230 kV power to the Station, a loss of coolant accident inside containment (loss of Reactor Coolant System Barrier) lowering reactor level to below top of active fuel (loss of the Fuel Barrier), emergency depressurization, core damage, and a radiological release to the environment via Reactor Building ventilation to demonstrate the licensee personnel's capability to implement their emergency plan.

The inspectors evaluated exercise performance by focusing on the risk-significant activities of event classification, offsite notification, recognition of offsite dose consequences, and development of protective action recommendations, in the Control Room Simulator and the following dedicated emergency response facilities:

- Control Room Simulator
- Technical Support Center
- Operations Support Center
- Emergency Operations Facility

The inspectors also assessed recognition of, and response to, abnormal and emergency plant conditions, the transfer of decision-making authority and emergency function responsibilities between facilities, onsite and offsite communications, protection of emergency workers, emergency repair evaluation and capability, and the overall implementation of the emergency plan to protect public health and safety and the environment. The inspectors reviewed the current revision of the facility emergency plan, emergency plan implementing procedures associated with operation of the licensee's emergency response facilities, procedures for the performance of associated emergency functions, and other documents as listed in the attachment to this report.

The inspectors compared the observed exercise performance with the requirements in the facility emergency plan, 10 CFR 50.47(b), 10 CFR Part 50, Appendix E, and with the guidance in the emergency plan implementing procedures and other federal guidance.

The inspectors attended the post-exercise critiques in each emergency response facility to evaluate the initial licensee self-assessment of exercise performance. The inspectors also attended a subsequent formal presentation of critique items to plant management. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one sample as defined in Inspection Procedure 71114.01-05.

b. Findings

No findings were identified.

**1EP6 Drill Evaluation (71114.06)**

Training Observations

a. Inspection Scope

The inspectors observed a simulator training evolution for licensed operators on July 20, 2010, which required emergency plan implementation by a licensee operations crew. This evolution was planned to be evaluated and included in performance indicator data regarding drill and exercise performance. The inspectors observed event classification and notification activities performed by the crew. The inspectors also attended the postevolution critique for the scenario. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance and ensure that the licensee evaluators noted the same issues and entered them into the corrective action program. As part of the inspection, the inspectors reviewed the scenario package and other documents listed in the attachment.

These activities constitute completion of one sample as defined in Inspection Procedure 71114.06-05.

b. Findings

No findings were identified.

**2. RADIATION SAFETY**

**Cornerstone: Occupational and Public Radiation Safety**

**2RS01 Radiological Hazard Assessment and Exposure Controls (71124.01)**

a. Inspection Scope

This area was inspected to: (1) review and assess licensee's performance in assessing the radiological hazards in the workplace associated with licensed activities and the implementation of appropriate radiation monitoring and exposure control measures for both individual and collective exposures, (2) verify the licensee is properly identifying and reporting Occupational Radiation Safety Cornerstone performance indicators, and (3) identify those performance deficiencies that were reportable as a performance indicator and which may have represented a substantial potential for overexposure of the worker.

The inspectors used the requirements in 10 CFR Part 20, the technical specifications, and the licensee's procedures required by technical specifications as criteria for determining compliance. During the inspection, the inspectors interviewed the radiation protection manager, radiation protection supervisors, and radiation workers. The inspectors performed walkdowns of various portions of the plant, performed independent radiation dose rate measurements and reviewed the following items:

- Performance indicator events and associated documentation reported by the licensee in the Occupational Radiation Safety Cornerstone
- The hazard assessment program, including a review of the license's evaluations of changes in plant operations and radiological surveys to detect dose rates, airborne radioactivity, and surface contamination levels
- Instructions and notices to workers, including labeling or marking containers of radioactive material, radiation work permits, actions for electronic dosimeter alarms, and changes to radiological conditions
- Programs and processes for control of sealed sources and release of potentially contaminated material from the radiologically controlled area, including survey performance, instrument sensitivity, release criteria, procedural guidance, and sealed source accountability

- Radiological hazards control and work coverage, including the adequacy of surveys, radiation protection job coverage, and contamination controls; the use of electronic dosimeters in high noise areas; dosimetry placement; airborne radioactivity monitoring; controls for highly activated or contaminated materials (non-fuel) stored within spent fuel and other storage pools; and posting and physical controls for high radiation areas and very high radiation areas
- Radiation worker and radiation protection technician performance with respect to radiation protection work requirements
- Audits, self-assessments, and corrective action documents related to radiological hazard assessment and exposure controls since the last inspection

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of the one required sample as defined in Inspection Procedure 71124.01-05.

b. Findings

No findings were identified.

**2RS02 Occupational ALARA Planning and Controls (71124.02)**

a. Inspection Scope

This area was inspected to assess performance with respect to maintaining occupational individual and collective radiation exposures as low as is reasonably achievable (ALARA). The inspectors used the requirements in 10 CFR Part 20, the technical specifications, and the licensee's procedures required by technical specifications as criteria for determining compliance. During the inspection, the inspectors interviewed licensee personnel and reviewed the following items:

- Site-specific ALARA procedures and collective exposure history, including the current 3-year rolling average, site-specific trends in collective exposures, and source-term measurements
- ALARA work activity evaluations/postjob reviews, exposure estimates, and exposure mitigation requirements
- The methodology for estimating work activity exposures, the intended dose outcome, the accuracy of dose rate and man-hour estimates, and intended versus actual work activity doses and the reasons for any inconsistencies
- Records detailing the historical trends and current status of tracked plant source terms and contingency plans for expected changes in the source term due to changes in plant fuel performance issues or changes in plant primary chemistry

- Radiation worker and radiation protection technician performance during work activities in radiation areas, airborne radioactivity areas, or high radiation areas
- Audits, self-assessments, and corrective action documents related to ALARA planning and controls since the last inspection

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of the one required sample as defined in Inspection Procedure 71124.02-05.

b. Findings

No findings were identified.

**2RS04 Occupational Dose Assessment (71124.04)**

a. Inspection Scope

This area was inspected to: (1) determine the accuracy and operability of personal monitoring equipment; (2) determine the accuracy and effectiveness of the licensee's methods for determining total effective dose equivalent; and (3) ensure occupational dose is appropriately monitored. The inspectors used the requirements in 10 CFR Part 20, the technical specifications, and the licensee's procedures required by technical specifications as criteria for determining compliance. During the inspection, the inspectors interviewed licensee personnel, performed walkdowns of various portions of the plant, and reviewed the following items:

- External dosimetry accreditation, storage, issue, use, and processing of active and passive dosimeters
- The technical competency and adequacy of the licensee's internal dosimetry program
- Adequacy of the dosimetry program for special dosimetry situations such as declared pregnant workers, multiple dosimetry placement, and neutron dose assessment
- Audits, self-assessments, and corrective action documents related to dose assessment since the last inspection

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of the one required sample as defined in Inspection Procedure 71124.04-05.

b. Findings

No findings were identified.

