



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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ARLINGTON, TEXAS 76011-4005**

July 22, 2006

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**SUBJECT: COLUMBIA GENERATING STATION - NRC INTEGRATED INSPECTION
REPORT 05000397/2006003**

Dear Mr. Parrish:

On June 30, 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 June 29, 2006, with Mr. W. Oxenford 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 one NRC identified finding. This finding was determined to involve a violation of NRC requirements. However, because of the very low safety significance and because it is entered into your corrective action program, the NRC is treating this finding as a noncited violation (NCV) 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

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Sincerely,

/RA/

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

Docket: 50-397
License: NPF-21

Enclosure:
NRC Inspection Report
05000397/2006003

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SUNSI Review Completed: CEJ ADAMS:/ Yes ☐ No Initials: CEJ
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SRI:DRP/A	RI:DRP/A	SPE:DRP/A	BC:DRP/A	BC:DRS/EB1
ZKDunham	RBCohen	TRFarnholtz	CEJohnson	JAClark
E-MJSpivey	E-MJSpivey	/RA/	/RA/	CJPaulk
7/20/06	7/20/06	7/14/06	7/22/06	7/21/06
BC:DRS/PSB	BC:DRS/OB	BC:DRS/EB2		
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7/19/06	7/21/06	7/17/06		

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 50-397
License: NPF-21
Report: 05000397/2006003
Licensee: Energy Northwest
Facility: Columbia Generating Station
Location: Richland, Washington
Dates: April 1, 2006 through June 30, 2006
Inspectors: Z. Dunham, Senior Resident Inspector, Project Branch A, DRP
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Approved By: C. E. Johnson, Chief, Project Branch A, Division of Reactor Projects
ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

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SUMMARY OF FINDINGS

IR05000397/2006003; 4/1/2006 - 6/30/2006; Columbia Generating Station; Other Activities

The report covered a 13-week period of inspection by resident inspectors, a senior health physicist, and an emergency preparedness inspector. **One** Green noncited violation 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." 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. An NRC identified noncited violation of 10 CFR 50, Appendix B, Criterion III, "Design Control," was identified when Energy Northwest failed to ensure the adequacy of a design modification, implemented in 1992, to a low pressure core spray instrument pipe associated with the discharge header flow element. Energy Northwest failed to ensure that steady state vibration stress levels in the pipe were within code standards after the modification was performed. Stress levels were later determined to exceed endurance stress limit standards after the NRC identified concerns with the magnitude of vibration the pipe exhibited during operation of the low pressure core spray pump.

This finding was determined to be more than minor because it was associated with the design control attribute of the mitigating systems cornerstone and it affected the cornerstone objective of ensuring the availability, reliability, and capability systems that respond to initiating events. The finding was determined to be of very low safety significance because 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." A crosscutting aspect associated with problem identification and resolution was identified when Energy Northwest failed to take vibration data at the earliest opportunity when the low pressure core spray pump was next operated. This resulted in a delay in Energy Northwest determining that the instrument tubing vibration stress levels exceeded ASME code endurance limits. (Section 4OA5.1)

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 maintained at essentially 100 percent power for the entire inspection period except for scheduled reductions in power to accommodate periodic testing or to support regional power demands.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather (71111.01)

a. Inspection Scope

The inspectors completed a review of the licensee's readiness of seasonal susceptibilities involving extreme high temperatures and high winds. 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 the system listed below to ensure that adverse weather protection features 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.

- Standby Service Water Pumps 1A and 1B; May 15, 2006

The inspectors completed one sample.

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.

