UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-4005

February 13, 2007

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

SUBJECT: COLUMBIA GENERATING STATION - NRC INTEGRATED INSPECTION REPORT 05000397/2006005

Dear Mr. Parrish:

On December 31, 2006, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Columbia Generating Station. The enclosed inspection report documents the inspection findings which were discussed on January 11, 2007, with Mr. Atkinson 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.

This report documents two NRC-identified findings and one self-revealing finding of very low risk significance (Green). All of the findings were determined to involve violations of NRC requirements. 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 (NCVs) consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest any NCV in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011-4005; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; 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 (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Claude E. Johnson, Chief
Project Branch A
Division of Reactor Projects

Docket: 50-397
License: NPF-21

Enclosure: NRC Inspection Report 05000397/2006005
w/Attachment: Supplemental Information

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SUNSI Review Completed: CEJ ADAMS: √ Yes ☐ No Initials: CEJ
√ Publicly Available ☐ Non-Publicly Available ☐ Sensitive √ Non-Sensitive

R:_REACTORS_COL\2006\COL2006-05RP-ZKD.wpd

SRI:DRP/A	SRI:DRP/A	SPE:DRP/A	BC:DRP/A	BC:DRS/EB1
ZKDunham	RBCohen	TRFarnholtz	CEJohnson	WBJones
E-CEJ	E-CEJ	/RA/	/RA/	/RA/
2/2/07	2/2/07	2/2/07	2/13/07	1/31/07

BC:DRS/PSB	BC:DRS/OB	BC:DRS/EB2	OE:/DRS/OB	SPE:DRP
MPShannon	ATGody	LJSmith	JFDrake	FLBrush
/RA/	/RA/	/RA/	/RA/	/RA/
1/26/07	1/31/07	1/31/07	1/31/07	1/31/07

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket:	50-397
License:	NPF-21
Report:	05000397/2006005
Licensee:	Energy Northwest
Facility:	Columbia Generating Station
Location:	Richland, Washington
Dates:	October 1 through December 31, 2006
Inspectors:	Z. Dunham, Senior Resident Inspector, Project Branch A, DRP R. Cohen, Temporary Senior Resident Inspector, Project Branch A, DRP J. Drake, Operations Engineer, Operations Branch F. Brush, Senior Project Engineer K. Clayton, Operations Engineer P. Elkmann, Emergency Preparedness Inspector M. Murphy, Senior Operations Engineer C. Paulk, Senior Reactor Inspector, Engineering Branch 1 J. Nadel, Reactor Inspector, Engineering Branch 1 E. Owen, Reactor Inspector, Engineering Branch 1
Accompanying Personnel	J. Bashore, Project Engineer
Approved By:	C. E. Johnson, Chief, Project Branch A, Division of Reactor Projects
ATTACHMENT:	SUPPLEMENTAL INFORMATION

Enclosure

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SUMMARY OF FINDINGS

IR05000397/2006005; 10/1/2006 - 12/31/2006; Columbia Generating Station; Surveillance Testing; Identification and Resolution of Problems; Other Activities

The report covered a 13-week period of inspection by resident and regional inspectors. Three Green noncited violations were identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609, "Significance Determination Process." 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 3, dated July 2000.

A. NRC Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

Green. A Green self-revealing noncited violation (NCV) of Technical Specification 5.4.1.a was identified for the failure to follow a diesel generator surveillance test procedure. This resulted in the unintentional inoperability of the backup transformer. Energy Northwest entered the issue into their corrective action program for evaluation and resolution.

This finding was more than minor because it had an attribute of human performance which affected the mitigating systems cornerstone objective to ensure the availability of systems that respond to initiating events to prevent undesirable consequences. The finding was of very low risk significance (Green) because the backup transformer was inoperable for less than its technical specification allowed outage time. Additionally, the finding was not a qualification issue confirmed not to result in loss of operability, did not represent a loss of safety function, and did not screen as potentially risk significant due to external events. The cause of the finding is also related to the crosscutting aspect of human performance with a work practices causal factor in that self and peer-checking techniques were not implemented properly during the conduct of the test procedure. This resulted in the failure to follow procedure. (Section 1R22)

Green. A Green NRC identified NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," was identified for failing to promptly identify conditions adverse to quality associated with loss of full environmental qualification of plant components due to degraded flexible electrical conduit jackets. Energy Northwest entered the issue into their corrective action program and took immediate action to repair the identified degraded conduit jackets and to plan additional periodic plant walkdowns to identify additional degraded conduit jackets.

The finding was more than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone and it affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to preclude undesirable consequences (i.e., core damage). The finding was determined to be of very low safety significance (Green) because although the qualification for high energy line break was affected for some

components, the finding did not result in inoperability of any equipment. Additionally, the finding did not represent a loss of safety function, and did not screen as potentially risk significant due to external events. This finding had a crosscutting aspect associated with problem identification and resolution with a corrective action program causal factor. Specifically, Energy Northwest failed to assess and trend information from the corrective action program in the aggregate resulting in the failure to identify an adverse trend regarding flexible electrical conduit jackets. (Section 4OA2.5)

Green. A Green NRC identified NCV of Technical Specification 5.4.1.a was identified for the failure to provide an adequate procedure for alternate boron injection. Specifically, Emergency Support Procedure 5.5.8, "Alternate Boron Injection," Revision 8, failed to direct venting of a temporarily installed hose between the standby liquid control boron storage tank and the reactor core isolation cooling pump suction. As a result, degraded reactor core isolation cooling pump performance could occur. Energy Northwest entered the issue into their corrective action program and revised the procedure to vent the hose.

This finding was more than minor because the finding had an attribute of procedure quality which affected the mitigating systems cornerstone objective to ensure the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. The finding was of very low risk significance (Green) because although degraded reactor core isolation cooling pump performance could occur, the pump was expected to perform adequately to support alternate boron injection, based on Energy Northwest's engineering evaluation. Additionally, the finding was not a qualification issue confirmed not to result in loss of operability, did not represent a loss of safety function for a single train or for the system, and did not screen as potentially risk significant due to external events.

B. Licensee Identified Violations

None.

REPORT DETAILS

Summary of Plant Status:

The inspection period began with Columbia Generating Station at 100 percent power. The plant was shutdown following an automatic reactor scram on October 31, 2006, from 100 percent power and entered forced outage F-06-01 due to a failure of a circuit card in the main turbine digital electro hydraulic control system. The reactor plant was brought critical on November 6, 2006, and was synchronized with the grid to end the forced outage on November 8, 2006. The facility operated at 100 percent power with the exception of scheduled reductions in power to support testing for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather (71111.01)

a. Inspection Scope

On October 30, 2006, the inspectors completed a review of the licensee's readiness of seasonal susceptibilities involving extreme cold and freezing temperatures. The inspectors: (1) reviewed plant procedures, the Updated Safety Analysis Report, and Technical Specifications to ensure that operator actions defined in adverse weather procedures maintained the readiness of essential systems; (2) walked down portions of safety-related systems to ensure that adverse weather protection features and system lineup were sufficient to support operability, including the ability to perform safe shutdown functions; (3) evaluated operator staffing levels to ensure the licensee could maintain the readiness of essential systems required by plant procedures; and (4) reviewed the corrective action program to determine if the licensee identified and corrected problems related to adverse weather conditions.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R02 Evaluations of Changes, Tests, or Experiments (71111.02)

a. Inspection Scope

The inspectors reviewed the effectiveness of the licensee’s implementation of changes to the facility structures, systems, and components; risk-significant normal and emergency operating procedures; test programs; and the Updated Final Safety Analysis Report in accordance with 10 CFR 50.59, "Changes, Tests, and Experiments." The inspectors utilized Inspection Procedure 71111.02, "Evaluation of Changes, Tests, or Experiments," for this inspection.

The procedure specifies five as the minimum sample size of safety evaluations and a combination of 10 applicability determinations and screenings, with the emphasis on screenings.

The inspectors reviewed six safety evaluations performed by the licensee since the last NRC inspection of this area at Columbia Generating Station. The evaluations were reviewed to verify that licensee personnel had appropriately considered the conditions under which the licensee may make changes to the facility or procedures or conduct tests or experiments without prior NRC approval. The inspectors reviewed five licensee-performed applicability determinations and five screenings, in which licensee personnel determined that evaluations were not required, to ensure that the exclusion of a full evaluation was consistent with the requirements of 10 CFR Part 50.59. Evaluations, screenings, and applicability determinations reviewed are listed in the Attachment to this report.

The inspectors reviewed and evaluated a sample of recent licensee condition reports to determine whether the licensee had identified problems related to 10 CFR Part 50.59 evaluations, entered them into the corrective action program, and resolved technical concerns and regulatory requirements. The reviewed condition reports are identified in the Attachment.