**2RS05 Radiation Monitoring Instrumentation (71124.05)**

a. Inspection Scope

This area was inspected to verify the licensee is assuring the accuracy and operability of radiation monitoring instruments that are used to: (1) monitor areas, materials, and workers to ensure a radiologically safe work environment; and (2) detect and quantify radioactive process streams and effluent releases. The inspectors used the requirements in 10 CFR Part 20, the technical specifications, and the licensee's procedures required by technical specifications as criteria for determining compliance. During the inspection, the inspectors interviewed licensee personnel, performed walkdowns of various portions of the plant, and reviewed the following items:

- Selected plant configurations and alignments of process, postaccident, and effluent monitors with descriptions in the Final Safety Analysis Report and the offsite dose calculation manual
- Select instrumentation, including effluent monitoring instrument, portable survey instruments, area radiation monitors, continuous air monitors, personnel contamination monitors, portal monitors, and small article monitors to examine their configurations and source checks
- Calibration and testing of process and effluent monitors, laboratory instrumentation, whole body counters, postaccident monitoring instrumentation, portal monitors, personnel contamination monitors, small article monitors, portable survey instruments, area radiation monitors, electronic dosimetry, air samplers, continuous air monitors
- Audits, self-assessments, and corrective action documents related to radiation monitoring instrumentation since the last inspection

Specific documents reviewed during this inspection are listed in the attachment. These activities constitute completion of the one required sample as defined in Inspection Procedure 71124.05-05.

b. Findings

No findings were identified.

#### 4. OTHER ACTIVITIES

##### 40A1 Performance Indicator Verification (71151)

###### .1 Mitigating Systems Performance Index - Emergency ac Power System (MS06)

###### a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - emergency ac power system performance indicator for the period from the third quarter 2009 through the third quarter 2010. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed the licensee's operator narrative logs, mitigating systems performance index derivation reports, issue reports, event reports, and NRC integrated inspection reports for the period of July 2009 through September 2010 to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one mitigating systems performance index emergency ac power system sample as defined in Inspection Procedure 71151-05.

###### b. Findings

No findings were identified.

###### .2 Mitigating Systems Performance Index - High Pressure Injection Systems (MS07)

###### a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - high pressure injection systems performance indicator for the period from the third quarter 2009 through the third quarter 2010. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed the licensee's operator narrative logs, issue reports, mitigating systems performance index derivation reports, event reports, and NRC integrated inspection reports for the period of July 2009 through September 2010 to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that



the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one mitigating systems performance index high pressure injection system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index - Heat Removal System (MS08)

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - heat removal system performance indicator for the period from the fourth quarter 2009 through the third quarter 2010. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports, mitigating systems performance index derivation reports, and NRC integrated inspection reports for the period of October 2009 through September 2010, to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one mitigating systems performance index heat removal system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.4 Data Submission Issue

a. Inspection Scope

The inspectors performed a review of the data submitted by the licensee for the Second Quarter 2010 performance indicators for any obvious inconsistencies prior to its public

release in accordance with Inspection Manual Chapter 0608, "Performance Indicator Program."

This review was performed as part of the inspectors' normal plant status activities and, as such, did not constitute a separate inspection sample.

b. Findings

No findings were identified.

.5 Drill/Exercise Performance (EP01)

a. Inspection Scope

The inspectors sampled licensee submittals for the Drill and Exercise Performance, performance indicator for the period July 2009 through June 2010. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's records associated with the performance indicator to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the Nuclear Energy Institute guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the performance indicator; assessments of performance indicator opportunities during predesignated control room simulator training sessions, performance during the 2010 biennial exercise, and performance during other drills. The specific documents reviewed are described in the attachment to this report.

These activities constitute completion of the drill/exercise performance sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.6 Emergency Response Organization Drill Participation (EP02)

a. Inspection Scope

The inspectors sampled licensee submittals for the Emergency Response Organization Drill Participation performance indicator for the period July 2009 through June 2010. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's records associated with the performance indicator to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the Nuclear Energy Institute guidance.

Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the performance indicator, rosters of personnel assigned to key emergency response organization positions, and exercise participation records. The specific documents reviewed are described in the attachment to this report.

These activities constitute completion of the emergency response organization drill participation sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.7 Alert and Notification System (EP03)

a. Inspection Scope

The inspectors sampled licensee submittals for the Alert and Notification System performance indicator for the period July 2009 through June 2010. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's records associated with the performance indicator to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the Nuclear Energy Institute guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the performance indicator and the results of periodic alert notification system operability tests. The specific documents reviewed are described in the attachment to this report.

These activities constitute completion of the alert and notification system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.8 Occupational Exposure Control Effectiveness (OR01)

a. Inspection Scope

The inspectors reviewed performance indicator data for the fourth quarter 2009 through the second quarter 2010. The objective of the inspection was to determine the accuracy and completeness of the performance indicator data reported during these periods. The inspectors used the definitions and clarifying notes contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, as criteria for determining whether the licensee was in compliance.

The inspectors reviewed corrective action program records associated with high radiation area (greater than 1 rem/hr) and very high radiation area non-conformances. The inspectors reviewed radiological, controlled area exit transactions greater than 100 mrem. The inspectors also conducted walkdowns of high radiation areas (greater than 1 rem/hr) and very high radiation area entrances to determine the adequacy of the controls of these areas.

These activities constitute completion of the occupational exposure control effectiveness sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.9 Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual  
Radiological Effluent Occurrences (PR01)

a. Inspection Scope

The inspectors reviewed performance indicator data for the fourth quarter 2009 through the second quarter 2010. The objective of the inspection was to determine the accuracy and completeness of the performance indicator data reported during these periods. The inspectors used the definitions and clarifying notes contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, as criteria for determining whether the licensee was in compliance.

The inspectors reviewed the licensee's corrective action program records and selected individual annual or special reports to identify potential occurrences such as unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose.

These activities constitute completion of the radiological effluent technical specifications/offsite dose calculation manual radiological effluent occurrences sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

## 40A2 Identification and Resolution of Problems (71152)

### Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Physical Protection

#### .1 Routine Review of Identification and Resolution of Problems

##### a. Inspection Scope

As part of the various baseline inspection procedures discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's corrective action program at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. The inspectors reviewed attributes that included the complete and accurate identification of the problem; the timely correction, commensurate with the safety significance; the evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent of condition reviews, and previous occurrences reviews; and the classification, prioritization, focus, and timeliness of corrective actions. Minor issues entered into the licensee's corrective action program because of the inspectors' observations are included in the attached list of documents reviewed.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure, they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

##### b. Findings

No findings were identified.