- Residual Heat Removal B; April 14, 2006
- Standby Service Water Division 1; May 22, 2006
- Containment Instrument Air; June 6, 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 SW-1; Standby Service Water Pump House 1A; April 11, 2006
- Fire Area SW-2; Standby Service Water Pump House 1B; April 12, 2006
- Fire Area DG-10; Deluge Valve Equipment Room; April 13, 2006
- Diesel Generator No. 4; April 24, 2006
- Fire Area DG-2; Diesel Generator Room No. 1; June 19, 2006
- Fire Area DG-3; Diesel Generator Room No. 2; June 19, 2006
- Fire Area R-8; Low Pressure Core Spray Pump Room; June 19, 2006

The inspectors completed seven samples.

b. Findings

No findings of significance were identified.

.2 Annual Inspection

a. Inspection Scope

The inspectors observed an unannounced fire brigade drill on June 12, 2006, to evaluate the readiness of licensee personnel to prevent and fight fires, including the following aspects: (1) use of protective clothing, (2) use of breathing apparatuses, (3) placement and use of fire hoses, (4) entry into the fire area, (5) use of fire fighting equipment, (6) brigade leader command and control, (7) communications between the fire brigade and control room, (8) searches for fire victims and fire propagation, (9) smoke removal, (10) use of pre-fire plans, and (11) adherence to the drill scenario. The licensee simulated a fire in an elevator on the 467' level in the Radioactive Waste Building.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Regualification (71111.11)

a. Inspection Scope

On June 20, 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 inspectors also observed the ability of the operators to respond to events and verified that the licensee configured the simulator consistent with the control room and plant.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors reviewed the maintenance 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.

- LPCS Keep Fill Pump Refurbishment Planned Maintenance Deferred; April 25, 2006

- PER 206-0342; Failure of Damper DMA-AD-12/2; June 20, 2006

The inspectors completed two 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.

- Emergency Diesel Generator Division 2 Maintenance Outage; May 1, 2006
- Battery E-B1-1 125VDC Battery On-line Replacement; May 16, 2006
- E-CB-B/8 motor operator cell inspection; June 27, 2006

The inspectors completed three samples.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors: (1) reviewed plant status documents such as operator shift logs, emergent work documentation, deferred modifications, and standing orders to determine if an operability evaluation was warranted for degraded components; (2) referred to the Updated Safety Analysis Report and design basis documents to review the technical adequacy of licensee operability evaluations; (3) evaluated compensatory measures associated with operability evaluations; (4) determined degraded component impact on any Technical Specifications; (5) used the significance determination process to evaluate the risk significance of degraded or inoperable equipment; and (6) verified that the licensee has identified and implemented appropriate corrective actions associated with degraded components.

- CR-2-06-02556; HPCS DG SW flow alarm had to be re-disabled due to frequent low flow alarms despite corrective action intended to fix the problem; April, 5 2006
- CR-06-03706; PSR-V-X77A/1 failed its as-found LLRT with a leak rate of 35,180 sccm. The ASME limit for this valve is 750 sccm; April 13, 2006
- CR 2-06-03769; Procedure step completed other than written; May 18, 2006
- CR 2-06-03322; Calculation E/I-02-91-1011, Appendix C, did not address all scenarios resulting in a non-conservative technical specification surveillance requirement; May 22, 2006

The inspectors completed four samples.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17)

a. Inspection Scope

The inspectors reviewed Energy Northwest's review and approval of the safety-related procedure listed below. This procedure was used to facilitate an at power replacement of the station's safety-related division 1 125 VDC battery. The inspectors reviewed associated calculations and safety reviews, and verified that the procedure was implemented as written. The inspectors verified that the procedure was adequate to ensure continuous battery operability during a planned replacement of battery cells.

- PPM 10.25.204; Online Battery Maintenance Replacement of 125 VDC E-B1-1; Revision 0

The inspectors completed one sample.

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.

- WO 01108711; Cycle RHR-V-67 and Lubricate Stem; April 7, 2006
- WO 01087389; Emergency Diesel Generator Division 2 Power Pack Replacement; May 10, 2006
- WO 01107064; RFW-FT-802B replace flow transmitter; June 27, 2006

The inspectors completed three samples.

b. Findings

No findings of significance were identified.