The inspection procedure specifies inspector review of a required minimum sample of 5 licensee safety evaluations and 10 applicability determinations and screenings (combined). The inspectors completed review of 6 licensee safety evaluations and 10 applicability determinations and screenings (combined).

b. Findings

No findings of significance were identified.

1R04 Equipment Alignments (71111.04)

.1 Partial Walkdown

a. Inspection Scope

The inspectors: (1) walked down portions of the risk important systems listed below and reviewed plant procedures and documents to verify that critical portions of the selected systems were correctly aligned; and (2) compared deficiencies identified during the walk down to the licensee's corrective action program to ensure problems were being identified and corrected.

- Division 2 Standby Service Water; November 1, 2006
- Division 2 Emergency Diesel Generator; November 2, 2006
- High Pressure Core Spray; November 10, 2006

The inspectors completed three samples.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Quarterly Inspection

a. Inspection Scope

The inspectors walked down the plant areas listed below to assess the material condition of active and passive fire protection features and their operational lineup and readiness. The inspectors: (1) verified when applicable that transient combustibles and hot work activities were controlled in accordance with plant procedures; (2) observed the condition of fire detection devices to verify they remained functional; (3) observed fire suppression systems to verify they remained functional; (4) verified that fire extinguishers and hose stations were provided at their designated locations and that they were in a satisfactory condition; (5) verified that passive fire protection features (electrical raceway barriers, fire doors, fire dampers, steel fire proofing, penetration seals, and oil collection systems) were in a satisfactory material condition; (6) verified when applicable that adequate compensatory measures were established for degraded or inoperable fire protection features; and (7) reviewed the corrective action program to determine if the licensee identified and corrected fire protection problems.

- Fire Area R-2; Reactor Building; Primary Containment; October 30, 2006
- Fire Area M-9; Reactor Building; Instrument Rack E-IR-H22/P009 Enclosure; October 30, 2006
- Fire Area M-21; Reactor Building South Valve Room; October 31, 2006
- Fire Area M-73; Reactor Building; Instrument Rack E-IR-73 Enclosure; November 1, 2006
- Fire Area RC-1; General Equipment Area; December 11, 2006
- Fire Area M-27; Reactor Building; E-IR-H22/P027; December 12, 2006

The inspectors completed six samples.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

.1 Internal Flood Protection

a. Inspection Scope

The inspectors performed the following: (1) reviewed the Updated Safety Analysis Report, the flooding analysis, and plant procedures to assess seasonal susceptibilities involving internal flooding; (2) reviewed the corrective action program to determine if the licensee identified and corrected flooding problems; (3) inspected underground bunkers/manholes to verify the adequacy of (a) sump pumps, (b) level alarm circuits, (c) cable splices subject to submergence, and (d) drainage for bunkers/manholes; (4) verified that operator actions for coping with flooding can reasonably achieve the desired outcomes; and (5) walked down the areas listed below to verify the adequacy of: (a) equipment seals located below the floodline, (b) floor and wall penetration seals, (c) watertight door seals, (d) common drain lines and sumps, (e) sump pumps, level alarms, and control circuits, and (f) temporary or removable flood barriers.

- Reactor Building Elevation 522 ft level which consisted of General Floor Area, Motor Control Center Rooms 410 and 411, Reactor Water Cleanup Pump Rooms 1A and 1B; December 11, 2006

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11)

.1 Quarterly Inspection

a. Inspection Scope

On November 13, 2006, the inspectors observed testing and training of senior reactor operators and reactor operators to identify deficiencies and discrepancies in the training, to assess operator performance, and to assess the evaluator's critique. The training scenario involved a rupture of the fire main in the reactor building which resulted in the loss of the residual heat removal Pumps B and C, a reactor core isolation cooling steam leak, and the failure of various electrical busses to transfer to the startup transformer following a manual reactor scram.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

.2 Biennial Inspection

a. Inspection Scope

This inspection was held during the week of December 11, 2006, the week before the end of the biennial examination testing cycle. The inspectors reviewed the overall pass/fail results of the individual job performance measure operating tests, simulator operating tests, and written examinations administered by the licensee during the operator licensing requalification biennial examination. Forty-eight licensed operators participated in simulator operating tests, and job performance measure operating tests. There were two operators who failed portions of the examination, they were remediated and passed the retake examinations. All of the licensed operators tested passed the biennial examination.

The inspectors reviewed biennial examination simulator job performance measures, in-plant job performance measures, the simulator static examination, and written examination. The inspectors also reviewed nine licensed operator annual medical forms and the procedures governing the medical examination process. The inspectors also interviewed two reactor operators, two senior operators, one simulator supervisor, one evaluator, one instructor, one training supervisor and the operations training manager regarding the policies and practices for administering examinations.

The inspectors assessed the Columbia Generating Station plant-referenced simulator for compliance with 10 CFR 55.46 using Baseline Inspection Procedure 71111.11. This assessment included the adequacy of the licensee's simulation facility for use in operator licensing examinations and for satisfying experience requirements as prescribed by 10 CFR 55.46. The inspectors reviewed a sample of simulator performance test records (steady state tests, real time tests, transient tests, surveillance tests, core performance tests, and scenario-based tests), simulator discrepancy report records, and processes for ensuring simulator fidelity commensurate with 10 CFR 55.46 and the commitments the licensee had made in implementing ANSI/ANS-3.5 1998. The inspectors assessed the effectiveness of the facility licensee's process for continued assurance of simulator fidelity with regard to identifying, reporting, correcting, and resolving simulator discrepancies via a corrective action program. The inspectors confirmed that the simulator has not been used for reactivity manipulation credits for initial license applications. The licensee has scheduled several improvements to the simulator, including core model replacement in late 2007.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors reviewed the activities listed below to: (1) verify the appropriate handling of structure, system, and component (SSC) performance or condition problems;

(2) verify the appropriate handling of degraded SSC functional performance; (3) evaluate the role of work practices and common cause problems; and (4) evaluate the handling of SSC issues reviewed under the requirements of the Maintenance Rule, 10 CFR Part 50 Appendix B, and the Technical Specifications.

- PER 206-0534; EDR-V-19 Drywell Drain Discharge Containment Isolation Valve Declared Inoperable; October 1, 2006
- PER 206-0551; RCIC-V-1 Closed Automatically; October 6, 2006
- PER 206-0585; Procedure step missed in OSP-ELEC-S702 resulting in a possible blown fuse on the Ready to Transfer Light for E-CB-B/8; October 19, 2006

The inspectors completed three samples.

b. Findings.

No findings of significance were identified.

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

.1 Risk Assessment and Management of Risk

a. Inspection Scope

The inspectors reviewed the risk assessment activities listed below to verify: (1) performance of risk assessments when required by 10 CFR 50.65 (a)(4) and licensee procedures prior to changes in plant configuration for maintenance activities and plant operations; (2) the accuracy, adequacy, and completeness of the information considered in the risk assessment; (3) that the licensee recognizes, and/or enters as applicable, the appropriate licensee-established risk category according to the risk assessment results and licensee procedures; and (4) the licensee identified and corrected problems related to maintenance risk assessments.

- E-CB-DG1/7 Inspection and DG1 Monthly Operability Test; October 2, 2006
- SGT B Maintenance Outage; October 23, 2006
- SRM Detector Calibration After Scram October 31, 2006
- HPCS-P-2 Outage; October 31 thru November 9, 2006

The inspectors completed four samples.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17B)

a. Inspection Scope

The inspection procedure requires inspection of a minimum sample size of five permanent plant modifications.

The inspectors reviewed five permanent plant modification packages and associated documentation, such as implementation reviews, safety evaluation applicability determinations, and screenings, to verify that they were performed in accordance with regulatory requirements and plant procedures. The inspectors also reviewed the procedures governing plant modifications to evaluate the effectiveness of the program for implementing modifications to risk-significant systems, structures, and components, such that these changes did not adversely affect the design and licensing basis of the facility. Procedures and permanent plant modifications reviewed are listed in the Attachment to this report. Further, the inspectors interviewed the cognizant design and system engineers for the identified modifications as to their understanding of the modification packages and process.

The inspectors evaluated the effectiveness of the licensee's corrective action process to identify and correct problems concerning the performance of permanent plant modifications by reviewing a sample of related condition reports. The reviewed condition reports are identified in the Attachment.

