March 19, 2007

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

SUBJECT: COLUMBIA GENERATING STATION - RELIEF REQUEST NO. 3ISI-05 FOR THE THIRD 10-YEAR INSERVICE INSPECTION INTERVAL RE: HOLD TIME PRIOR TO VT-2 EXAMINATION OF STANDBY LIQUID CONTROL SYSTEM (TAC NO. MD1168)

Dear Mr. Parrish:

By letter dated December 15, 2005, as supplemented by letter dated April 27, 2006, Energy Northwest (the licensee) submitted requests for relief 3ISI-01 and 3ISI-03 through 3ISI-07 from certain requirements of the American Society of Mechanical Engineers (ASME) *Boiler and Pressure Vessel Code* (Code), Section XI, for the third 10-year inservice inspection (ISI) interval at Columbia Generating Station (CGS). The ASME Code, Section XI, of record for CGS for the third 10-year ISI interval is the 2001 Edition with 2003 Addenda. The third 10-year ISI interval at CGS began on December 13, 2005, and ends on December 12, 2015.

Based on the information provided in the submittal, the U.S. Nuclear Regulatory Commission (NRC) staff concluded that relief request 3ISI-05 was acceptable. Relief requests 3ISI-01, 3ISI-03, 3ISI-04, 3ISI-06, and 3ISI-07 will be addressed by separate NRC correspondence.

For relief request 3ISI-05, relief is granted for the third 10-year ISI interval pursuant to paragraph 50.55a(g)(6)(i) of Title 10 of the *Code of Federal Regulations* based on the determination that it is impractical for the licensee to comply with the specified ASME Code requirement. The licensee's proposed alternative inspection provides reasonable assurance of structural integrity. The granting of this relief is authorized by law and will not endanger life or property or the common defense and security, and is otherwise in the public interest, giving due consideration to the burden upon the licensee that could result if the Code requirement was imposed on the facility.

The above relief request is applicable for the third 10-year ISI interval at CGS. All other requirements of the ASME Code, Section XI, for which relief has not been specifically requested remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

The detailed results of the NRC staff's review are provided in the enclosed safety evaluation. If you have any questions concerning this matter, please call Mr. F. Lyon of my staff at 301-415-2296.

Sincerely,

/RA/

David Terao, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-397

Enclosure: Safety Evaluation

cc w/encl: See next page

The detailed results of the NRC staff's review are provided in the enclosed safety evaluation. If you have any questions concerning this matter, please call Mr. F. Lyon of my staff at 301-415-2296.

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Columbia Generating Station

cc:
Mr. W. Scott Oxenford (Mail Drop PE04)
Vice President, Technical Services
Energy Northwest
P.O. Box 968
Richland, WA 99352-0968

Mr. Albert E. Mouncer (Mail Drop PE01)
Vice President, Corporate Services/
General Counsel/CFO
Energy Northwest
P.O. Box 968
Richland, WA 99352-0968

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

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

Mr. Gregory V. Cullen (Mail Drop PE20)
Supervisor, Licensing
Energy Northwest
P.O. Box 968
Richland, WA 99352-0968

Regional Administrator, Region IV
U.S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-4005

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

Senior Resident Inspector
U.S. Nuclear Regulatory Commission
P.O. Box 69
Richland, WA 99352-0069

Mr. Dale K. Atkinson (Mail Drop PE08)
Vice President, Nuclear Generation
Energy Northwest
P.O. Box 968
Richland, WA 99352-0968

Mr. William A. Horin, Esq.
Winston & Strawn
1700 K Street, N.W.
Washington, DC 20006-3817

Mr. Matt Steuerwalt
Executive Policy Division
Office of the Governor
P.O. Box 43113
Olympia, WA 98504-3113

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

Technical Services Branch Chief
FEMA Region X
130 228th Street, S.W.
Bothell, WA 98201-9796

Ms. Cheryl M. Whitcomb (Mail Drop PE03)
Vice President, Organizational
Performance & Staffing/CKO
Energy Northwest
P.O. Box 968
Richland, WA 99352-0968

Assistant Director
Nuclear Safety and Energy Siting Division
Oregon Department of Energy
625 Marion Street, NE
Salem, OR 97301-3742

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

THIRD 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM

REQUEST FOR RELIEF NO. 3ISI-05

ENERGY NORTHWEST

COLUMBIA GENERATING STATION

DOCKET NO. 50-397

1.0 INTRODUCTION

By letter dated December 15, 2005 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML053620391), as supplemented by letter dated April 27, 2006 (ADAMS Accession No. ML061250154), Energy Northwest (the licensee) submitted relief requests pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(g)(6)(i) associated with its third 10-year interval inservice inspection (ISI) program at Columbia Generating Station (CGS). The third 10-year ISI interval began on December 13, 2005, and is scheduled to end on December 12, 2015. The American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code), Section XI, 2001 Edition with 2003 Addenda is the ISI code of record for the CGS third 10-year interval ISI program.