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-RCIC/IST-Q701; RCIC Operability Test; April 15, 2006
- OSP-ELEC-S702; Diesel Generator 2 Semi-Annual Operability Test; May 12, 2006
- ISP-LCPS/RHR-Q901; RHR A & LPCS Discharge Pressure - ADS Trip System A Permissive (By K10A Relay) - CFT/CC; May 15, 2006

The inspectors completed three samples which included a review of an in-service pump and valve test.

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 an in-office review of Revision 43 to the Columbia Generating Station Emergency Plan. This revision removed the requirement for radioactive liquid sampling drills following the licensee's removal of the post-accident sampling system, and deleted references to the state common emergency radio frequency.

This revision was compared to its previous revision, 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, and to the requirements of 10 CFR 50.47(b) and 50.54(q) to determine if the licensee adequately implemented 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 changes are subject to future inspection.

The inspector completed one sample during this inspection.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on May 9, 2006, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation (PAR) development activities. The inspectors observed emergency response operations in the simulated control room to verify that event classification and notifications were done in accordance with procedure PPM 13.1.1, "Classifying the Emergency," Revision 34. The inspectors also reviewed the licensee's evaluation of the drill to compare any inspector-observed weakness with those identified by the licensee in order to verify whether the licensee was properly identifying failures.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01)

a. Inspection Scope

This area was inspected to assess the licensee's performance in implementing physical and administrative controls for airborne radioactivity areas, radiation areas, high radiation areas (HRAs), and worker adherence to these controls. The inspector used the requirements in 10 CFR Part 20, the Technical Specifications, and the licensee's procedures required by Technical Specification as criteria for determining compliance. During the inspection, the inspector interviewed the radiation protection manager, radiation protection supervisors, and radiation workers. The inspector performed independent radiation dose rate measurements and reviewed the following items:

- Performance indicator events and associated documentation packages reported by the licensee in the Occupational Radiation Safety Cornerstone
- Controls (surveys, posting, and barricades) of radiation, high radiation, or airborne radioactivity areas
- Conformity of electronic personal dosimeter alarm set points with survey indications and plant policy; workers' knowledge of required actions when their electronic personnel dosimeter noticeably malfunctions or alarms
- Physical and programmatic controls for highly activated or contaminated materials (non-fuel) stored within spent fuel and other storage pools
- Self-assessments, audits, licensee event reports, and special reports related to the access control program since the last inspection
- Corrective action documents related to access controls
- Licensee actions in cases of repetitive deficiencies or significant individual deficiencies
- Controls for special areas that have the potential to become very high radiation areas during certain plant operations
- Posting and locking of entrances to all accessible high dose rate - high radiation areas and very high radiation areas

The inspector completed 12 of the required 21 samples.

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls (71121.02)

a. Inspection Scope

The inspector assessed licensee performance with respect to maintaining individual and collective radiation exposures as low as reasonably achievable (ALARA). The inspector used the requirements in 10 CFR Part 20 and the licensee's procedures required by Technical Specification as criteria for determining compliance. The inspector interviewed licensee personnel and reviewed:

- Current 3-year rolling average collective exposure
- Five work activities from previous work history data that resulted in the highest personnel collective exposures
- Site specific trends in collective exposures, plant historical data, and source-term measurements
- ALARA work activity evaluations, exposure estimates, and exposure mitigation requirements
- 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
- Declared pregnant workers during the current assessment period, monitoring controls, and the exposure results
- Exposures of individuals from selected work groups
- Source-term control strategy or justifications for not pursuing such exposure reduction initiatives
- Specific sources identified by the licensee for exposure reduction actions and priorities established for these actions, and results achieved against since the last refueling cycle
- Self-assessments, audits, and special reports related to the ALARA program since the last inspection
- Effectiveness of self-assessment activities with respect to identifying and addressing repetitive deficiencies or significant individual deficiencies

The inspector completed 9 of the required 15 samples and 3 of the optional samples.

b. Findings

No findings of significance were identified

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope

Cornerstone: Mitigating Systems

The inspectors sampled licensee submitted data for the performance indicator listed below. The inspectors looked at the period from second quarter 2004 through the first quarter 2006. To verify the accuracy of the data reported during that period, performance indicator definitions and guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," Revision 4, were used to verify the basis in reporting for each data element.