The inspection procedure specifies inspector-review of a required minimum sample of five permanent plant modifications. The inspectors completed review of five permanent plant modifications.

b. Findings

No findings of significance were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors selected the postmaintenance test activities of risk significant systems or components listed below for review. For each item, the inspectors: (1) reviewed the applicable licensing basis and/or design-basis documents to determine the safety functions; (2) evaluated the safety functions that may have been affected by the maintenance activity; and (3) reviewed the test procedure to ensure it adequately tested the safety function that may have been affected. The inspectors either witnessed or reviewed test data to verify that acceptance criteria were met, plant impacts were evaluated, test equipment was calibrated, procedures were followed, jumpers were properly controlled, the test data results were complete and accurate, the test equipment was removed, the system was properly re-aligned, and deficiencies during testing were documented. The inspectors also reviewed the corrective action program to determine if the licensee identified and corrected problems related to postmaintenance testing.

- Work Order 01116867; Standby Gas Treatment Relay Replacement; November 28, 2006
- Work Order 01114075; HPCS-P-2 Operability /PMT
- Work Order 01126167; PMT - TDR Testing for IRM-DET-2C Detector Cable, November 3, 2006
- Work Order 01100689; SRM-W403 Channel C CFT, November 3, 2006
- Work Order 01100773; SRM-W402 Channel B CFT, November 3, 2006
- Work Order 01104378; Repair/Replace Limit Switch for MS-V-22D, November 3, 2006
- Work Order 01126133; Replace Failed NDI card "Turbine Trip Logic" in DEH-CAB-01 Card Slot C1-H-30; November 7, 2006
- Work Order 01121174; Quarterly Battery Testing 250 VDC E-B2-1; Revision 7

The inspectors completed eight samples.

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities (71111.20)

.1 Forced Outage FO-06-01

a. Inspection Scope

The inspectors reviewed the following risk significant outage activities to verify defense in depth commensurate with the outage risk control plan and compliance with the technical specifications: (1) the outage risk control plan; (2) reactor coolant system instrumentation; (3) electrical power; (4) decay heat removal; (5) heatup and cooldown activities; and (6) licensee identification and implementation of appropriate corrective actions associated with refueling and outage activities.

The inspectors completed one sample**.**

b. Findings

Introduction: An Unresolved Item (URI) was identified pending the NRC's additional inspection to determine (1) if an inadequate procedure caused the problem, and (2) determine the risk significance of any performance deficiency associated with the loss of shutdown cooling.

Description: On November 3, 2006, during a forced outage with shutdown cooling in operation in Mode 4, operators implemented Procedure PPM 2.7.6, "Reactor Protection System," Revision 23, to transfer the Reactor Protection System (RPS) B to its alternate power supply to support a maintenance activity. Step 5.9.6 provided the following:

"If transferring RPS-B to **ALT B** or **NORMAL**,"
AND maintaining RHR in Shutdown Cooling,
THEN **VERIFY** the disconnects are OPEN for the following valves per SOP-RHR-SDC-BYPASS: Otherwise, N/A.

- RHR-V-8 (RHR-42-S21A7B)
- RHR-V-9 (RHR-DISC-V/9)
- RHR-V-53A (RHR042-7BA5B)
- RHR-V-53B (RHR-42-7BA8C)

The intention of the step was to allow the operating residual heat removal (RHR) Pump RHR-P-2B to remain running to ensure that shutdown cooling was not interrupted during the transfer. Energy Northwest completed the transfer of RPS B at 3:02 a.m. At 3:09 a.m., shutdown cooling inboard suction Valve, RHR-V-9, disconnect, RHR-DISC-V/9, was closed per PPM 2.7.6, Step 5.9.17. Operators noted that valve RHR-V-9 automatically closed when power was restored to the valve resulting in a trip of pump RHR-P-2B and loss of shutdown cooling. Energy Northwest operators entered ABN-RHR-SDC-LOSS and ABN-LEVEL. Operators removed control power fuses for Pump RHR-P-2B and performed a vent and fill verification per Procedure OSP-RHR-M102. Valve RHR-V-9 logic was reset and the Pump RHR-P-2B breaker was reclosed, restoring shutdown cooling at 3:54 a.m. At the time shutdown cooling was lost, reactor pressure vessel level was + 70 inches with reactor coolant system temperature at 114 °F. At the time that shutdown cooling was restored, operators noted that reactor pressure vessel level had increased to + 95 inches and that reactor coolant system temperature peaked at 148 °F. Operators subsequently restored reactor vessel level and system temperature to the previously maintained operating bands of 60-80 inches and 110-120 °F at 4:51 a.m. However, at the end of the inspection period, additional inspection was needed to determine (1) if an inadequate procedure caused the problem, and (2) determine the risk significance of any performance deficiency associated with the loss of shutdown cooling. Therefore, pending additional inspection this item will remain open as unresolved item (URI 05000397/2006005-01; Loss of Shutdown Cooling).

Analysis: A determination of any risk significance associated with any performance deficiencies will be addressed in the resolution of the URI.

Enforcement. A determination of enforcement aspects associated with any performance deficiencies will be addressed in the resolution of the URI.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the Updated Final Safety Analysis Report, procedure requirements, and Technical Specifications to ensure that the surveillance activities listed below demonstrated that the SSC's tested were capable of performing their intended safety functions. The inspectors either witnessed or reviewed test data to verify that the following significant surveillance test attributes were adequate: (1) preconditioning; (2) evaluation of testing impact on the plant; (3) acceptance criteria; (4) test equipment; (5) procedures; (6) jumper/lifted lead controls; (7) test data; (8) testing frequency and method demonstrated Technical Specification operability; (9) test equipment removal; (10) restoration of plant systems; (11) fulfillment of ASME Code requirements; (12) updating of performance indicator data; (13) engineering evaluations, root causes, and bases for returning tested SSC's not meeting the test acceptance criteria were correct; (14) reference setting data; and (15) annunciators and alarms setpoints. The inspectors also verified that the licensee identified and implemented any needed corrective actions associated with the surveillance testing.

- OSP-ELEC-S702; Diesel Generator 2 Semi-Annual Operability Test, October 19, 2006
- OSP-INST-H101; Shift and Daily Instrument Checks (Modes 1, 2, 3); November 30, 2006
- ISP-FDR/EDR-M401; Drywell Sump Flow Monitors - CFT; November 30, 2006
- OSP-FPC/IST-Q701; Fuel Pool Cooling System Operability Surveillance, December 6, 2006
- OSP-RRC/IST-Q701; RRC Valve Operability; December 27, 2006

The inspectors completed five samples which included a review of an in-service pump and valve test, a reactor coolant system leak detection surveillance test, and a containment isolation valve surveillance test.

b. Findings

Introduction. A self-revealing Green noncited violation (NCV) of Technical Specification 5.4.1.a was identified for the failure to adequately implement a surveillance test procedure resulting in the inoperability of the backup transformer. Additionally, a crosscutting aspect in human performance associated with work practices was identified.

Description. On October 19, 2006, operators performed Procedure OSP-ELEC-S702, "Diesel Generator 2 Semi-Annual Operability Test," Revision 26, to conduct a semi-annual surveillance test on diesel generator (DG)-2. In preparation for closing the DG output Breaker E-CB-DG2/8, the test procedure directed placing the CB-DG2/8 Sync

Selector switch to the “manual check” position and then to adjust DG-2 generator voltage per Step 7.6.23 to slightly higher than SM-8 voltage which was being supplied from the startup Transformer TR-S, through electrical Bus SM-3. The operators noted that the DG-2 output voltage could not be increased enough to raise output voltage greater than SM-8 voltage. The operators noted that the procedure then provided a note as follows:

“Note: SM-8 may be paralleled to TR-B per PPM 2.7.1A, provided the following:

Note: The following condition is commonly encountered during an outage when TR-S voltage is high and DG-2 voltage regulator is unable to attain sufficient voltage while unloaded.

DG-2 cannot be paralleled to TR-S (via SM-8) or

TR-S is supplying all plant loads in Modes 1, 2, 3.

and

SM-7 is not paralleled to TR-B.”

The operators determined that Procedure PPM 2.7.1A should be performed to transfer SM-8 to the backup Transformer TR-B, since DG-2 could not be paralleled to TR-S due to known DG-2 voltage limitations. The operators then transitioned to PPM 2.7.1A. The operators failed to note though that the next step of OSP-ELEC-S702, Step 7.6.24(a), directed to first place CB-DG2/8 Sync Selector to “Off” and then to transfer SM-8 to TR-B per PPM 2.7.1A.

Procedure 2.7.1A, Step 5.12.9, directed placing the CB-B8 Sync Selector switch to “manual.” The operators noted that following this step that both the CB-DG2/8 Sync Selector and the CB-B8 Sync Selector were in Manual Check and Manual respectively. Control staff also noted that the E-CB-B8 “ready to transfer” light was extinguished and incoming voltage was zero. A follow-up investigation by Energy Northwest determined that having both sync selector switches in manual at the same time created a mismatch in voltages to be present in the synchronization circuitry and caused an overcurrent condition which cleared a circuit fuse. As a result, the “ready to transfer” indication for breaker E-CB-B/8 was de-energized indicating that the breaker was not capable of auto-closure. Energy Northwest declared TR-B inoperable at 11:15 a.m. Energy Northwest subsequently replaced the cleared fuse and declared TR-B operable at 3:52 p.m.

