ENERGY NORTHWEST

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May 26, 2011
GO2-11-098

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

Subject: **COLUMBIA GENERATING STATION, DOCKET NO. 50-397**
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
LICENSE RENEWAL APPLICATION

References:
1) Letter, GO2-10-11, dated January 19, 2010, WS Oxenford (Energy Northwest) to NRC, "License Renewal Application"

2) Letter dated March 15, 2011, NRC to Energy Northwest, "Summary of Telephone Conference Call Held on March 8, 2011, Between the US Nuclear Regulatory Commission and Energy Northwest, Concerning the Responses to the Request for Additional Information Pertaining to the Columbia Generating Station, License Renewal Application (ML110690997)"

3) Letter dated April 21, 2011, Energy Northwest to NRC, "Columbia Generating Station, Docket No.50-397 Response to Request for Additional Information License Renewal Application (GO2-11-083)"

Dear Sir or Madam:

By Reference 1, Energy Northwest requested the renewal of the Columbia Generating Station (Columbia) operating license. A conference call was conducted with the NRC on March 8, 2011(Reference 2) which specifically addressed License Renewal Application (LRA) Table 3.1.2-3, row numbers 182 and 183 for Cast Austenitic Stainless Steel (CASS) valves less than 4 inches in the In-Service Inspection (ISI) program at Columbia. However, during the review of documentation for preparing the response to the NRC, it was determined that there are no American Society of Mechanical Engineers (ASME) III Class 1 CASS valves less than 4 inches installed at Columbia. Therefore, the LRA was amended (Amendment 31 via Reference 3) to remove row numbers 182 and 183.

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There are other rows in LRA Table 3.1.2-3 (rows 128 through 135) that address CASS valves less than 4 inches. The response in Reference 3 was focused on rows 182 and 183 only when, in fact, it should have addressed all of the ASME III Class I CASS valves less than 4 inches.

The LRA has been amended to remove all references to ASME III Class 1 CASS valves less than 4 inches. Amendment 35 is provided in the Enclosure. No new commitments are included in this letter.

If you have any questions or require additional information, please contact Abbas Mostala at (509) 377-4197.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the date of this letter.

Respectfully,

for [Daljit Mand]
DA Swank
Acting Vice President, Engineering

Enclosure: License Renewal Application Amendment 35

cc: NRC Region IV Administrator
NRC NRR Project Manager
NRC Senior Resident Inspector/988C
EFSEC Manager
RN Sherman – BPA/1399
WA Horin – Winston & Strawn
AD Cunanan - NRC NRR (w/a)
BE Holian - NRC NRR
RR Cowley – WDOH

LICENSE RENEWAL APPLICATION AMENDENT 35

Section Number	Page Number	RAI Number
Table 3.1.1 Line Item 3.1.1-55	3.1-24	Supplement to RAI 3.1.2.3-01
Table 3.1.2-3 Line Items 128-135	3.1-109	Supplement to RAI 3.1.2.3-01
A.1.2.49	A-24a	Supplement to RAI 3.1.2.3-01
Table B-1 Line Item XI.M12	B-12	Supplement to RAI 3.1.2.3-01
B.2.49	B-187a	Supplement to RAI 3.1.2.3-01

Table 3.1.1 Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of NUREG-1801

Item Number	Component/Commodity	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.1.1-54	Copper alloy piping, piping components, and piping elements exposed to closed cycle cooling water	Loss of material due to pitting, crevice, and galvanic corrosion	Closed-Cycle Cooling Water System	No	Not applicable. The reactor coolant pressure boundary does not have any copper alloy components.
3.1.1-55	Cast austenitic stainless steel Class 1 pump casings, and valve bodies and bonnets exposed to reactor coolant >250 °C (>482 °F)	Loss of fracture toughness due to thermal aging embrittlement	Inservice inspection (IWB, IWC, and IWD). Thermal aging susceptibility screening is not necessary, inservice inspection requirements are sufficient for managing these aging effects. ASME Code Case N-481 also provides an alternative for pump casings.	No	Consistent with NUREG-1801. Loss of fracture toughness for Class 1 pump casings and valve bodies is managed by the Inservice Inspection (ISI) Program. ~~Reduction of fracture toughness for CASS valve bodies less than 4 inches is included in this item and managed by the Small Bore Class 1 Piping Inspection.~~ Program
3.1.1-56	Copper alloy >15% Zn piping, piping components, and piping elements exposed to closed cycle cooling water	Loss of material due to selective leaching	Selective Leaching of Materials	No	Not applicable. The reactor coolant pressure boundary does not include any copper alloy >15% Zn components.