The licensee submitted relief request 3ISI-05 based on impracticality, which would exist if the licensee had to maintain a 10-minute hold time during the pressure test of a small segment of the standby liquid control (SLC) system prior to performing visual (VT-2) examination, because the hold time would increase the potential of damage to relief valves SLC-RV-29A and SLC-RV-29B. The ASME Code, Section XI, IWA-5213(a)(2) requires a hold time of 10 minutes prior to performing the Code-required VT-2 examination. The licensee stated that the same relief request was approved by the Nuclear Regulatory Commission (NRC) for the second 10-year interval ISI program (ADAMS Accession No. ML050870348, dated May 17, 2005).

2.0 REGULATORY EVALUATION

Paragraph 50.55a(g) of 10 CFR specifies that the ISI of nuclear power plant components shall be performed in accordance with the requirements of the ASME Code, Section XI, except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). Paragraph 50.55a(a)(3) of 10 CFR states that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if (i) the proposed alternatives would provide an acceptable level of quality and safety or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Paragraph 50.55a(g)(5)(iii) of 10 CFR states that if the licensee has determined that conformance with certain ASME Code requirements is

impractical for its facility, the licensee shall notify the Commission and submit, as specified in Section 50.4, information to support the determinations.

The information provided by the licensee in support of its request has been evaluated by the NRC staff and the bases for disposition are documented below.

3.0 LICENSEE'S EVALUATION (AS PROVIDED)

3.1 ASME Code Components Affected

The components affected by this request are in Examination Category C-H, "All Pressure Retaining Components," Item Numbers C7.10, for the standby liquid control (SLC) system. The portion of the ASME [Code,] Section III Code Class 2 SLC system included in this request is from the SLC pumps 1A and 1B to valves SLC-V-3A and SLC-V-3B and to relief valves SLC-RV-29A and SLC-RV-29B.

The SLC system is designed to perform a once-through injection of boron solution into the reactor pressure vessel (RPV) to bring reactivity to zero in the event the control rods are unable to insert. To confirm the operability of the system, a functional test is performed on a quarterly basis by circulating demineralized water within the system. The system is pressurized to approximately 1240 psig [pounds per square inch gauge] during this test.

The SLC system consists of two loops, A and B. The scope of this request for each loop consists of approximately 5-1/2 feet of 1-inch and 1-1/2-inch schedule 80S SA 312 TP304 pipe, one 1-inch relief valve, one 1-1/2-inch check valve, and one 1-1/2-inch gate valve.

The components are not insulated. [The] [d]esign conditions [for the affected piping are]:

- Downstream of SLC-P-1A, 1B 1400 psig
- Upstream of SLC-P-1A, 1B 150 psig

3.2 Applicable Code Requirement

The pressure test requires a hold time of 10 minutes in accordance with IWA-5213(a)(2) prior to performing the VT-2 examinations.

The ASME [Code,] Section XI hydrostatic pressure test of the SLC pump discharge piping is performed at Columbia [CGS] by two methods. The system downstream of valves SLC-V-3A and SLC-V-3B uses a hydro pump to pressurize the system. After a [10]-minute hold time the VT-2 visual examination is performed. Gate valves SLC-V-3A and SLC-V-3B are used to isolate the portion of the system upstream of the pumps (design pressure of 150 psig) from the higher downstream pressure (design pressure 1400 psig). The remaining

portion of the discharge piping from the pumps to valves SLC-V-3A and SLC-V-3B is pressurized in accordance with IWA-5213(a)(2) during the quarterly SLC functional test and a VT-2 examination is performed. It is not possible to pressurize this portion of the system with the hydro pump without disconnecting the pumps from the system and installing blind flanges with fittings to connect the hydro pump. This test would involve major maintenance on the system and is not considered prudent to perform for this visual examination.

3.3 Impracticality of Compliance

This 10 CFR 50.55a request is to eliminate the 10-minute hold time requirement of IWA-5213(a)(2) for the small segment of the SLC system that cannot be pressurized using the hydro pump.

The [C]ode requirement for a 10-minute hold time prior to performing the VT-2 visual examination is impractical in this case, because the hold time increases the potential for damage to relief valves SLC-RV-29A and SLC-RV-29B. The section of the SLC system subject to this pressure test contains a small volume of fluid, which is circulated through 1-inch, 1-1/2-inch, 3-inch, and 4-inch NPS [nominal pipe size] pipe and a small test tank (210 gallon capacity). The pump suction pressure is approximately 50 psig and the pump discharge pressure is approximately 1240 psig. The system test fluid (demineralized water) rapidly heats up, causing chattering of the system relief valves and erratic pump discharge.