Energy Northwest subsequently identified that the reactor operator and a peer checker failed to adequately implement self and peer-checking techniques which operators are expected to use. As a result, the operator and peer checker failed to evaluate the intended action of placing the CB-B/8 Sync Selector switch to the “manual” position which would energize the synchronization circuitry. A full review of the procedure step by the operators would have revealed that the synchronization circuitry was already energized with the CB-DG2/8 Synch Selector switch in the “manual check” position.

Analysis. The performance deficiency associated with this finding is Energy Northwest's failure to properly implement Procedure OSP-ELEC-S702 in accordance with TS 5.4.1.a. resulting in inadvertent inoperability of TR-B. This self-revealing finding was more than minor because the finding had an attribute of human performance which affected the mitigating systems cornerstone objective to ensure the availability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to follow procedure resulted in inoperability of TR-B. Utilizing NRC Manual Chapter 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," Phase 1 screening, the inspectors determined that the finding was of very low risk significance (Green) because the backup transformer was inoperable for less than its technical specification allowed outage time. Additionally, the finding was not a qualification issue confirmed not to result in loss of operability, did not represent a loss of safety function for a single train or for the system, and did not screen as potentially risk significant due to external events. This finding had crosscutting aspects in the area of human performance associated with work practices in that self and peer-checking techniques were not implemented properly during the conduct of a safety-related test procedure. This resulted in the failure to follow procedure.

Enforcement. Technical Specification 5.4.1.a requires in part that written procedures shall be established and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)," Revision 2, Appendix A, Section 8.b.(2)(q) requires that specific surveillance tests should be written for emergency power tests. Contrary to this requirement, on October 19, 2006, operators failed to perform Step 7.6.24(a) of OSP-ELEC-S702 subsequently rendering TR-B inoperable. Because this finding was of very low safety significance and was entered into the licensee's corrective action program as PER 206-0584, this violation is being treated as an NCV, consistent with Section VI.A.1 of the Enforcement Policy (NCV 05000397/2006005-02; Failure to Follow Diesel Generator Surveillance Test Procedure). Energy Northwest implemented immediate corrective actions to restore TR-B to an operable condition.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed the Updated Final Safety Analysis Report, plant drawings, procedure requirements, and Technical Specifications to ensure that the two below listed temporary modifications were properly implemented. The inspectors: (1) verified that the modification did not have an affect on system operability/availability; (2) verified that the installation was consistent with the modification documents; (3) ensured that the post-installation test results were satisfactory and that the impact of the temporary modification on permanently installed SSC's were supported by the test; (4) verified that the modifications were identified on control room drawings and that appropriate identification tags were placed on the affected drawings; and (5) verified that appropriate safety evaluations were completed. The inspectors verified that the licensee identified and implemented any needed corrective actions associated with temporary modifications.

The inspectors completed one sample.

- Temporary Modification Request 06-002; Install a temporary jumper in the control room termination Cabinet E-CP-H13/P807 due to BS-V-39B staying open and not cycling based on level switch for Trap #17; December 4, 2006

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

a. Inspection Scope

The inspector performed in-office reviews of Revisions 44 and 45 to the Columbia Generating Station Emergency Plan, Revisions 17 and 18 to Emergency Plan Implementing Procedure 13.1.1A, "Classifying the Emergency - Technical Bases," and Revision 35 to Procedure 13.1.1, "Classifying the Emergency," submitted in July and August 2006. These revisions (1) described the Security Supervisor position and the Plant Security Force in the emergency plan, (2) made changes in Emergency Action Levels 6.1.U.1, 6.1.A.1, 6.1.A.2, 6.1.S.1, 6.2.U.1, 6.2.S.1, and 6.1.G.1, to address installation of crosstie capability between Diesel Generator 3 and Buses SM-7 and -8, (3) updated emergency response organization titles, and (4) changed the reporting units of Monitor TSW-RIS-5 from counts per minute to µCi per cubic centimeter.

The revisions were compared to their previous revisions, to the criteria of NUREG-0654, “Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants,” Revision 1, to the criteria of NEI 99-01, "Methodology for Development of Emergency Action Levels," Revision 2, and to the standards in 10 CFR 50.47(b) to determine if the revisions were adequately conducted following the requirements of 10 CFR 50.54(q). This review was not documented in a safety evaluation report and did not constitute approval of licensee changes, therefore, these revisions are subject to future inspection.

The inspector completed two samples during the inspection.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Barrier Integrity

a. Inspection Scope

The inspectors compared the data from surveillance procedures, operator logs, equipment out-of-service logs, and corrective action logs for the last eleven quarters. The inspectors verified that Energy Northwest calculated performance indicators in accordance with NEI 99-02, "Regulatory Assessment Performance Indicator Guidelines," Revision 4. Performance indicators verified included:

- Reactor Coolant Specific Activity
- Reactor Coolant System Identified Leakage Rate

The inspectors completed two samples.

b. Findings

No findings of significance were identified.

.2 Mitigating Systems

a. Inspection Scope

The performance indicators listed below were replaced by the Mitigating Systems Performance Index.

- High Pressure Coolant Injection
- Heat Removal System
- Emergency AC Power System
- Residual Heat Removal System

See Section 4OA5.1 for discussion regarding Temporary Instruction (TI) 2515/169 - Mitigating Systems Performance Index Verification. This new performance indicator replaced the above mentioned performance indicators which were not required to be verified per Procedure 71151.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Semi-Annual Trend Review

a. Inspection Scope

The inspectors completed an semi-annual trend review of repetitive or closely related issues that were documented in corrective action documents, maintenance records, system health reports, quality assurance audits, and control room logs to identify trends that might indicate the existence of more safety significant issues. The inspectors verified that equipment, human performance, and programmatic issues were being identified by Energy Northwest at an appropriate threshold and were being entered into the corrective action program.

The inspectors completed one sample.

b. Findings and Observations

The inspectors identified an adverse trend associated with degraded flexible electrical conduit jackets resulting in a violation of NRC requirements. See Section 4OA2.5 for more details. No other adverse trends were identified by the inspectors.

.2 Cross-References to PI&R Findings Documented Elsewhere

Section 4OA2.5 describes a finding for the failure to assess corrective action documents in the aggregate resulting in the failure to identify an adverse trend in degraded flexible electrical conduit jackets.

.3 Daily Corrective Action Document Review

a. Inspection Scope

The inspectors performed a review of all documented condition reports and problem evaluation reports to help identify repetitive equipment failures or specific human performance issues for follow-up inspection using other baseline inspection procedures. The review was accomplished by evaluating Energy Northwest's electronic condition report and problem evaluation report databases and attending periodic plant status meetings.

b. Findings

No findings of significance were identified.

.4 Annual Sample - Operator Work Around Review

a. Inspection Scope

On November 29, 2006, 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.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

.5 Annual Sample - Adverse Trend in Degraded Electrical Conduit Jackets

a. Inspection Scope

The inspectors reviewed corrective action program records reporting conditions adverse to quality associated with degradation of flexible electrical conduit jackets on various plant electrical components. In some cases, these conduit jackets were credited as a barrier to preclude moisture intrusion into environmentally qualified conduit jackets to support high energy line break calculations. The inspectors reviewed the documents to determine whether operability had been adequately assessed in each case and to ensure that extent of condition had been appropriately considered. Additionally, the inspectors conducted independent walkdowns of various plant components to determine whether degraded conduit jackets existed elsewhere.

The condition reports reviewed by the inspectors included:

- CR 2-05-00341; Flex Conduit Marked 2CMS-4-2 Div-2 Rubber is Split; January 20, 2005
- CR 2-05-03522; Broken Flexible Conduit to Junction Box for MS-V-22D Limit Switches; May 14, 2005
- CR 2-05-04051; MLCS-MO-2A Has Damaged Conduit Which Requires Repair; May 23, 2005
- CR 2-05-04057; MS-V-106A Limit Switch Conduit Damaged; May 23, 2005
- CR 2-05-04328; Panel E-CP-DG/EP3 has severely damaged flexible conduit; May 27, 2005
- CR 2-05-04635; CIA-V-764 has flex conduit pulled loose from the conduit fitting with cables visible; June 3, 2005
- CR 2-05-04636; CIA-V-766 has flex conduit pulled loose from the conduit fitting with cables visible; June 3, 2005

b. Findings

Introduction. The inspectors identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for failing to promptly identify conditions adverse to quality associated with loss of full environmental qualification of plant components due to degraded flexible electrical conduit jackets. This finding had a crosscutting aspect associated with problem identification and resolution with a corrective action program causal factor.