Table 3.1.2-3 Aging Management Review Results – Reactor Coolant Pressure Boundary

Row No.	Component Type	Intended Function(s)	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801 Volume 2 Item	Table 1 Item	Notes
127	Tubing	Pressure boundary	Stainless Steel	Air-Indoor Uncontrolled (External)	None	None	IV.E-2	3.1.1-86	A
~~128~~	~~Valve Bodies < 4 inches~~	~~Pressure boundary~~	~~CASS~~	~~Reactor Coolant (Internal)~~	~~Cracking - Fatigue~~	~~TLAA~~	~~IV.C1-15~~	~~3.1.1-03~~	~~A~~
~~129~~	~~Valve Bodies < 4 inches~~	~~Pressure boundary~~	~~CASS~~	~~Reactor Coolant (Internal)~~	~~Cracking - Flaw Growth~~	~~Small Bore Class 1 Piping Inspection~~	~~N/A~~	~~N/A~~	~~H~~
~~130~~	~~Valve Bodies < 4 inches~~	~~Pressure boundary~~	~~CASS~~	~~Reactor Coolant (Internal)~~	~~Cracking - SCC/IGA~~	~~BWR Water Chemistry~~	~~IV.C1-1~~	~~3.1.1-48~~	~~A~~
~~131~~	~~Valve Bodies < 4 inches~~	~~Pressure boundary~~	~~CASS~~	~~Reactor Coolant (Internal)~~	~~Cracking - SCC/IGA~~	~~Small Bore Class 1 Piping Inspection~~	~~IV.C1-1~~	~~3.1.1-48~~	~~A~~
~~132~~	~~Valve Bodies < 4 inches~~	~~Pressure boundary~~	~~CASS~~	~~Reactor Coolant (Internal)~~	~~Loss of Material~~	~~BWR Water Chemistry~~	~~IV.C1-14~~	~~3.1.1-15~~	~~A~~
~~133~~	~~Valve Bodies < 4 inches~~	~~Pressure boundary~~	~~CASS~~	~~Reactor Coolant (Internal)~~	~~Loss of Material~~	Chemistry Program ~~Effectiveness~~ Inspection	~~IV.C1-14~~	~~3.1.1-15~~	~~A~~
~~134~~	~~Valve Bodies < 4 inches~~	~~Pressure boundary~~	~~CASS~~	~~Reactor Coolant (Internal)~~	~~Reduction of Fracture~~ Toughness	~~Small Bore Class 1 Piping Inspection~~	~~IV.C1-3~~	~~3.1.1-55~~	~~E~~
~~135~~	~~Valve Bodies < 4 inches~~	~~Pressure boundary~~	~~CASS~~	~~Air-Indoor Uncontrolled (External)~~	~~None~~	~~None~~	~~IV.E-2~~	~~3.1.1-86~~	~~A~~

Program

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Program

Program

Insert A to Page A-24

The Small Bore Class 1 Piping Program will detect and characterize cracking of small bore Class 1 piping components that are exposed to reactor coolant. This periodic program will provide physical evidence as to whether, and to what extent, cracking due to SCC or to thermal or mechanical loading has occurred in small bore Class 1 piping components. ~~It will also verify, by inspections for cracking, that reduction of fracture toughness due to thermal embrittlement requires no additional aging management for small Class 1 cast austenitic stainless steel valve bodies.~~ The Small Bore Class 1 Piping Program will be a condition monitoring program with no actions to prevent or mitigate aging effects. The program will include visual and volumetric inspection of a representative sample of small bore Class 1 piping, including butt welds and socket welds.

The Small Bore Class 1 Piping Program is a new program that will be implemented prior to the period of extended operation. Inspection activities will start during the fourth 10-year inservice inspection interval and continue through the period of extended operation. The Small Bore Class 1 Piping Program will credit portions of the Inservice Inspection Program. The Small Bore Class 1 Piping Program will verify the effectiveness of the BWR Water Chemistry Program in mitigating cracking of small bore piping and piping components.