- Safety System Functional Failures

The inspectors reviewed operator logs, corrective action program documentation, and licensee event reports issued during the referenced time frame to determine the accuracy of the performance indicator.

The inspectors completed one sample.

Cornerstone: Occupational Radiation Safety

- Occupational Exposure Control Effectiveness

The inspector reviewed licensee documents from October 1, 2005, through March 31, 2006. The review included corrective action documentation that identified occurrences in locked high radiation areas (as defined in the licensee's Technical Specification), very high radiation areas (as defined in 10 CFR 20.1003), and unplanned personnel exposures (as defined in NEI 99-02). Additional records reviewed included as low as reasonably achievable (ALARA) records and whole body counts of selected individual exposures. The inspector interviewed licensee personnel that were accountable for collecting and evaluating the performance indicator (PI) data. In addition, the inspector toured plant areas to verify that high radiation, locked high radiation, and very high radiation areas were properly controlled. PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," Revision 3, were used to verify the basis in reporting for each data element.

The inspector completed one sample.

Cornerstone: Public Radiation Safety

- Radiological Effluent Technical Specification/Offsite Dose Calculation Manual
Radiological Effluent Occurrences

The inspector reviewed licensee documents from October 1, 2005, through March 31, 2006. Licensee records reviewed included corrective action documentation that identified occurrences for liquid or gaseous effluent releases that exceeded PI thresholds and those reported to the NRC. The inspector interviewed licensee personnel that were accountable for collecting and evaluating the PI data. PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," Revision 3, were used to verify the basis in reporting for each data element.

The inspector completed one sample.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

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

Section 4OA5.1 documented a problem identification crosscutting aspect associated with missed opportunities by Energy Northwest to promptly identify a non-conforming condition associated with the low pressure core spray system.

.2 Review of Identification and Resolution of Problems Associated with Radiation Protection

a. Inspection Scope

The inspector evaluated the effectiveness of the licensee's problem identification and resolution process with respect to the following inspection areas:

- Access Control to Radiologically Significant Areas (Section 2OS1)
- ALARA Planning and Controls (Section 2OS2)

b. Findings

No findings of significance were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors completed a 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 a more safety significant issues. The inspectors' review covered a six month period from December 2005 through May 2006.

The inspectors completed one sample.

b. Findings and Observations

No significant findings or observations were identified. During the review the inspectors noted that Energy Northwest identified two potential adverse trends which were documented in the corrective action program:

- PER 206-0283 documented an adverse trend associated with recent examples of equipment not being protected per procedure OI-49, "Protected Systems," Revision 5, when required to implement identified risk management actions for planned work activities.
- PER 206-0166 documented a potential adverse trend in the reliability of the rod drive control system. Several condition reports had been documented associated with component reliability and failures which resulted in increased challenges to control room staff.

The inspectors did not identify any other adverse trends.

4OA5 Other Activities

.1 (Closed) URI 05000397/2006002-02: Potential Excessive Vibration of Low Pressure Core Spray Instrument Line

Introduction: The inspectors identified a noncited violation of 10 CFR 50, Appendix B, Criterion III, "Design Control," because vibration stress levels of instrument tubing associated with the low pressure core spray discharge flow element (LPCS-FE-2) exceeded ASME endurance stress limits during operation of the low pressure core spray pump. A cross-cutting aspect associated with problem identification and resolution was identified when Energy Northwest failed to take vibration data at the earliest opportunity when the low pressure core spray pump, LPCS-P-1, was next operated. This resulted in a delay in Energy Northwest determining that the instrument tubing vibration stress levels exceeded ASME code endurance limits.