Description. During a walkdown of various plant areas and components, the inspectors identified multiple examples of breeches in flexible conduit hermetic sealing jackets in the Reactor Building. Some of these components were required to be environmentally qualified (i.e., moisture barrier) in the event of a high energy line break. Energy Northwest documented the inspectors observations in the corrective action program as listed below:

- CR 2-06-00142; Low Pressure Core Spray Motor (LPCS-M-P/1) space heater flex has a small hole exposing the inner metal sheath; July 12, 2006

- CR 2-06-05340; The flex conduit jacket for the power supply to RCIC-MO-68 has a slight separation at the connection to the motor operator; July 19, 2006

- CR 2-06-07101; NRC Inspector Identified Conduit Concerns in Reactor Building Pump Rooms; September 26, 2006

- CR 2-06-07293; Issues identified by the NRC resident with the Reactor Building 572 foot level conduits; October 3, 2006

- CR 2-06-07441; NRC Resident Inspector Reported that the Power Supply Cable to MSLC-V-1D Rubber Jacket is torn; October 11, 2006

The inspectors were concerned because degradation of the conduit jacket associated with safety-related components, such as RCIC-MO-68, could result in the component not meeting it's environmental qualification requirements.

As a result of the deficiencies documented above during NRC walkdowns and previous deficiencies discovered by Energy Northwest, an adverse trend in the condition of flexible electrical conduit jacket material was documented by Energy Northwest in PER 206-0557, dated October 12, 2006. When degraded flexible electrical conduit jackets were found they were repaired. Further walkdowns by Energy Northwest (as directed by Action Item Number A-247252) and walkdowns by the inspectors identified additional degraded flexible electrical conduit jackets and environmental qualification issues on safety-related components throughout the plant as listed below:

- CR 2-06-07493; Concerns identified by the NRC on 10/12/2006 with flexible conduits and conduit fittings; October 13, 2006

- CR 2-06-07509; Conduit problems identified by NRC during walkdown; October 13, 2006

- CR 2-06-07505; CRD-HCU-3043 has a damaged flexible conduit; October 13, 2006

- CR 2-06-07503; CRD-HCU-1051 has a damaged flexible conduit; October 13, 2006

- CR 2-06-07739; Damaged Flex Conduit on multiple pieces of Plant equipment in the Turbine Building, Feed Pumps, Booster Pumps and Fire Protection Panel; October 15, 2006

- CR 2-06-07735; CMS-RE-12/1B Detector Cable Clamp Needs Repair; October 21, 2006

- CR 2-06-07780; While performing walkdown of the CRD pump room the following issues were identified; October 24, 2006

- CR 2-06-07845; Flexible Conduit issues identified on 471' RB and in DG2 room HVAC panel, 2 issues identified by NRC resident inspector, 1 identified by Energy Northwest; October 25, 2006

- CR 2-06-08015; IRM detector cable IRM-DET-2C found damaged during forced outage FO-06-01; November 2, 2006

- CR 2-06-08087; Degraded Flexible Electrical Conduit Jackets that are split may create additional strainer debris not accounted for in calculation ME-02-97-03; November 3, 2006

NUREG-0588, “Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment,” Revision 1, provides that, “Equipment that is used to perform a necessary safety function must be capable of maintaining functional operability under all service conditions postulated to occur during the installed life for the time it is required to operate. The qualification method for this equipment shall establish that each type of equipment is qualified for its application as required by Paragraph 5, Method and Documentation, IEEE 323-1971, “General Guide for Qualifying Class I Electric Equipment for Nuclear Power Generating Stations,” Revision dated April 1971. Energy Northwest calculation EI-02-86-02, Revision 0, dated April 3, 1986, concludes that the life expectancy of flexible electrical conduit jackets is greater than 40 years under specified temperatures and radiation levels. Energy Northwest determined, as documented in PER 206-0664, dated December 8, 2006, that samples of degraded flexible electrical conduit jackets taken from the Reactor Building and Turbine Building showed that jacket degradation occurs in areas of high stress such as tight bends or buckles in the jacket. Energy Northwest postulated that this most likely would have occurred during initial installation of the conduit. This additional stress was not accounted for in environmental qualification design calculations. As a result, some conduit jacket had degraded and failed prematurely before reaching its expected design environmental qualification lifetime.

After extent of condition walkdowns by engineering staff, flexible electrical conduits jackets for two safe shutdown components were found to be not fully environmentally qualified due to bend radius' in the electrical conduits being exceeded as specified per PPM 10.25.57, "Electrical Raceway Installation," Revision 29, Attachment 9.1. The affected components were containment instrument air pressure Switch CIA-PS-21A and a containment monitoring system pressure Transmitter CMS-PT-5 limit switch. CIA-PS-21A pressure switch is part of the actuation logic which supports the automatic depressurization system function. CMS-PT-5 provides post accident monitoring of primary containment pressure. Although the conduit bend radius was exceeded, the conduit jacket had not degraded to the point of it being breached.

Analysis. The performance deficiency associated with this finding was Energy Northwest's failure to promptly identify degraded conduit jackets required to be intact to support full environmental qualification (conditions adverse to quality). This occurred as a result of Energy Northwest failing to identify an adverse trend in conduit jacket material condition although several condition reports written during 2005 and 2006 documented degraded conduit jackets on plant components. The finding was more than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone and it affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to preclude undesirable consequences (i.e., core damage). The finding was determined to be of very low safety significance because, although the qualification for high energy line break was affected for some components, the finding did not result in inoperability of any equipment. Additionally, the finding was a qualification deficiency confirmed not to result in loss of operability per "Part 9900 Technical Guidance, Operability Determination Process for Operability and Functional Assessment." This finding had a crosscutting aspect associated with problem identification and resolution with a corrective action program casual factor. Specifically, Energy Northwest failed to assess and trend information from the corrective action program in the aggregate resulting in the failure to identify an adverse trend regarding flexible electrical conduit jackets.

Enforcement. 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires in part that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. Full qualification requires that environmental barriers (moisture seals) be effective during a predetermined qualified life as required by NUREG-0588 and IEEE 323-1971. Contrary to this requirement, prior to October 12, 2006, the station failed to take action to promptly identify degraded flexible electrical conduit jackets, conditions adverse to quality. Consequently, a violation of 10 CFR Part 50, Appendix B, Criterion XVI, was identified by the inspectors. Because this finding was of very low safety significance and was entered into the licensee's corrective action program as PER 206-0557, this violation is being treated as an NCV, consistent with Section VI.A.1 of the Enforcement Policy (NCV 0500097/2006005-03; Failure to Promptly Identify Degraded Conduit Jacket). Energy Northwest plans to further assess the operability of safe shutdown equipment by: (1) ensuring that Rosemount transmitter MS-PT-51B is sealed with Dow Corning foam. This is will ensure that this transmitter has a qualified moisture barrier and would restore the component to full qualification. (2) Complete walkdowns of high energy line break affected areas for flexible conduit condition and repair flexible conduit

damage if evident. (3) Revise Drawing M937 to require annual inspections of safe shutdown equipment conduit jackets and tape repairs for integrity. Full qualification will be achieved when the first inspection (see item number 2 above) is completed and the drawing is updated to reflect that annual inspections are required.

4OA3 Event Follow-up (71153)

.1 Automatic Scram on October 31, 2006

a. Inspection Scope

On October 31, 2006, the inspectors observed and evaluated Energy Northwest's response to an automatic reactor scram from 100 percent power. The scram initiated when the high pressure turbine throttle valves and governor valves closed as a result of a digital electrical hydraulic system circuit card failure. Per design, an automatic reactor scram occurred when the throttle valves were less than 95 percent open. The inspectors responded to the control room and verified the status of plant conditions by observing key plant parameters, annunciator status, and observing the current status of safety-related mitigating equipment to ensure that the reactor plant was stable. The inspectors also observed reactor operator actions in response to the reactor scram and senior reactor operators evaluation of plant conditions and oversight of the reactor operators to ensure that operators were adhering to plant procedures.

b. Findings

No findings of significance were identified

.2 Reactor Level and Reactor Power Transient During Startup on November 7, 2006

a. Inspection Scope

On November 7, 2006, the inspectors observed and evaluated Energy Northwest's response to a reactor level and reactor power transient during startup. While raising reactor pressure from 600 psig to 935 psig via the digital electrical hydraulic system in auto, a reactor pressure vessel level and reactor power transient occurred. As reactor pressure vessel pressure increased, the discharge pressure of the operating reactor feed water pump was not raised sufficiently to ensure continued feeding of the reactor pressure vessel. As a consequence, reactor feedwater flow reduced resulting in lowering vessel level. Control room staff noted a slowly lowering trend in vessel level and increased reactor feedwater pump speed and discharge pressure to increase feedwater flow to the reactor vessel. Vessel level was noted to lower to 33 inches. The increase in feedwater flow resulted in the addition of relatively colder feedwater resulting in a slight power increase, receipt of an average power range monitor high rod block alarm, and vessel level peaking at 43 inches. Operators subsequently returned reactor pressure vessel water level to normal. Energy Northwest subsequently concluded that inadequate control room supervisory oversight resulted in the failure of the reactor operator to receive information regarding the command to raise vessel pressure using the main turbine control system. The inspectors performed an independent assessment of the circumstances of the event and did not identify any significant issues.