#### .2 Daily Corrective Action Program Reviews

##### a. Inspection Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's corrective action program. The inspectors accomplished this through review of the station's daily corrective action documents.

The inspectors performed these daily reviews as part of their daily plant status monitoring activities and, as such, did not constitute any separate inspection samples.

##### b. Findings

No findings were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors focused their review on repetitive equipment issues, but also considered the results of daily corrective action item screening discussed in Section 4OA2.2, above, licensee trending efforts, and licensee human performance results. The inspectors nominally considered the 6-month period of January 2010 through June 2010 although some examples expanded beyond those dates where the scope of the trend warranted.

The inspectors also included issues documented outside the normal corrective action program in major equipment problem lists, repetitive and/or rework maintenance lists, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self-assessment reports, and Maintenance Rule assessments. The inspectors compared and contrasted their results with the results contained in the licensee's corrective action program trending reports. Corrective actions associated with a sample of the issues identified in the licensee's trending reports were reviewed for adequacy.

These activities constitute completion of one single semi-annual trend inspection sample as defined in Inspection Procedure 71152-05.

b. Findings

No findings were identified.

.4 In-depth Review of Operator Workarounds

a. Inspection Scope

On September 23, 2010, the inspectors reviewed the operations department burden list, control room deficiencies, and operator work around list to determine if any operator work arounds, either individually or collectively, could unnecessarily challenge mitigating system performance or operators during event response. The inspectors verified that Energy Northwest was identifying and documenting operator work around problems at an appropriate threshold. Documents reviewed are listed in the attachment.

These activities constitute completion of one sample as defined in Inspection Procedure 71152-05.

b. Findings

No findings were identified.

## 40A5 Other Activities

### .1 (Closed) Apparent Violation 05000397/2003002-01: Failure to Assure That One Train of Low Pressure Coolant Injection Remained Free of Fire Damage

Introduction. The inspectors confirmed a violation of License Condition 2.C.(14) for failure to protect cables from fire damage as required by 10 CFR Part 50, Appendix R, Section III.G. Specifically, the licensee failed to assure that one train of low pressure coolant injection remained free of fire damage and capable of accomplishing reactor coolant inventory control and core cooling following a fire. The inspectors found that a fire in Fire Areas R-1, R-18, RC-2, or RC-3 could divert a substantial amount of coolant from the core, during the low pressure coolant injection mode of operation, as a result of multiple hot short circuits. The licensee documented this deficiency in Condition Report 2-04-06699. Because the licensee met the conditions of Enforcement Guidance Memorandum 09-002, "Enforcement Discretion for Fire Induced Circuit Faults," the NRC is exercising enforcement discretion.

Description. At the time this apparent violation was documented, the NRC concluded that this issue involved a violation of NRC requirements and the licensee did not agree. In accordance with Enforcement Guidance Memorandum 98-002, this issue was documented as an apparent violation pending resolution of the associated generic industry issue. The generic issue involving multiple spurious operations has been resolved, so this apparent violation is being dispositioned in accordance with Enforcement Guidance Memorandum 09-002.

In the event of a fire, the safe shutdown strategy involved the use of the automatic depressurization system to reduce reactor pressure and the residual heat removal system to provide low pressure coolant injection. Operators reduce reactor pressure by opening automatic depressurization system valves and depressurizing into the suppression pool. Further, this mode of operation utilizes the suppression pool as the water source and residual heat removal pumps transfer water through the residual heat removal heat exchangers along the low pressure coolant injection path into the reactor.

The inspectors found a potential vulnerability when using the residual heat removal system as a result of fire-induced spurious actuations of certain valves during a fire in either the reactor building or the control building. The specific conditions involved:

- A fire in the cable spreading room (Fire Areas RC-2 and RC-3) had the potential to prevent injection through motor-operated Valve RHR-V-42B, Pump B injection valve, by diverting flow to the radioactive waste drain collection tank, as a result of opening two in-series, normally closed motor-operated valves (Valve RHR-V-40, discharge to radioactive waste, and Valve RHR-V-49, discharge to radioactive waste). The licensee had routed the cables for these valves in the same cable tray in these fire areas.
- A fire in the reactor building (Fire Areas R-1 and R-18) had the potential to divert flow to the drywell spray header, as a result of opening two in-series, normally

closed motor-operated valves (Valve RHR-V-16B, lower drywell spray outboard isolation, and Valve RHR-V-17B, lower drywell spray inboard isolation). The licensee had routed the cables for these valves in the same cable tray in these fire areas.

Safety Evaluation Report (NUREG 0892), Section 9.5.1.7.(3) specifies, in part, "By letter dated October 12, 1981, the applicant committed to comply with the technical requirements of Section III.G of Appendix R." Title 10 CFR Part 50, Appendix R, Section III.G.2, requires that cables for redundant safe shutdown equipment located in the same fire area, whose fire damage could prevent the operation or cause maloperation of safe shutdown functions, shall be physically protected from fire damage.

The licensee corrected this condition in 2007 by implementing Engineering Change 4558. This design change modified these motor-operated valve pairs and several other licensee-identified motor-operated valve pairs listed in Action Request 11265-01 by replacing the control cables for one of each valve pair with armored cables. In the event of fire damage, the design would prevent spurious opening of the associated motor-operated valve.

Analysis. Failure to protect post-fire safe shutdown cables from fire damage as required by their fire protection plan was a performance deficiency. This deficiency was more than minor since it had the potential to impact the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to external events (such as fire) to prevent undesirable consequences. Consequently, the inspectors evaluated these deficiencies using Inspection Manual Chapter 0609, Appendix F.

The inadequate cable separation for motor-operated Valves RHR-V-16B and RHR-V-17B in Fire Areas R-1 and R-18 affecting post-fire safe shutdown functions related to maintaining reactor coolant system inventory (potential diversion of flow) had existed for more than 30 days, and had a high degradation rating. Consequently, the issue did not screen out in Phase 1. During the Phase 2 evaluation, the inspectors identified the ignition sources (switchgear cabinets, general control cabinets, 480 Vac dry transformers, transient combustibles and hot work) and the targets (Cable Tray CZ). The licensee had administrative limits for controlling hot work and for the amount of combustibles allowed into the fire areas. All fire source-to-target combinations, including the maximum amount of transient combustibles allowed, screened out in Step 2.3.5 because their potential heat release rate would not damage the cables or create a damaging hot gas layer.