Description: On October 6, 2005, during a low pressure core spray surveillance test, the inspectors observed instrument tubing, downstream of LPCS-V-708 on the discharge header of the low pressure core spray pump, LPCS-P-1, vibrating while the system was in operation. The inspectors were concerned that the instrument tubing was vibrating excessively and could result in a failure of the tubing. This instrument tubing was associated with LCPS-FE-2. A failure of the tubing would result in the low pressure core spray minimum flow control valve failing closed which could result in failure of LPCS-P-1 during low flow conditions. Energy Northwest documented the inspectors' observation in CR 2-05-07910. Energy Northwest wrote Work Request 29050247 to take vibration measurements of the instrument tubing. A routine operability test of LPCS-P-1 was subsequently performed on December 29, 2005. The inspectors noted that vibration

analysis data was not collected by Energy Northwest during the test. The inspectors were concerned that Energy Northwest had missed an opportunity to collect data to ensure that the vibration levels observed on the instrument line would not adversely affect system operability. The inspectors discussed the concern with Energy Northwest management. Subsequently, Work order 01107283 was performed on March 22, 2006, and vibration data was collected on the instrument tubing. Results from the data were inconclusive.

On May 17, 2006, Energy Northwest collected additional vibration data on the instrument tubing during operation of LPCS-P-1. The data collected indicated that the steady state vibration stress levels for the small bore carbon steel pipe associated with LPCS-FE-2 and the associated stainless steel instrument tubing downstream of LPCS-V-708 were 12,951 psi and 12,421 psi respectively. Energy Northwest concluded that these stress levels exceeded plant administrative screening vibration stress level criteria of 10,000 psi. Energy Northwest assessed the vibration data in accordance with the methods prescribed in ASME, OM3, "Requirements for Preoperational and Initial Start-up Vibration Testing of Nuclear Power Plant Piping Systems" and concluded that the ASME code allowable stress limits of 10,800 psi for stainless steel and 10,000 psi for carbon steel were also exceeded. However, Energy Northwest determined that although the stainless steel instrument tubing met the specified ASME endurance limit of 13,500 psi, the carbon steel instrument pipe exceeded its associated endurance limit of 12,500 psi. Energy Northwest documented the evaluation in PER 206-0259 and concluded that although the endurance limit was exceeded the carbon steel small bore pipe, although non-conforming, was operable based on no visual indications and the inherent margin considered in the ASME endurance limit established for carbon steel material.

During resolution of the issue, Energy Northwest determined that in 1992 that the affected instrument tubing and LPCS-FE-2 taps were relocated per Basic Design Change 92-0131-0, "LPCS-FE-2 Instrument Lines." This design change relocated the instrument tubing connection to LPCS-FE-2 from a vertical connection to a horizontal connection due to previous concerns with air entrapment in the instrument line during operation of LPCS-P-1. Energy Northwest concluded that the design change failed to ensure that post modification testing was performed to ensure that the relocated instrument tubing and LPCS-FE-2 tap vibration induced stresses met ASME code requirements. The inspectors reviewed Energy Northwest's assessment and concluded that the design change was inadequate in that it failed to ensure post modification vibration stresses were adequate.

Analysis: The performance deficiency associated with this finding was Energy Northwest's failure to implement adequate post modification testing following the implementation of Basic Design Change PRM 91-0131-0A. This resulted in Energy Northwest failing to identify that LPCS-FE-2 instrument tap to LPCS-V-708 induced vibration stress levels exceeded the code allowable endurance stress limits. This NRC identified finding was determined to be more than minor in accordance with Manual Chapter 0612, Appendix B, because it was associated with the design control attribute of the mitigating systems cornerstone and it affected the cornerstone objective of ensuring the availability, reliability, and capability of a mitigating system to respond to an initiating event to prevent undesirable consequences. Utilizing MC 0609, Appendix A,