Additionally, the inspectors verified that fuel thermal limits were not exceeded during the event.

b. Findings

No findings of significance were identified.

.3 (Closed) LER 05000397/2005-005 - Inoperable Standby Liquid Control Pump Due to Incorrect Fuse

On July 28, 2005, Energy Northwest identified that an incorrect fuse had been installed in the circuitry associated with standby liquid control pump 1A. The incorrect fuse was installed during a maintenance activity on July 6, 2005, and resulted in the pump being inoperable for approximately 22 days. Energy Northwest replaced the fuse with the correct type and declared the pump operable. See IR 05000397/2005-004, Section 4OA7.2, for discussion of an associated licensee identified NCV. The inspectors did not identify any other significant findings or violations of NRC requirements during their review of the LER. Energy Northwest documented the issue in PER 205-0502.

4OA5 Other Activities

.1 Temporary Instruction (TI) 2515/169 - Mitigating Systems Performance Index Verification

a. Inspection Scope

On November 30, 2006, the inspectors completed an inspection in accordance with Temporary Instruction 2515/169, "Mitigating Systems Performance Index Verification," to verify that the licensee correctly implemented the Mitigating System Performance Index (MSPI) guidance.

The inspectors reviewed the data the licensee used to generate the basis document unavailability and unreliability values. The licensee entered the values into a spreadsheet which was used to perform various calculations. The inspectors also used the following licensee source documents to verify the validity of the input data:

- Control Room Logs
- Surveillance Test Procedures
- Maintenance Procedures

b. Findings

No findings of significance were identified. The inspectors concluded that the licensee is monitoring, collecting and entering the appropriate data in accordance to the prescribed guidance.

Per the temporary instruction, the inspectors assessed and answered the following questions:

Question	Answer
For the sample selected, did the licensee accurately document the baseline planned unavailability hours for the MSPI systems?	Yes
For the sample selected, did the licensee accurately document the actual unavailability hours for the MSPI systems?	Yes
For the sample selected, did the licensee accurately document the actual unreliability information for each MSPI monitored component?	Yes
Did the inspector identify significant errors in the reported data, which resulted in a change to the indicated index color?	No
Did the inspector identify significant discrepancies in the basis document which resulted in (1) a change to the system boundary; (2) an addition of a monitored component; or (3) a change in the reported index color?	No

.2 (Closed) URI 05000397/2006004-01: Non-Venting of Alternate Boron Injection Hose

Introduction. An NRC identified Green NCV of TS 5.4.1.a was identified for the failure to provide an adequate procedure for alternate boron injection. Specifically, procedure Emergency Support Procedure (ESP) 5.5.8, "Alternate Boron Injection," Revision 8, failed to direct venting of a temporarily installed hose between the standby liquid control boron storage tank and the reactor core isolation cooling (RCIC) Pump RCIC-P-1 suction. As a result, air introduction into RCIC-P-1 upon initiation of alternate boron injection during low flow operations could adversely affect RCIC-P-1 performance.

Description. As documented in IR 0500397/2006004, Section 1R04.2, the inspectors identified that procedure ESP 5.5.8 did not direct venting of a temporarily installed hose between the outlet of the standby liquid control boron storage tank (approximate 548 foot elevation) and the suction of the reactor core isolation cooling pump (approximate 422 foot elevation). This hose connection allowed the contents of the boron storage tank to be injected into the reactor coolant system via RCIC-P-1 to provide for a diverse method of shutting down the reactor in the event that AC power was not available to operate the standby liquid control pumps in response to an anticipatory transient without scram event. The inspectors were concerned that by not venting the hose that air (approximately 4.3 cubic feet) could be inadvertently injected into the suction of RCIC-P-1 causing the pump to lose net positive suction head and adversely impact pump performance. URI 05000397/2006004-01 was opened pending the NRC's review of Energy Northwest's evaluation of the adequacy of not venting the temporarily installed hose prior to initiating alternate boron injection via RCIC-P-1. Energy Northwest documented the concern in CR 2-06-06510.

The inspectors reviewed Energy Northwest's evaluation of CR 2-06-06510 and an associated evaluation (PTLA 252435) and noted that Energy Northwest concluded that RCIC-P-1 would not become airbound due to the following:

- With the RCIC system operating at 600 gpm (rated flow), that RCIC-P-1 would not become air bound during alternate boron injection without venting.

- At less than 350 gpm RCIC-P-1 pump flow, RCIC-P-1 could potentially meet or exceed 8 percent air entrainment by volume during alternate boron injection without venting. Air entrapment greater than 8 percent has the potential to cause air binding. However, due to the short duration that the pump could have been exposed to greater than 8 percent air by volume, the pump vendor does not anticipate that air in the temporarily installed hose would present a problem for RCIC-P-1.

- The probability that RCIC-P-1 would be operated at less than 350 gpm at the time it would be needed for alternate injection of boron is very low. RCIC-P-1 typically runs in automatic at 600 gpm. Additionally, operators would be expected to operate RCIC-P-1 at rated flow of 600 gpm in the event that RCIC-P-1 is needed for boron injection to maximize the rate of boron injection. Additionally, while RCIC-P-1 can be taken to manual control to achieve flow rates less than 600 gpm, operations' procedures contain notes cautioning against operating RCIC-P-1 at flow rates less than 300 gpm.

However, Energy Northwest also determined that per PPM 5.1.2, "RPV Control - ATWS," Revision 17, it is possible for an operator to maintain RPV level using RCIC while concurrently using RCIC to add boron via Procedure ESP 5.5.8. Therefore, RCIC flow could be throttled to maintain RPV level at a flow rate less than 350 gpm. If boron injection occurred per Procedure ESP 5.5.8 with RCIC-P-1 operating at less than 350 gpm, it would be possible for RCIC-P-1 to experience decreased performance due to the air-water volume exceeding 8 percent.

Although it was unlikely that RCIC-P-1 would become air bound as a result of not venting the installed hose prior to initiating alternate boron injection, the inspectors noted that Energy Northwest's evaluation concluded that RCIC-P-1 performance could be adversely affected during low flow conditions (300 - 350 gpm) where the percent air by volume would exceed 8 percent. As a result, the inspectors concluded that procedure ESP 5.5.8 was not adequate in that acceptable RCIC-P-1 performance was not assured without venting the temporarily installed hose prior to initiating alternate boron injection. The inspectors noted that Energy Northwest revised procedure ESP 5.5.8 on October 27, 2006, to direct venting the temporarily installed hose prior to initiation of alternate boron injection.

Analysis. The performance deficiency associated with this finding is Energy Northwest's failure to ensure that Procedure ESP 5.5.8 was adequate in accordance with TS 5.4.1.a. Specifically, Procedure ESP 5.5.8 failed to direct venting of a temporarily installed hose between the outlet of the standby liquid control boron storage tank and suction of RCIC-P-1. As a result, air introduction into the suction of RCIC-P-1 upon initiation of alternate boron injection, during conditions of low flow operation of RCIC-P-1, could result in decreased performance of RCIC-P-1. This NRC identified finding was more than minor because the finding had an attribute of procedure quality which affected the mitigating systems cornerstone objective to ensure the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. Utilizing

MC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," Phase 1 screening, the inspectors determined that the finding was of very low risk significance (Green) because, although degraded reactor core insolation cooling pump performance could occur, the pump was expected to perform adequately to support alternate boron injection, based on Energy Northwest's engineering evaluation. Additionally, the finding was not a qualification issue confirmed not to result in loss of operability, did not represent a loss of safety function for a single train or for the system, and did not screen as potentially risk significant due to external events.