The inadequate cable separation for motor-operated Valves RHR-V-40 and RHR-V-49 in Fire Areas RC-2 and RC-3 affecting post-fire safe shutdown functions related to maintaining reactor coolant system inventory (potential diversion of flow) had existed for more than 30 days and had a high degradation rating. Consequently, the issue did not screen out in Phase 1. During the Phase 2 evaluation, the inspectors identified that personnel performing hot work and the presence of transient combustibles would create the only potential sources of fire that could damage post-fire safe shutdown equipment. The licensee had administrative limits for controlling hot work and for the amount of



combustibles allowed into the fire areas. Using the maximum amount of transient combustibles allowed, the inspectors determined in Step 2.3.5 that their potential heat release rates would not damage the cables or create a damaging hot gas layer.

Because a credible fire scenario did not exist in Fire Areas R-1, R-18, RC-2, and RC-3 that would result in core damage, as determined by the Appendix F, Step 2.3 Phase 2, Significance Determination Process for each fire area, the inspectors concluded that this finding had very low safety significance (Green).

Enforcement. License Condition 2.C.(14) states, "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 thru Amendment No. 39 and as described in subsequent letters to the staff through November 30, 1988, referenced in the May 22, 1989, safety evaluation and in other pertinent sections of the FSAR referenced in either Section 9.5.1 or Appendix F and as approved in the Safety Evaluation Report issued in March 1982 (NUREG 0892) and in Supplement 3, issued in May 1983, and Supplement 4, issued in December 1983, and in safety evaluations issued with letters dated November 11, 1987, and May 22, 1989."

Safety Evaluation Report (NUREG 0892), Section 9.5.1.7.(3), specifies, in part, "By letter dated October 12, 1981, the applicant committed to comply with the technical requirements of Section III.G of Appendix R." Title 10 CFR Part 50, Appendix R, Section III.G.2, requires that where cables or equipment, including associated non-safety circuits that could prevent operation or cause maloperation due to hot shorts, open circuits, or shorts to ground, of redundant trains of systems necessary to achieve and maintain hot shutdown conditions are located within the same fire area outside of primary containment, shall be physically protected from fire damage by one of three specified methods.

Contrary to these requirements, the licensee did not properly implement all provisions of the approved fire protection program and 10 CFR Part 50, Appendix R, Section III.G. Specifically, the licensee failed to assure that one train of low pressure coolant injection remained free of fire damage. Specifically, the licensee failed to protect motor-operated valve pairs, (RHR-V-16B and RHR-V-17B; RHR-V-40 and RHR-V-49), from fire damage using one of the physical methods described in Appendix R, Section III.G.2.

The licensee had entered this finding into their corrective action program as Condition Report 2-04-06699, established appropriate compensatory measures, and corrected the condition prior to May 2, 2010. Because the violation was associated with multiple fire induced circuit faults and was identified and corrected prior to the end of the discretion period, the NRC is exercising enforcement discretion in accordance with Enforcement Guidance Memorandum 09-002 (EA 2010-137).

.2 (Closed) Apparent Violation 05000397/2006008-02: Lack of an Evaluation of the Effect of Fire on the Reactor Protection System/Scram

Introduction. The inspectors confirmed a violation of License Condition 2.C.(14) because the licensee failed to account for fire damage to control room reactor trip

circuits and failed to assure that Procedure ABN-CR-EVAC, "Control Room Evacuation and Remote Cool Down," had operators confirm a full scram prior to initiating emergency depressurization. The licensee documented this deficiency in Condition Reports 2-06-02397 and 2-06-05147. Because the licensee met the conditions of Enforcement Guidance Memorandum 09-002, "Enforcement Discretion for Fire Induced Circuit Faults," the NRC is exercising enforcement discretion.

Description. At the time this apparent violation was documented, the NRC concluded that this issue involved a violation of NRC requirements and the licensee did not agree. In accordance with Enforcement Guidance Memorandum 98-002, this issue was documented as an apparent violation pending resolution of the associated generic industry issue. The generic issue involving multiple spurious operations has been resolved, so this apparent violation is being dispositioned in accordance with Enforcement Guidance Memorandum 09-002.

As described in Inspection Report 05000397/2006008, the control rods are divided into four groups. The system design has two scram logic divisions functioning in a 1 out of 2 taken twice arrangement. This design requires that one of two trip logic channels for a control rod group must be satisfied in both scram logic divisions before the control rod group will scram. The normally energized circuits ensure a failsafe design since a loss of power will initiate a scram. Operators may also place the mode switch in SHUTDOWN to manually remove the power from the trip circuits causing the reactor scram circuits to actuate.

In response to inspectors' questions, the licensee reviewed the scram circuits for potential effects of fire damage. As a result of fire damage to the mode switch (a designated piece of post-fire safe shutdown equipment required for reactivity control), a hot short resulting between conductors at the mode switch could keep the associated trip channel logics energized. Specifically, simultaneous hot shorts in two different trip logic circuits without the occurrence of an open circuit or short to ground had the potential to prevent the control rods from scrambling. The analysis confirmed that other scram signals (e.g. low reactor vessel level (Level 1) or main steam isolation valve closure) would result in a reactor scram.

During the 2006 triennial fire protection inspection, the inspectors verified that Procedure ABN-CR-EVAC, "Control Room Evacuation and Remote Cool Down," Revision 8, described operator actions needed for a control room fire that required an evacuation, including actions required before initiating an emergency depressurization. Procedure ABN-CR-EVAC, Attachment 7.10, Step 7.10.3, required that the operator open the scram breakers to de-energize the reactor protection system power supplies from outside the control room, which provided an independent method to ensure that the reactor scram had initiated. However, the licensee had not placed this step in sequence such that they had positive assurance that operators completed the step prior to an emergency depressurization. Emergency depressurization results in the reactor vessel pressure being lowered to the point where low pressure injection occurs. The addition of this cold water adds positive reactivity. To ensure that the reactor stays shutdown operators must first ensure that all control rods are inserted. The licensee documented this deficiency in Condition Reports 2-06-02397 and 2-06-05147.

During the 2006 triennial fire protection inspection, the inspectors verified that Calculation NE-02-85-19, "Post Fire Safe Shutdown Analysis," Section 1, "Time Line," demonstrated that the reactor water level would decrease to the top of active fuel and required that operators initiate emergency depressurization 20 minutes after the scram in the control room. From walkdown of Procedure ABN-CR-EVAC, the licensee demonstrated that operators had de-energized the circuits in approximately 11 minutes.

During this in-office inspection, the inspectors verified that the licensee had revised Procedure ABN-CR-EVAC to require that the control room supervisor verify all rods had scrammed prior to initiating an emergency depressurization. Since the licensee took actions outside of the fire affected area and established positive controls to ensure the reactor had scrammed before initiating the emergency depressurization, the inspectors found this to be satisfactory corrective action.

Analysis. Failure to protect post-fire safe shutdown cables from fire damage, as required by their fire protection plan was a performance deficiency. The finding is more than minor because it affected the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of system that respond to external events (such as fire) to prevent undesirable consequences. The finding affected fire protection defense-in-depth strategies involving post-fire safe shutdown. Because this finding involved a control room fire, a senior reactor analyst performed a Phase 3 significance determination evaluation.