“Determining the Significance of Reactor Inspection Findings for At-Power Situations,” the inspectors performed a phase 1 significance determination screening. The finding was determined to be of very low safety significance (Green) because the design change deficiency did not result in a loss of operability per “Part 9900 Technical Guidance, Operability Determination Process for Operability and Functional Assessment”. The cause of the finding was related to the crosscutting aspect of problem identification and resolution because of Energy Northwest’s failure to assess and analyze the vibration levels exhibited by the instrument tubing connected to LPCS-V-708 at the earliest opportunity. Specifically, although the inspectors notified Energy Northwest of the vibrating line on October 6, 2005, Energy Northwest failed to examine the instrument tubing vibration on December 29, 2005, during the next scheduled operation of the LPCS system. It was not until May 16, 2006, that vibration analysis testing was performed which concluded that the level of vibration of the instrument tubing was unacceptable. Energy Northwest’s failure to evaluate the instrument tubing vibration levels at the next available opportunity on December 29, 2005, resulted in a delay in determining that the instrument tube vibration levels had exceeded ASME code limits. Additionally, Energy Northwest identified during an evaluation of PER 206-0259 that previously system engineers had noted the instrument line vibrating during walkdowns of the system but did not consider the magnitude of vibration to be an operability or qualification concern. This represented an additional missed opportunity for Energy Northwest to identify the issue at an earlier date.

Enforcement: 10 CFR 50, Appendix B, Criterion III, “Design Control,” required in part that design control measures shall be provided for verifying or checking the adequacy of design. Contrary to this requirement, since the implementation of Basic Design Change PMR 92-0131-0A, on December 8, 1992, Energy Northwest failed to ensure the adequacy of PMR 92-0131-0A by failing to conduct adequate post modification testing to ensure that instrument tubing vibration associated with LPCS-V-708 and LPCS-FE-2 was acceptable per ANSI/ASME OM-3 requirements. Because this finding was of very low safety significance and was entered into the licensee’s corrective action program as PER 206-0259, this violation is being treated as an NCV, consistent with Section VI.A of the Enforcement Policy (NCV 05000397/2006003-01, Inadequate Design Modification of LPCS). Energy Northwest plans to correct this condition adverse to quality with a modification which will be implemented in R-18 via work request 01119522 and Action Request 12702.

.2 Temporary Instruction (TI) 2515/165: Operational Readiness of Offsite Power and Impact on Plant Risk

a. Inspection Scope

The objective of TI 2515/165, “Operational Readiness of Offsite Power and Impact on Plant Risk,” was to confirm, through inspections and interviews, the operational readiness of offsite power systems in accordance with NRC requirements. On March 7 through 15, 2006, the inspectors reviewed licensee procedures and discussed the attributes identified in TI 2515/165 with licensee personnel. In accordance with the requirements of TI 2515/165, the inspectors evaluated the licensee’s operating procedures used to assure the functionality/operability of the offsite power system, as well as, the risk

assessment, emergent work, and/or grid reliability procedures used to assess the operability and readiness of the offsite power system.

The information gathered while completing this Temporary Instruction was forwarded to the Office of Nuclear Reactor Regulation for further review and evaluation.

b. Findings

No findings of significance were identified.

.3 Review of Energy Northwest's Response to Substantive Crosscutting Issue in Problem Identification and Resolution

In the annual assessment letter, dated March 2, 2006, from the NRC to Energy Northwest, the NRC documented a substantive crosscutting issue in problem identification and resolution. Problem resolution issues with a common performance characteristic of inadequate problem analysis and extent of condition evaluations contributed to four Green findings associated with mitigating systems during 2005. Energy Northwest documented the concern in PER 206-0122. The inspectors reviewed Energy Northwest's completed and planned corrective actions and did not identify any findings associated with the adequacy of the corrective actions. Corrective actions included but were not limited to: (1) add extent of condition training to the training planned for NRC Regulatory Issues Summary (RIS) 2005-020; (2) enhance extent of condition information in apparent and root cause initial and refresher qualification training; (3) revise procedure SWP-CAP-01, "Corrective Action Program," to provide extent of condition information, if known, at the time of initiation of a condition report and to reflect new guidance in RIS 2005-020; and (4) revise procedure PPM 1.3.66, "Operability Determination," to incorporate guidance provided in RIS 2005-020 and to incorporate a final operability template to be used to support the operability determination process.