Enforcement. Technical Specification 5.4.1.a, requires in part that written procedures shall be established and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)," Revision 2, Appendix A, Section 6.n, provides in part that emergency procedures be established for conditions requiring use of emergency boration or standby liquid control system. Contrary to this requirement, since August 23, 1990, Procedure ESP 5.5.8 was inadequate in that it did not provide for venting of a temporarily installed hose between the boron storage tank and the suction of RCIC-P-1. As a result, RCIC-P-1 could experience decreased performance during operations below 350 gpm. Because this finding was of very low safety significance and was entered into the licensee's corrective action program as CR 2-06-06510, this violation is being treated as an NCV, consistent with Section VI.A.1 of the Enforcement Policy (NCV 05000397/2006005-04, Inadequate Alternate Boron Injection Procedure). Energy Northwest revised procedure ESP 5.5.8 to vent the temporarily installed hose.

4OA6 Meetings, Including Exit

On November 6, 2006, the inspector presented the emergency plan change inspection results to Mr. M. Reis, Supervisor, Emergency Preparedness. The inspector confirmed that proprietary information was not provided or examined during the inspection.

On November 16, 2006, the inspectors presented the safety evaluation and permanent plant modifications inspection results to Mr. S. Oxenford, Vice President of Technical Services, and other members of the staff who acknowledged those results. No proprietary information was included in this report.

On December 14, 2006 the inspector debriefed the inspection results with Mr. Louis Cortopassi, Training Manager, and other members of the licensee's staff at the conclusion of the inspection. A telephone exit was held with Mr. Michael Cantrell on January 10, 2007. The licensee acknowledged the findings presented in both the briefing and the final exit meeting. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On January 11, 2007, the resident inspectors presented the inspection results to Mr. Atkinson and other members of his staff who acknowledged the findings. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

4OA7 Licensee Identified Violations

None.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Energy Northwest

D. Atkinson, Vice President, Nuclear Generation
S. Belcher, Manager, Operations
I. Borland, Manager, Radiation Protection
S. Boynton, Manager, Systems Engineering
M. Cantrell, Manager, Operations Training
D. Coleman, Manager, Performance Assessment and Regulatory Programs
L. Cortopassi, Manager, Training
G. Cullen, Licensing Supervisor, Regulatory Programs
J. Dittmer, Supervisor, Design Engineering
M. Eades, Licensing Engineer, Regulatory Programs
D. Gregoire, Supervisor Licensing (Acting), Regulatory Programs
R. Jorgenson, Senior Emergency Planner
A. Khanpour, General Manager, Engineering
T. Lynch, Plant General Manager
S. Mazurkiewicz, Licensing Engineer
T. North, Supervisor, Operator Training, Requalification
W. Oxenford, Vice President, Technical Services
J. Parrish, Chief Executive Officer
J. Redwine, Simulator Supervisor
M. Reis, Supervisor, Emergency Preparedness
N. Richmond, Senior Occupational Health/Nurse
F. Schill, Licensing
R. Torres, Manager, Quality Assurance
C. Whitcomb, Vice President, Organizational Performance and Staffing

NRC Personnel

J. Bashore, Project Engineer
F. Brush, Senior Project Engineer
R. Cohen, Resident Inspector and Temporary Senior Resident Inspector
Z. Dunham, Senior Resident Inspector

ITEMS OPENED AND CLOSED

Items Opened, Closed, and Discussed During this Inspection

Opened

05000397/2006005-01	URI	Loss of Shutdown Cooling (Section 1R20)

Opened and Closed

05000397/2006005-02	NCV	Failure to Follow Diesel Generator Surveillance Test Procedure (Section 1R22)
05000397/2006005-03	NCV	Failure to Promptly Identify Degraded Conduit Jacket (4OA2.5)
05000397/2006005-04	NCV	Inadequate Alternate Boron Injection Procedure (Section 4OA5.2)

Closed

05000397/2005-005-00	LER	Inoperable Standby Liquid Control Pump Due to Incorrect Fuse (Section 4OA3.2)
05000397/2006004-01	URI	Non-Venting of Alternate Boron Injection Hose (Section 4OA5.2)

Discussed

None.

PARTIAL LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

PPM SOP-COLD WEATHER-OPS; Revision 1

Final Safety Analysis Report; Chapter 9

WO 01120456; COLD WEATHER OPS;

Section 1R02: Evaluations of Changes, Tests, or Experiments

10 CFR 50.59 Evaluations

Number	Revision
5059-03-0002	0
5059-04-0002	0
5059-05-0006	1
5059-05-0012	0
5059-06-0002	0

10 CFR 50.59 Screenings

5059SCREEN-03-0185
5059SCREEN-05-0230
5059SCREEN-06-0087
5059SCREEN-06-0171
5059SCREEN-06-0130

Applicability Determinations

EC-1702
EC-4691
EC-4337
MPDC 2201
MPDC 4193

Condition Reports

2-04-04538
2-05-08137
2-06-03555
2-06-06990
2-06-08186
2-06-08408
2-06-08462

Section 1R04: Equipment Alignment

Procedures

SOP-DG2-STBY; Emergency Diesel Generator (DIV 2) Standby Lineup, Revision 6

SOP-HPCS-STBY; Placing HPCS in Standby Lineup; Revision 2

SOP-SW-STBY; Placing Standby Service Water in Standby Status; Revision 1

FSAR; Section 8.3

Drawings

M524-1; Revision 106

M512-1; Revision 39

M512-4; Revision 8

Section 1R05: Fire Protection

Columbia Generating Station Pre-Fire Plan, Revision 2

Final Safety Analysis Report; Appendix F

National Fire Protection Association NFPA-10; 1984 Revision

Section 1R06: Flood Protection Measures

Final Safety Analysis Report; Sections 2.4.2 and 3.4.1.5.1

Section 1R11: Licensed Operator Requalification Program (71111.11)

OI-09, Operations Standards and Expectations

TPD-9, Licensed Operator Continuing Training Program Description

OI-07, Training Expectations

TDI-OPS-13, Program Material Maintenance Including the Use of Industry Experience

TDI-OPS-17, Course Critique and Feedback Process

TDI-OPS-09, Performance Deficiency Analysis and Remediation

OLTS report 9 list (NRC)

CGS licensed operator training list

Open Simulator Discrepancy Reports

Closed Simulator discrepancy report from January 2005 thru December 2006

Condition report from previous RQ inspection (CR 2-04-06473)

Annual operability Test Packages:

a. Steady state power test (100%, 25%)
b. Transients Reviewed (All 10)
c. Core test packages for heat balance and shutdown margin calculations
d. Low and High power stability tests (24% and 100%)

SBT packages for loss of forced flow and drifting rods reviewed
Loss of shutdown cooling lesson plan LR000069 for LO and NLO

Unplanned Pressure Vessel Pressure Reduction lesson plan LR001724

Loss of Reactor Recirc. Pump lesson plan LR001705

Simulator Configuration Test and Control documents,TDLI-SIM-001 thru TRI-SIM-005 with TDI-OPS-05 and TDI-OPS-10

Simulator Review Board meeting minutes for past three quarters

Simulator Improvement (Excellence) Plan

Simulator versus Plant differences list and draft lesson plan

Section 1R12: Maintenance Effectiveness

CER No. C93-0849; Revision 0

Trouble Shooting Plan No. 06-010; Revision 0, dated October 31, 2006

PPM 10.27.87; RCIC Keepfill Instruments RCIC-PIS-1 and RCIC-PIS-34 - CFT/CC; Revision 1

50.59 Screen 06-0174, Dated October 06, 2006

FSAR Section 5.4.6

FSAR Section 7.4

CCER No. C 91-0192

CCER No. C 97-0124

CCER No. C01-0003

Drawings

EWD-6E-003, Revision 8

136B1797; Revision 12

EWD 6E052; Revision 18

Work Orders

WO 01124976 WO 01065653 WO 01120934 WO 01121027

WO 01125113

Work Requests

WR 29056916 WR 29056920 WR 29056917

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

PPM 1.3.76; Integrated Risk Management; Revision 5

OI-49; Protected Systems; Revision 4

PPM 1.5.14; Risk Assessment and Management for Maintenance for/Surveillance Activities; Revision 11

OSP ELEC-M701; Diesel Generator 1 - Monthly Operability Test; Revision 25

LCO Log No. 10477

LCO Log No. 10661

LCO Log No. 10363

Section 1R15: Operability Evaluations

Procedures

IEE Std 387-1995; IEE Standard Criteria for Diesel-Generator Units Applied as Standby Power Supplies for Nuclear Power Generating Stations; Revision of IEE Std 387-1984

Regulatory Guide 1.9; Selection, Design, Qualification, and Testing of Emergency Diesel Generator Units Used as Class IE Onsite Electrical Power Systems at Nuclear Power Plants, Revision 3