To assign a risk value to this performance deficiency, the fire scenario requires a fire in or near the mode switch that affects the reactor trip circuits in both divisions. Because the wires terminate at the mode selector switch, the senior reactor analyst assumed that the fire and distance to the target set was zero feet. The target consisted of the mode switch located on one panel on the main control board where the individual trip circuit conductors connected for both divisions and all rod groups. The senior reactor analyst evaluated the likelihood of a fire in the control room panel that required an evacuation. The senior reactor analyst multiplied the control room fire initiating event frequency ( $CR_{\text{Fire-IE}}$ ) by the combined probability of nonsuppression and severity factor value ( $SF \cdot P_{\text{NS}}$ ) identified in NUREG/CR-6850, Volume 2, "Fire PRA Methodology for Nuclear Power Facilities," Appendix L, "Appendix for Chapter 11 Main Control Board Fires." The analyst then multiplied this product by the partial fraction of control room panels affected. The senior reactor analyst obtained values for the control room fire initiating event frequency (0.0095) and the number of control room panels (82) from the licensee's individual plant examination of external events. The resulting probability of a control room evacuation resulting from potential hot shorts associated with a fire in the mode switch resulted from the following factors:

$$CR_{\text{Fire-IE}} \cdot (SF \cdot P_{\text{NS}}) \cdot \text{partial fraction of control room panels} = \\ 0.0095/\text{yr} \cdot 4\text{E-}03 \cdot (1/82) = 4.634\text{E-}07/\text{yr}$$

This value indicates that the likelihood of a control room evacuation that resulted from hot shorts on the mode selector switch preventing a rod group from inserting. The likelihood of core damage would be even lower; consequently, this event has very low risk significance (Green).

Enforcement. License Condition 2.C.(14) states, "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 thru Amendment No. 39 and as described in subsequent letters to the staff through November 30, 1988, referenced in the May 22, 1989, safety evaluation and in other pertinent sections of the FSAR referenced in either Section 9.5.1 or Appendix F and as approved in the Safety Evaluation Report issued in March 1982 (NUREG 0892) and in Supplement 3, issued in May 1983, and Supplement 4, issued in December 1983, and in safety evaluations issued with letters dated November 11, 1987 and May 22, 1989."

FSAR, Section F.4.3, states, "The systems and equipment which are designated as post-fire safe shutdown equipment represent the minimum equipment which is necessary to bring the plant to a safe cold shutdown condition in the event of a fire in any area of the plant. Only that portion of post-fire safe shutdown equipment which is expected to be free of fire damage is credited for post-fire safe shutdown, although other plant systems and equipment could also be available for use after a fire."

Contrary to the above, the licensee did not implement the approved fire protection program. The licensee did not assure that the potential effects of fire damage on a required post-fire safe shutdown component would not preclude the ability to bring the plant to cold shutdown. Specifically, fire damage that had the potential to create two simultaneous hot shorts in the mode switch could prevent a reactor scram, and Procedure ABN-CR-EVAC failed to require that operator's de-energized the reactor protection system in a timely manner to ensure a full reactor scram resulted prior to emergency depressurization.

The licensee had entered this finding into their corrective action program as Condition Reports 2-06-02397 and 2-06-05147, established appropriate compensatory measures, and corrected the condition prior to May 2, 2010. Because the violation was associated with multiple fire induced circuit faults and identified and corrected prior to the end of the discretion period, the NRC is exercising enforcement discretion in accordance with Enforcement Guidance Memorandum 09-002 (EA 2010-137).

.3 Temporary Instruction 2515/180

a. Inspection Scope

The objective of this TI was to determine if licensees' implementation procedures and processes required by 10 CFR Part 26, Subpart I, "Managing Fatigue", are in place to reasonably ensure the requirements specified in Subpart I are being addressed. The TI applies to all operating nuclear power reactor licensees but is intended to be performed for one site per utility. The inspector interfaced with the appropriate station staff to obtain and review station policies, procedures and processes necessary to complete all portions of this TI.

b. Findings

No findings were identified.

4. (Closed)Temporary Instruction 2515/179, “Verification of Licensee Responses to NRC Requirement for Inventories of Materials Tracked in the National Source Tracking System Pursuant to title 10, Code of Federal Regulations, Part 20.2207 (10 CFR 20.2207)”

a. Inspection Scope

An NRC inspection was performed to confirm that the licensee had reported their initial inventories of sealed sources pursuant to 10 CFR 20.2207 and to verify that the National Source Tracking System database correctly reflected the category 1 and 2 sealed sources in custody of the licensee. Inspectors interviewed personnel and performed the following:

- Reviewed the licensee’s source inventory
- Verified the presence of any Category 1 or 2 sources
- Reviewed procedures for and evaluated the effectiveness of storage and handling of sources
- Reviewed documents involving transactions of sources
- Reviewed adequacy of licensee maintenance, posting, and labeling of nationally tracked sources

b. Findings

No findings were identified

## **40A6 Meetings**

### Exit Meeting Summary

On August 26, 2010, the inspector presented the results of the in-office inspection of the review of two fire protection related apparent violations and basis for enforcement discretion to Mr. D. Coleman, Manager, Regulatory Programs, and other licensee staff members. The licensee acknowledged the issues presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On July 1, 2010, the inspectors presented the results of the radiation safety inspections to Mr. S. Oxenford, Vice President Nuclear Generation, Chief Nuclear Officer, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On September 3, 2010, the inspectors presented the results of the onsite inspection of the licensee's biennial emergency preparedness exercise to Mr. M. Reddemann, Chief Executive Officer, and other members of the licensee's staff. The licensee acknowledged the issues presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On September 16, 2010, the inspectors presented the results of the radiation safety inspections to Mr. S. Oxenford, Vice President Nuclear Generation, Chief Nuclear Officer, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On October 4, 2010, the inspectors presented the inspection results to Mr. M. Reddemann, Chief Executive Officer, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

#### **40A7 Licensee-Identified Violations**

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which meet the criteria of Section 2.3.2.a of the NRC Enforcement Policy for being dispositioned as NCVs:

Technical Specification 3.6.4.2, requires each secondary containment isolation valve to be operable. And, with one secondary containment isolation valve inoperable, within 8 hours, isolate the penetration by at least one closed and deactivated automatic valve, closed manual valve, or blind flange, or be in Mode 3 within the next 12 hours. Contrary to this requirement, one secondary containment isolation valve was inoperable, but the licensee failed to take action to isolate the affected penetration within 8 hours, or be in Mode 3 within the next 12 hours. Specifically, between August 13, 1994 and June 30, 2010, valve FDR-V-219 (a secondary containment isolation valve) was inoperable and not fully seated, but the licensee failed to take the actions prescribed in Technical Specification 3.6.4.2. This issue was entered into the licensee's corrective action program as Condition Report 220785. The finding is of very low safety significance because it only represented a degradation of the radiological barrier function provided for the reactor building.