4OA6 Meetings, Including Exit

On April 4, 2006, the inspector conducted a telephonic exit meeting to present the inspection results to Mr. D. Holmes, Emergency Planner, who acknowledged the findings. The inspector confirmed that proprietary information was not provided or examined during the inspection.

On April 27, 2006, the inspector presented the inspection results to Mr. Victor Parish, Chief Executive Officer, and other members of his staff who acknowledged the findings. The inspector confirmed that proprietary information was not provided or examined during the inspection.

On June 29, 2006, the resident inspectors presented the inspection results to Mr. W. Oxenford, Vice President - Technical Services, and other members of his staff who acknowledged the findings. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

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
M. Brandon, Licensing Engineer
P. Campbell, Technical Specialist, Radiation Protection
D. Coleman, Manager, Performance Assessment and Regulatory Programs
G. Cullen, Licensing Supervisor, Regulatory Programs
D. Dinger, Planning Supervisor, Radiation Protection
D. Holmes, Emergency Planner
R. Jorgensen, Emergency Planner
A. Khanpour, General Manager, Engineering
W. LaFramboise, Manager, Technical Engineering
T. Lynch, Plant General Manager
W. Oxenford, Vice President, Technical Services
J. Parrish, Chief Executive Officer
T. Powell, Emergency Planner
M. Reis, Supervisor, Emergency Preparedness
F. Schill, Engineer, Licensing
R. Torres, Manager, Quality Assurance
C. Whitcomb, Vice President, Organizational Performance and Staffing

NRC Personnel

R. Cohen, Resident Inspector
Z. Dunham, Senior Resident Inspector

ITEMS OPENED AND CLOSED

Items Opened, Closed, and Discussed During this Inspection

Opened

None.

Opened and Closed

05000397/2006003-01	NCV	Inadequate Design Modification of LPCS (Section 4OA5.1)
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Closed

05000397/2006002-02	URI	Potential Excessive Vibration of Low Pressure Core Spray Instrument Line (Section 4OA5.1)
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Discussed

None.

PARTIAL LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignment

Drawing M521-2; Flow Diagram - Residual Heat Removal System Loop B; Revision 100

Drawing M524-1; Flow Diagram Standby Service Water System; Revision 106

Drawing M524-1; Containment Instrument Air System; Revision 49

Section 1R05: Fire Protection

Columbia Generating Station Pre-Fire Plan, Revision 2

Section 1R12: Maintenance Effectiveness

PER 206-0342

WO 01115627

PER 206-0096

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

CR 2-06-04745

PER 206-0283

Night Order 742

Night Order 750

PER 206-0305

LCO Log 10060 10189

Regulatory Guide 1.9; Selection, Design, Qualification, and Testing of Emergency Diesel Generator Units Used as Class 1E Onsite Electric Power Systems at Nuclear Power Plants; Revision 3

10 CFR 50.59 Evaluation; 5059-05-0011; Revision 1

Section 1R19: Postmaintenance Testing

WO 01107064

ICP-RFW-A301; Reactor Feedwater Flow - CC; Revision 5

WO 01090907

WO 01108711

Section 1R22: Surveillance Testing

ISP-LPCS/RHR-Q901; RHR A & LPCS Discharge Pressure - ADA Trip System A Permissive (By K10A Relay) - CFT/CC; Revision 7

OSP-RCIC/IST-Q701; RCIC Operability Test; Revision 32

Section 2OS2: ALARA Planning and Controls (71121.02)