Relief valves SLC-RC-29A and SLC-RC-29B have experienced frequent set point failures. Investigation into the frequent failures of relief valves SLC-RV-29A and SLC-RV-29B to meet their set points concluded that excess operation of the SLC system during the quarterly functional test leads to relief valve chatter, which damages the sealing surfaces. Damaged sealing surfaces prevent the relief valves from meeting their set point requirement. Procedure enhancements made after this investigation have significantly reduced the valves' failure rate. These enhancements include limiting the time of operation during the system functional test. To reduce the likelihood of damage to the relief valves, the system is now normally operated for 3 to 5 minutes during the functional test. If the functional test cannot be completed in this time frame, the system is allowed to cool and restarted to continue the test. Prior to the procedure enhancements, SLC-RV-29 failed [two] of its [five] tests in a [5]-year period (1990-1995). During the same [5]-year period, SLC-RV-29B failed in [four] of its [five] tests. Since making the procedure changes in 1996, there have been two failures of SLC-V-29A and one failure to SLC-RV-29B. The three failures occurred with the valves that were installed during the functional tests when the ASME [Code,] Section XI first and second inspection period VT-2 examinations [were] performed. For these examinations, the system was in operation for greater than 10 minutes due to the 10-minute hold time requirement. Running the system during the functional test for the length of time to meet the 10-minute hold time increases the potential to damage the relief valve sealing surface resulting in set point failure.

3.4 Burden Caused by Compliance

The burden caused by compliance to the 10-minute hold time is the higher potential of the relief valves being damaged so that they will not meet their functional requirements (set point). This results in operating with incorrect set points and requiring repairs to the valves.

3.5 Proposed Alternative and Basis for Use

The proposed alternative to the 10-minute hold time required by IWA-5213(a)(2), "Test Condition Holding Time," is to perform the VT-2 [examination] during the 3-5 minute operating time without implementing a hold time for this small section of piping. In addition, the VT-2 examiner will continually observe this section of piping during the entire time the pump is operating (approximately 3-5 minutes).

The system pressure rapidly increases to the 1240 psig operating pressure when the pump starts. The high VT-2 test pressure (1240 psig) should reveal any through wall discontinuities rapidly thus providing reasonable assurance of structural integrity without implementing the 10-minute hold time required by IWA-5213(a)(2).

4.0 NRC STAFF EVALUATION

The ASME Code, Section XI, IWA-5213(a)(2) requires a hold time of 10 minutes prior to performing the VT-2 examinations. The licensee stated that the pressure test of the SLC pump discharge piping is performed by employing two methods. Downstream of valves SLC-V-3A and SLC-V-3B, the licensee uses a hydro pump to pressurize the system. After a 10-minute hold time, the VT-2 visual examination is performed. Gate valves SLC-V-3A and SLC-V-3B are used to isolate the portion of the system upstream of the pumps (design pressure of 150 psig) from the higher downstream pressure (design pressure 1400 psig). The remaining portion of the discharge piping from the pumps to valves SLC-V-3A and SLC-V-3B is pressurized in accordance with IWA-5213(a)(2) during the quarterly SLC functional test and a VT-2 examination is performed. The licensee also stated that it is not possible to pressurize this portion of the system using the hydro pump without disconnecting the pumps from the system and installing blind flanges with fittings to connect the hydro pump.

The licensee also stated that the requirement for a 10-minute hold time prior to performing the VT-2 visual examination is impracticable for approximately 5-1/2 feet of 1-inch and 1-1/2-inch schedule 80S SA 312 TP304 pipe, one 1-inch relief valve, one 1-1/2-inch check valve, and one 1-1/2-inch gate valve, because the 10-minute hold time would increase the potential of damage to relief valves SLC-RV-29A and SLC-RV-29B. The licensee is proposing to perform the VT-2 examination during the 3-5 minute pump operating time without implementing a hold time for this small section of piping. The NRC staff finds the licensee's proposed alternative acceptable because the system pressure would rapidly increase to the 1240 psig operating pressure when the pump starts. Performing VT-2 examination on the piping at this test pressure (1240 psig) would reveal any through wall discontinuities and, thus, reasonable assurance of structural integrity and safety is assured without implementing the 10-minute hold time required by ASME Code, Section XI, IWA-5213(a)(2).

Therefore, compliance with the 10-minute hold time is impractical because it would create a higher potential for the relief valves to be damaged and thus not meet their functional set point requirements. The licensee's proposal to perform VT-2 examination of the small section of piping at 1240 psig test pressure for 3-5 minutes assures that significant degradation, if occurring, will be detected. Therefore, it is concluded that reasonable assurance of structural integrity will be provided.

5.0 CONCLUSION

The NRC staff has reviewed the information provided by the licensee in support of relief request 3ISI-05 for the third 10-year ISI interval at CGS. Based on this evaluation, the staff concludes that imposing compliance to the 10-minute hold time is impractical, because it would create a higher potential for the relief valves to be damaged and thus not meet their functional set point requirements. The licensee's proposal to perform VT-2 examination of the small section of piping at the 1240 psig test pressure for 3-5 minutes assures that significant degradation, if occurring, will be detected and provides reasonable assurance of structural integrity. Therefore, relief request 3ISI-05 is granted pursuant to 10 CFR 50.55a(g)(6)(i). Granting of this relief is authorized by law and will not endanger life or property or common defense and security, and is otherwise in the public interest, giving due consideration to the burden upon the licensee that could result if the ASME Code requirements were imposed on the facility.

All other requirements of the ASME Code, Section XI, for which relief has not been specifically requested remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

Principal Contributor: G. Georgiev

Date: March 19, 2007