**SUPPLEMENTAL INFORMATION**  
**KEY POINTS OF CONTACT**

Licensee Personnel

B. Adami, Manager, Technical Services  
D. Atkinson, Vice President Operations Support  
D. Bennett, Technical Supervisor, Chemistry  
D. Bent, System Engineer  
K. Christianson, Licensing Engineer  
D. Coleman, Manager, Regulatory Programs  
T. Collis, Fire Protection Engineer, Design Engineering  
M. Davis, Manager, Radiation Protection  
G. Egert, Health Physics Staff Advisor, Radiation Protection  
R. Garcia, Licensing Engineer  
D. Gregoire, Licensing Supervisor, Regulatory Programs  
W. Harper, Fire Protection Engineer  
M. Huiatt, Engineer, Licensing  
C. King, Assistant Plant General Manager  
M. Kinmark, Health Physics Staff Advisor, Radiation Protection  
D. Merhar, Manager, Emergency Preparedness  
M. Reddemann, Chief Executive Officer  
F. Schill, Operating Experience Coordinator  
M. Sheppard, Supervisor, Radiation Protection  
M. Shymanski, Radiological Support Supervisor, Radiation Protection  
C. Sonada, Licensing Engineer, Regulatory Programs  
R. Torres, Manager, Quality Assurance

NRC Personnel

R. Cohen, Senior Resident Inspector  
M. Hayes, Resident Inspector  
J. Watkins, Reactor Inspector

**LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED**

Opened

None.

Opened and Closed

05000397/2010004-01 NCV Inadequate Risk Assessment Associated with Planned Surveillance Activities (Section 1R13)

Closed

05000397/2003002-01 AV Failure to Assure that One Train of Low Pressure Coolant Injection Remained Free of Fire Damage (Section 4OA5.1)

05000397/2006008-02 AV Lack of an Evaluation of the Effects of Fire on the Reactor protection System/Scram (Section 4OA5.2)



## LIST OF DOCUMENTS REVIEWED

### Section 1RO1: Adverse Weather Protection

#### PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
ABN-ELEC-GRID	Degraded Offsite Power Grid	3
	Energy Northwest/BPA Agreement Number 09TX-14025, Agreement for Duties and Responsibilities for Integration of Columbia Generating Station Output	3/28/2010

### Section 1RO4: Equipment Alignment

#### MISCELLEANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
Drawing M775	Emergency Chiller	26
Drawing M548	HVAC for Control and Switchgear Room	100
	FSAR 6.4	Amendment 53
	FSAR 9.4	Amendment 54
SOP-RCIC-STBY	Placing RCIC in Standby Status	4
Drawing M521-3	Flow Diagram Residual Heat removal System Loop "C"	8

#### ACTION REQUEST/CONDITION REPORTS

218546

### Section 1RO5: Fire Protection

#### MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
FSAR	Columbia Generating Station Final Safety Analysis Report, Appendix F	60

### Section 1R11: Licensed Operator Requalification Program

MISCELLANEOUS DOCUMENTS

Operations Requalification Training, Cycle 10-4 Scenario

REVISION  
0

**Section 1R12: Maintenance Effectiveness**

ACTION REQUEST/CONDITION REPORTS

220785

WORK ORDERS

01192092

MISCELLANEOUS DOCUMENTS

Component Classification Evaluation Record C93-0895, Revision 2

**Section 1R13: Maintenance Risk Assessment and Emergent Work Controls**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
1.5.14	Risk Assessment and Management for Maintenance/Surveillance activities	18
ABN-ELEC-SM3/SM8	SM-3,SM-8, SM-85, SM-82, SL-81, SL-83, & SL-31 Distribution System Failures	10
OSP-ELEC-M702	DG2 Monthly Operability Run	48

ACTION REQUEST/CONDITION REPORTS

223446            223528            223530

WORK ORDERS

01191780            01192396            01192323

ODMI

223446

**Section 1R15: Operability Evaluations**

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
OSP-ELEC-M703	HPCS Diesel Generator Monthly Operability Test	46
C93-0624	Component Classification Evaluation Record	0
AR/CR 00223935	RHR-P-2C Has Entered the Alert Range	August 19, 2010
OSP-RHR/IST- Q704	RHR Loop C Operability Test	23
AR/CR 002239686	SW-P-1B Performance in the ALERT Range	August 22, 2010
OSP-SW/IST- Q702	Standby Service Water Loop B Operability	20
AR/CR 211374	E-B2-1 Battery Connections Not Meeting LCS Criteria	February 19, 2010
AR/CR 211313	E-B1-1 Battery Connections Not Meeting LCS Criteria	January 19, 2010
AR/CR 225234	Diesel Generator Head Cracking Extent of Condition	September 10, 2010

**ACTION REQUEST/CONDITION REPORTS**

00205636

**WORK ORDERS**

01186149

**Section 1R19: Postmaintenance Testing****MISCELLEANEOUS DOCUMENTS**

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
WO 01187882	Diesel Generator 3 Monthly Operability Testing	September 9, 2010
WO 01193637	HPCS-P-3 Fill and Vent Post Maintenance Testing	September 7, 2010
Work Request 290848884	CAS-MON-1A and C Reading High With CAS-C-1A Running	September 23, 2010

AR/CR 225916	CAS-MON-1A and C Reading High With CAS-C-1A Running	September 23, 2010
Drawing M510-1	CAS and SA Flow Diagram	80
WO 01164148	E-IN-5, Perform PPM 10.25.10	September 24, 2010
AR/EVAL 225885	E-IN-5, Prevent E-CB-IN5/3 Breaker Trip	September 24, 2010
Work Request 29084928	WOA-ECH-54B Measured Power Below Acceptable Limit	September 23, 2010
WO 01189477	OSP-WMA-B704 Control Room Emergency Filtration Heater B Operability	8

ACTION REQUEST/CONDITION REPORTS

224883                      203945                      226008

**Section 1R22: Surveillance Testing**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
OSP-LPCS-MO1	LPCS Fill Verification	4
OSP-LPCS/IST-Q702	LPCS System Operability Test	26
ISP-SEIS-S403	Seismic System Reactor Building Foundation Triaxial Response-Spectrum Recorders-CFT	1
CCER C92-0363	Component CER Summary Sheet	1
OSP-SW/IST-Q703	HPCS Service Water Operability	14

WORK ORDERS

1185108

**Section 1EP1: Exercise Evaluation**

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
13.4.1	Emergency Notifications 2006 Team A Graded Exercise	39 September 12, 2006