Procedures

GEN-RPP-01 ALARA Program Description, Revision 5

GEN-RPP-02 ALARA Planning and Radiation Work Permits, Revision 12

GEN-RPP-04 Entry Into, Conduct in & Exit From Radiologically Controlled Areas, Revision 12

GEN-RPP-06 Dosimetry Program Description, Revision 3

GEN-RPP-13 ALARA Committee, Revision 4

GEN-RPP-14 Control of Temporary Shielding, Revision 4

GIH-4.1.20 Continuous Improvement Coordinators, Revision 0

SWP-CAR-07 Corrective Action Program, Revision 4

SWP-RPP-01 Radiation Protection Program, Revision 5

11.2.7.1 Area Posting, Revision 23

11.2.7.3 High, High High, and, Very High Radiation Area Controls, Revision 12

SOP-RHR-STBY, Placing RHR in Standby Status, Revision 1

WO 01097005, 01117817

ABN-ELEC-GRID, degraded Off Site Power, Revision 1

1.5.14 At Power High Risk Evolution (HRE) in the ORAM-Sentinel Program, Revision 15

1.3.76 Integrated Risk Management; Revision 5

OI-49 Protected Systems; Revision 4

WCI-4, Online Work Control Process; Revision 10

SOP-DG4-START, Diesel Generator 4 Start, Revision 0

SOP-DG4-SHUTDOWN, Diesel Generator 4 Shutdown, Revision 0

Corrective Action Documents

CR# 2-05-00110, CR# 2-05-04252, CR# 2-05-04436, CR# 2-05-05568, CR# 2-05-06046,
CR# 2-05-06613, CR# 2-05-06637, CR# 2-05-07075, CR# 2-05-08764, CR# 2-05-08798,
CR# 2-05-08864, CR# 2-05-09265, CR# 2-05-09674, CR# 2-06-00028, CR# 2-06-00047,
CR# 2-06-00063, CR# 2-06-00135, CR# 2-06-00256, CR# 2-06-00365, CR# 2-06-01085,
CR# 2-06-02697, CR# 2-06-02858, CR# 2-06-03113, CR# 2-05-07910, CR# 2-06-03692,
CR# 2-06-03170, CR# 2-06-02790, CR# 2-06-03706, CR# 2-06-02871, CR# 2-06-02556
CR# 2-06-03722, CR# 2-06-03727, CR# 2-06-04634, CR# 2-06-06411, CR# 2-06-0661,
CR# 2-06-02172, CR# 2-06-00243, CR# 2-06-03082, CR# 2-06-02713, CR# 2-06-02340
CR# 2-05-00728
PER# 206-0259, PER# 206-0177, PER# 205-0078

Audits and Self-Assessments

AU-RP-05: Quality Services Audit Report, December 21, 2005
Quality's Integrated Performance Assessment Report (July 1, 2003, through October 31, 2003)
SA-2005-0043: Assessment of High Radiation Controls (August 2005)
SA-2005-0073: 2005 Annual Review of Radiation Protection Program (November 2005)
SA-2005-0075: R-17 ALARA Performance (February 2006)
Continuous Monitoring Report-SR 05-04 (August 5, 2005)

ALARA Work Packages: Radiation Work Permits

30001238, 30001245, 30001300, 30001491, 30001495, 30001565

Miscellaneous Documents

CR Summary Report - Radiological Services, January - March 2006
Columbia Generating Station Trend Report: March 2006
Radiation Protection Continuous Improvement Plan
Cross-Discipline Review Team Meeting Minutes - 2005
Senior ALARA Committee Meeting Minutes (September 2005 - March 2006)
Basic Design Document 92-0131-0, December 8, 1992
Fire Brigade Drill 2006; Backshift Unannounced Drill; Crew D; June, 12, 2006
CCER No. C94-0271, Component CER Summary Sheet, Revision 0
CCER No. C90-0025, Component CER Summary Sheet, Revision 4