OSP-ELEC-S701; Diesel Generator 1 Semi-Annual Operability Test; Revision 26

OSP-ELEC-M701; Diesel Generator 1 - Monthly Operability Test; Revision 25

FSAR; Section 8.3

Letter Docket Number 50-397; GI2-89-121; Standby Diesel Generator Automatic Return To Standby Mode (TAC No. 60955), dated October 5, 1989

Letter Docket Number 50-397; GO2-89-201; Standby Diesel Generator Automatic Return To Standby Mode, dated March 10,1986

Letter Docket Number 50-397; GO2-83-1111; Standby Diesel Generator Automatic Return To Standby Mode, dated December 2, 1983

Letter Docket Number 50-397; GI2-01-073; Standby Diesel Generator Automatic Return To Standby Mode - OOL Amendment 173, dated May 18, 2001

Letter Docket Number 50-397; GO2-01-053; Standby Diesel Generator Automatic Return To Standby Mode, dated April 6, 2001

Letter Docket Number 50-397; GO2-92-045; Diesel Generator 2 Shorted Poles; dated 1992

Letter Docket Number 50-397; GO2-95-026; Diesel Generator 2 Shorted Poles; dated 1995

LCO No. 10538

LCO No. 10702

Drawings

EWD-47E-046; Revision 7

EWD-47E-032; Revision 8

EWD-47E-048; Revision 14

Section 1R16: Operator Work-Arounds

Columbia Operational Challenges List

Section 1R17B: Permanent Plant Modifications

Engineering Changes

Number	Title	Revision
1702	Replacement of DSA-42-8AA1A with Spectrum Model	0
2201	Replace E-RLY-27/X Relays with ETR Type Relays	0
4193	Replace E-RLY-62/X Relays with ETR Type Relays	0
4337	Preventing Level 8 Trip After Scram	0
4691	Replace RFW-HX-6B AND RFW-HX-6B	0

Miscellaneous Documents

Number	Title	Revision
06-1501-A02	TEI Feedwater Heater Specification Sheet	0
10.2.14	Maintenance Coating Program	21
15B.1	Design Piping and Material Specification for Non-ASME Piping Systems	0
CMR 4755	CMR 4755 to Calc 02-02-48	0
OE 21482	Inadvertent Trip of a Reactor Feedwater Pump Causes SCRAM - Columbia	October 2005
SWP-LIC-02	Licensing Basis Impact Determinations	6

	Email to B. Ghuman from T. Ravindranath	November 15, 2006
	Email to B. Ghuman from T. North	November 15, 2006

Calculations

Number	Title	Revision
Calc ME 02-02-48	Carbon to Stainless Steel Replacement Justification	0

Condition Reports

2-05-01486
2-05-07725
2-05-08086
2-06-08403
2-06-08467

Section 1R19: Postmaintenance Testing

Procedures:

OSP-HPCS/IST-Q701; HPCS System Operability Test; Revision 26

OSP-MT-B401; Main Turbine Overspeed Channel Functional Test, Revision 2

SOP-MT-TRIP; Main Turbine Generator Trip Functional Test, Revision 2

OSP-SGT-M701; Standby Gas Treatment System A Operability; Revision 7

OSP-SGT/IST-Q701; SGT Valve Operability (System A); Revision 5

Work Orders:

WO 01116867	WO 01116868	WO 01114075	WO 01126167
WO 01100689	WO 01100773	WO 01104378	WO 01126133
WO 01101312	WO 01105345	WO 01105014	

Work Requests

WR 29056920

Drawings:

EWD-39E-009, Revision 11

EWD-39E-011, Revision 15

EWD-39E-020, Revision 14

EWD-39E-029, Revision 9

MEC-M544, Revision 70

LCO/INO Log # 10721

Procedures:

OSP-SGT-M701; Standby Gas Treatment System A Operability, Revision 7

OSP-SGT/IST-Q701; SGT Valve Operability (System A), Revision 5

PPM 10.25.207; Testing and Setting AGASTAT 7000 Series and AGASTAT ETR Series Time Delay Relays, Revision 1

Section 1R20: Refueling and Outage Activities

Columbia Generating Station Forced Outage FO-06-01; Shutdown Safety Plan, Revision 1

SOP-RHR-SDC; RHR Shutdown Cooling; Revision 9

Section 1R22: Surveillance Testing

Procedures

OSP-FPC/IST-Q701; Fuel Pool Cooling System Operability Surveillance; Revision 16

OSP-INST-H101; Shift and Daily Instrument Checks (Modes 1, 2, 3); Revision 55

ISP-FDR/EDR-M401; Drywell Sump Flow Monitors - CFT; Revision 5

Section 1R23: Temporary Plant Modifications

Procedures

TMR 06-002; Install a Temporary Jumper in the Control Room Termination Cabinet; dated November 14, 2006

Work Orders

WO 01126813

Section 4OA1: Performance Indicator Verification

OSP-INST-H101; Shift And Daily Instrument Checks (Modes 1, 2,3), Revision 55

CSP-I131-W101; Reactor Coolant Isotopic Analysis For I-131 Dose Equivalent, Revision 3

PPM 2.11.3; Equipment Drain System, Sections 5.6 and 5.7, Revision 24

PPM 2.11.5; Floor Drain System, Section 5.11, Revision 31

PPM 12.5.33; Reactor Coolant Sampling, Revision 6

CI 10.17; Iodine, Revision 6

CSP-I131-W101; Reactor Coolant Isotopic Analysis for I-131 Dose Equivalent; Revision 3

NEI 99-02; Regulatory Assessment Performance Indicator Guideline, Revision 4

LCO Log Number 10860; Technical Specification Inoperable Equipment/LCO/RFO Status Sheet

LCO Log Number 10721; Technical Specification Inoperable Equipment/LCO/RFO Status Sheet

ISP-FDR/EDR-M401; Drywell Sump Flow Monitors - CFT; Revision 5

ISP-FDR/EDR-X301; Drywell Sump Flow Monitors - CC; Revision 7

Work Orders

WO 01123124 WO 01127421

Work Requests

WR 29057423

Section 4OA2: Identification and Resolution of Problems (71152)

Procedures

CER C93-0647

EQ Record Number 156009-01

PPM 10.25.57; Electrical Raceway Installation; Revision 29

FSAR; Section 3.11-1

FSAR; Section 3.1-3

FSAR; Section 8.3

PPM 10.25.19; Termination and Splicing Instructions; Revision 18

TI-2.2; System Walkdown; Revision 11

OI-14; Columbia Generating Station Operational Challenges Program; Revision 2

Calculation EI-02-86-02

Drawings

M937; Revision 32

E823-1; Revision 25

E827; Revision 13

E824; Revision 8

Section 4OA3: Event Follow-up

Procedures

OSP-RCS-C102; RPV Non-Critical Cooldown Surveillance; Revision 5

SOP-RFT-RESTART-QC; Reactor Feed Pump Restart - Quick Card; Revision 0

OSP-RRC-C103; RRC Pump Start Temperature and Loop Flow Verification; Revision 6

SOP-CN-CONT-VENT; Containment Vent, De-Inert, Purge, and Ventilation

PPM 3.3.1; Reactor Scram; Revision 46

Columbia Operational Challenges List; Dated November 29, 2006

Corrective Action Documents:

CR 0-06-00213	CR 2-06-07493	CR 2-06-07801	CR 2-06-07762
CR 2-06-07735	CR 2-06-05340	CR 2-06-07101	CR 2-06-07142
CR 2-06-07293	CR 2-06-07300	CR 2-06-07350	CR 2-06-07441
CR 2-06-03866	CR 2-06-03511	CR 2-06-01506	CR 2-06-00752
CR 2-06-00223	CR 2-06-00200	CR 2-06-09801	CR 2-06-07845
CR 2-06-07780	CR 2-06-07539	CR 2-06-07509	CR 2-06-05340
CR 2-06-07942	CR 2-06-08060	CR 2-06-08015	CR 2-06-07702
CR 2-06-04557	CR 2-06-05721	CR 2-06-07698	CR 2-06-08602
CR 2-06-08655	CR 2-06-07293	CR 2-06-07597	CR 2-06-06546
CR 2-06-07217	CR 2-06-00560	CR 2-06-04559	CR 2-06-07354

CR 2-06-06062	CR 2-06-07486	CR 2-06-08002	CR 2-06-07505
CR 2-06-07503	CR 2-06-07739	CR 2-06-07735	CR 2-06-07780
CR 2-06-08015	CR 2-06-08087		
PER 206-0664	PER 206-0557	PER 206-0392	PER 206-0451
PER 206-0466	PER 202-0905	PER 206-0596	PER 206-0602
PER 206-0551	PER 206-0534	PER 206-0586	PER 203-4157
PER 290-0499	PER 206-0584	PER 206-0585	PER 206-0122