**Section 1EP1: Exercise Evaluation**

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
	2008 Ingestion Pathway Exercise Report – Team B	September 10, 2008
	Drill Report Team D	January 13, 2009
	ERO Team A/B Drill	October 27, 2009
	2010 Team A Training Drill	January 12, 2010
	2010 Team D Training Drill	March 16, 2010
	2010 Team C Training Drill	May 11, 2010
	2010 ERO Team C Dress Rehearsal	July 20, 2010

**CORRECTIVE ACTION DOCUMENTS**

205153	205569	206287	206711	206703
222136				

**Section 1EP6: Drill Evaluation**

**MISCELLANEOUS DOCUMENTS**

<u>TITLE</u>	<u>REVISION / DATE</u>
Columbia Generating Station Operations Department 2010 Emergency Organization Response Team Training Drill	July 20, 2010

**Section 2RS01: Radiological Hazard Assessment and Exposure Controls**

**PROCEDURES**

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
SWP-RPP-01	Radiation Protection Program	8
HPI-0.19	Radiation Protection Standards and Expectations	7
HPI-12.97	Remote Radiological Work Monitoring	0
HPI-12.101	Radlock Key and Lock System	0
11.2.21.1	Radiological Controls for Diving Operations	7
11.2.14.4	Procurement, Receipt, Control and Leak Testing of Radioactive Sealed Sources and Devices	19
11.2.13.11	Characterization of Alpha Radioactivity	0
11.2.13.1	Radiation and Contamination Surveys	26
11.2.7.3	High Radiation Area, Locked High Radiation Area, and Very High Radiation Area Controls	34
11.2.7.1	Area Posting	33
1.11.23	Radioactive Material Container Control	4

ACTION REQUEST/CONDITION REPORTS

208757	209560	210027	211304	212117
212955	214230	215760	216422	216719
216899	218153	219200		

RADIOLOGICAL SURVEYS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
802710	Reactor Building; 548' FPC HX Room	July 29, 2010
845710	Reactor Building; 548' FPC HX Room	September 9, 2010
650710	Reactor Building; 572' B RHR HX Room	March 25, 2010
1414-08	Reactor Building; 501' TIP Mezzanine Room	December 9, 2010
286809	Reactor Building; 548' Valve FPC-V-106	April 21, 2010
822410	Reactor Building; 606' Refuel Floor	August 20, 2010
827610	Reactor Building; 572' Ventilation	August 26, 2010
821410	Reactor Building; 501' Elevation	August 19, 2010
8-6-10	Air Sample Survey; Transformer Yard/CST Pit	August 13, 2010
9-1-10	Air Sample Survey; 441' A Steam Jet Air Ejector	September 8, 2010
9-3-10	Air Sample Survey; 606' Reactor Building, SFP Coupon Holder Decon	September 16, 2010

**Section 2RS02: Occupational ALARA Planning and Controls**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
SWP-RPP-01	Radiation Protection Program	8
HPI-0.19	Radiation Protection Standards and Expectations	7
HPI-12.97	Remote Radiological Work Monitoring	0
11.2.21.1	Radiological Controls for Diving Operations	7
11.2.7.3	High Radiation Area, Locked High Radiation Area, and Very High Radiation Area Controls	34
11.2.7.1	Area Posting	33
GEN-RPP-01	ALARA Program Description	7
GEN-RPP-02	ALARA Planning and Radiation Work Permits	23
GEN-RPP-13	ALARA Committee	8

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
63729	Effectiveness of Portions of the ALARA Program and its Efforts to Reduce Station Dose	September 17, 2009

ALARA POST JOB REVIEWS

<u>RWP NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
3002084	Condenser HX-9 Tube Plugging and Debris B Water Box	1
3002268	2009 HP Pre-Job Surveys and Investigations	0
3002271	Plant Operations/Investigations	0
3002284	2009 441"/456" T?G High Rad Area Approved Work	1
3002298	2009 RX 548', 572' RHR-HX-B Maintenance Task	0
3002397	2009 TG Inspect/Repair Heater Bays at LTE 75% Power	1
3002585	FY-10 Spent Fuel Pool Clean Up	0
3002613	2010 Main Condenser Water Box Tube Plugging On Line	2

**Section 2RS04: Occupational Dose Assessment**

<u>PROCEDURES NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
GEN-RPP-06	Dosimetry Program Description	6
SWP-RPP-01	Radiation Protection Program	8
HPI-0.19	Radiation Protection Standards and Expectations	7
11.2.4.5	Whole Body Counts and Daily Checks Using the Renaissance Fastscan	12
11.2.6.7	Special Dosimetry	12

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
63729	Effectiveness of Portions of the ALARA Program and its Efforts to Reduce Station Dose	September 17, 2009

ACTION REQUEST/CONDITION REPORTS

200592          203711          212177          212955          213599

MISCELLANEOUS DOCUMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
100529-0	National Voluntary Laboratory Accreditation Program for Detroit Edison, Fermi 2 Dosimetry Laboratory	2010
TBD 04-02	Comparison of Whole Body Counter Library with CGS Source Term	October 14, 2008

**Section 2RS05: Radiation Monitoring Instrumentation**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
12.1.1	Laboratory Quality Assurance	17
HPI-5.6	Calibration of the Renaissance Fastscan Whole Body Count System	6
HPI-7.25	Ludlum Model 177 Alarm Ratemeter Calibration with GM Probe	7
HPI-7.47	Calibration of the Eberline Model ASP-1 with AC3-8 Alpha Scintillation Probe	4
HPI-7.61	Calibration of the Ludlum Model 3 Survey Meter	0
HPI-12.63	Calibration of the NE SAM-9/11 Small Particle Monitor	7
HPI-12.92	Calibration of the Canberra GEM-5 Gamma Sensitive Portal Monitor	2
HPI-12.72	Calibration of the IPM8-M/IPM9 Installed Personnel Monitor	6

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
66474	Assessment of Radiation Protection Portable Instrumentation, Equipment, and Technologies	December 1, 2009

ACTION REQUEST/CONDITION REPORTS

202592	202729	203833	204391	206052
209561	212906	213083	214289	

CALIBRATION RECORDS

<u>TITLE</u>	<u>DATE</u>
Fastscan Calibration Yakima	December 4, 2009
Fastscan Calibration Deschutes	November 11, 2009



PORTABLE INSTRUMENT CALIBRATION

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
RO166	Eberline RO2	April 14, 2010
RO169	Eberline RO2	March 18, 2010
T005	Eberline Teletector	April 5, 2010
RO220	Ludlum Model 14 C	January 6, 2010
L014	Ludlum Model 177	January 19, 2010

INSTALLED MONITORS

<u>WORK ORDER</u>	<u>TITLE</u>	<u>DATE</u>
01183514	Radwaste Building Low Range Noble Gas Monitor WEA RE-14	June 6, 2010
01183511	Turbine Building Low Range Noble Gas Monitor	June 9, 2010
01183510	Reactor Building Low Range Noble Gas Monitor	June 15, 2010
01167052	Reactor Building Effluent Monitor-High Range	June 9, 2009
01142173	Primary Containment Post LOCA Area Monitor	May 20, 2009

MISCELLANEOUS DOCUMENTS

	<u>DATE</u>
CDM21 Calibration Characterization Data Sheet	December 31, 2009
Model M28 Irradiator Calibration Report	September 17, 2009
Model Box3 Irradiator Calibration Report	September 17, 2009

**Section 40A1: Performance Indicator Verification**

MISCELLANEOUS DOCUMENTS

<u>TITLE</u>	<u>REVISION</u>
NEI 00-02 Regulatory Assessment Performance Indicator Guidelline	6
Energy Northwest and NRC Performance Indicator Data for July 2009 through September 2010	N/A
Energy Northwest operator Logs for July 2009 through September 2010	N/A
Columbia Generating Station Emergency Plan	50
Occupational Exposure Control Effective Margin High	August 1, 2010

<u>PROCEDURES NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EPI-18	Emergency Preparedness Performance Indicators	16
TSI 6.2.22	Annual E/R Siren System Activation Test	11
TSI 6.2.32	Weekly Emergency Response River Siren Polling Test	11
HPI-0.14	Assessing and Reporting NRC Occupational Exposure Control Effectiveness Performance Indicator Data	5

**Section 40A2: Identification and Resolution of Problems**ACTION REQUEST/CONDITION REPORTS

00220449	00219354	00215399	00220544	00220548
00220585	00220443	00220449	00220464	00220806
00220808	00220836	00220838	00220842	00220870
00220877	00220881	00220884	00220929	00220967
00220971	00220995	00221002	00221003	00221004
00221005	00221009	00221015	00221017	00221030
00221031	00221033	00221035	00221036	00221040
00221096	00221204	00221147	00221210	00221490
00221511	00221534	00221560	00221145	00221187
00221188	00221244	00221246	00221270	00221276
00221285	00221292	00221294	00221302	00221304
00221305	00221349	00221385	00221960	00221961
00221968	00221969	00221971	00221973	00221975
00221976	00221977	00221978	00221980	00221712
00221722	00221766	00221774	00221779	00221789
00221795	00221798	00221814	00221816	00221821
00221824	00221827	00221833	00221839	00222021
00222027	00222064	00222450	00222451	00222463
00222483	00222516	00222521	00222528	00222528
00222531	00222543	00222582	00222584	00222585
00222591	00222597	00222607	00222608	00222648

00222071	00222330	00222767	00222517	00222609
00222650	00222332	00222772	00222775	00222778
00222817	00222837	00222857	00222858	00222869
00222874	00222875	00222877	00222880	00223204
00223206	00223224	00223039	00223182	00223183
00223184	00223187	00223193	00222816	00222837
00222885	00222896	00222897	00222928	00222930
00222939	00222946	00222955	00222957	00222961
00222963	00222964	00223224	00223229	00223231
00223925	00223492	00224565	00224591	00224634
00224643	00224698	00224711	00224713	00224717
00224722	00224733	00224552	00224576	00224584
00224586	00224590	00224629	00223421	00223666
00223667	00224277	00224289	00224180	00224277
00224285	00224289	00224299	00224304	00224311
00224315	00224316	00224323	00224334	00224366
00224555	00225158	00225294	00225329	00225330
00225332	00225117	00225158	00225160	00225163
00225182	00225183	00225184	00225186	00224733
00224796	00224818	00224831	00224845	00224846
00225797	00225795	00225792	00225790	00225763
00225895	00225939	00226006	00226008	00226013
00226016	00226018	00225895	00225795	

**Section 40A5: Other Activities**

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION / DATE</u>
SWP-FFD-03	Fatigue Management	1
SWP-FFD-01	Fitness for Duty Program Requirements	16
SWP-FFD-04	Work Hour Controls	1
SWP-ASU-01	Evaluations of Programs, Processes, and Suppliers	21
ABN-CR-FIRE	Control Room Fire	0
ABN-CR-EVAC	Control Room Evacuation and Remote Cool Down	8, 9, and 11
3.3.1	Reactor Scram	49

SWP-RPP-01	Radiation Protection Program	8
HPI-0.10	Radiation Protection Standards and Expectations	7
11.2.14.4	Procurement, Receipt, Control and Leak Testing of Radioactive Sealed Sources and Devices	19

MISCELLEANEOUS DOCUMENTS

REVISION /  
DATE

NEI 06-11, Managing Personnel Fatigue at Nuclear Power Reactor Sites	1
Letter G02-95-119, Initial Submittal of Individual plant Examination for External Events	June 26, 1995
EGM 09-002, Enforcement Discretion for Fire Induced Circuit Failures	May 14, 2009
Radioactive Source Inventory	September 2, 2010

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
E735	Radwaste & Control Building Elevation 525'.0" & Misc Elevations Lighting Plan	16
E919	Building EL522' 0" Location Plan Cable Tray Nodes	10
E921	Reactor Building EL572' 0" Location Plan Cable Tray Nodes	9
E934	Radwaste & Control Building Cable Spreading Room Cable Tray Nodes – Location Plan EL. 484' 0" sh 1	13
E934	Radwaste & Control Building Cable Spreading Room Cable Tray Nodes – Location Plan EL. 484' 0" sh 2	13
PFSS-4	Appendix R – Post Fire Safe Shutdown (PFSS) RHR & ADS System Alternate Shutdown Cooling Piping and Instrument Diagram	2
EWD-9E-028	Electrical Wiring Diagram Residual Heat Removal System MOV RHR-V-16B (E12-F016B)	21
EWD-9E-030	Electrical Wiring Diagram Residual Heat Removal System MOV RHR-V-17B (E12-F017B)	15
EWD-9E-039	Electrical Wiring Diagram Residual Heat Removal System MOV RHR-V-40 (E12-F040)	11
EWD-9E-078	Electrical Wiring Diagram Residual Heat Removal System MOV RHR-V-49 (E12-F049)	14

ACTION REQUESTS

00191398      00192685      00194347      00194354      00216204  
00217958      00220623

CONDITION REPORTS

2-04-06699    2-05-09801    2-05-09932    2-05-09995    2-05-09996    2-05-09997  
2-05-09998    2-06-00382    2-06-00446    2-06-01926

**Section 40A7: Licensee-Identified Violations**

MISCELLEANEOUS DOCUMENT

REVISION /  
DATE

Action Request/Condition Report 220785, FDR-V-219 Flow Scan Indicates Valve Is Not Fully Closed      June 30, 2010