Insert B into page A-24

The Service Air System Inspection Program manages the effect of loss of material due to corrosion of steel piping and valve bodies exposed to an "air (internal)" (i.e., compressed air) environment within the license renewal boundary of the Service Air System.

The Service Air System Inspection Program is a new plant-specific program that will be implemented via baseline inspection of a sample population followed by opportunistic inspections when components are opened for periodic maintenance, repair, or surveillances when surfaces are made available for inspection. These inspections ensure that the existing environmental conditions are not causing material degradation that could result in a loss of component intended function during the period of extended operation. Inspection of a sample population will be conducted within the 10-year period prior to the period of extended operation and will serve as a baseline for future inspections.

Table B-1
Correlation of NUREG-1801 and Columbia Aging Management Programs
(continued)

Number	NUREG-1801 Program	Corresponding Columbia AMP
XI.M10	Boric Acid Corrosion	Not Applicable. Columbia is a BWR and does not use boric acid in any systems. The Standby Liquid Control System uses a sodium pentaborate solution (a mixture of boric acid and borax) that is not aggressive to metals.
XI.M11A	Nickel-Alloy Penetration Nozzles Welded to the Upper Reactor Vessel Closure Heads of Pressurized Water Reactors	Not Applicable. This program is applicable to PWR plants, Columbia is a BWR.
XI.M12	Thermal Aging Embrittlement of Cast Austenitic Stainless Steel (CASS)	Not credited for aging management. The Inservice Inspection (ISI) Program (See Section B.2.33) ~~or the Small Bore Class 1 Piping Inspection (See Section B.2.49)~~ is credited for pump casings and valve bodies.
XI.M13	Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (CASS)	Thermal Aging and Neutron Embrittlement of Cast Austenitic Stainless Steel (CASS) Program See Section B.2.52.
XI.M14	Loose Parts Monitoring	Not credited for aging management. The Columbia loose parts detection system has been deactivated and spared in-place, as described in FSAR Section 7.7.1.12.
XI.M15	Neutron Noise Monitoring	Not Applicable. This program is applicable to PWR plants, Columbia is a BWR.
XI.M16	PWR Vessel Internals	Not Applicable. This program is applicable to PWR plants, Columbia is a BWR.
XI.M17	Flow-Accelerated Corrosion	Flow-Accelerated Corrosion (FAC) Program See Section B.2.28.
XI.M18	Bolting Integrity	Bolting Integrity Program See Section B.2.4.
XI.M19	Steam Generator Tube Integrity	Not Applicable. Columbia is a BWR design that does not utilize steam generators.

Program

Insert A to Page B-187

The Small Bore Class 1 Piping Program will detect and characterize cracking of small bore, less that 4 inches nominal pipe size, Class 1 piping components (piping, fittings, branch connections, and valve bodies) that are exposed to reactor coolant. This periodic program will provide physical evidence as to whether, and to what extent, cracking due to SCC or to thermal or mechanical loading has occurred in small bore Class 1 piping components. ~~It will also verify, by inspections for cracking, that reduction of fracture toughness due to thermal embrittlement requires no additional aging management for small bore Class 1 cast austenitic stainless steel valve bodies.~~ The Small Bore Class 1 Piping Program will be a condition monitoring program with no actions to prevent or mitigate aging effects.

While the ASME Code does not require volumetric examination of Class 1 small bore piping, the Small Bore Class 1 Piping Program includes visual and volumetric inspection of a representative sample of small bore Class 1 piping components; the sample will include butt welds and socket welds, and will focus on the bounding or lead components most susceptible to aging due to time in service, severity of operating conditions, and lowest design margin. Actual inspection locations will be based on physical accessibility, exposure levels, NDE techniques, and locations identified in NRC Information Notice 97-46. Volumetric examinations (including destructive and/or nondestructive techniques) will be performed by qualified personnel following procedures that are consistent with Section XI of the ASME Code and 10 CFR 50, Appendix B.

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In scope components will be grouped into populations based on component type, material and environment. ~~Sample size will be 10% of each population (except socket welds) with a minimum of one location and a maximum of twenty locations; the socket weld sample will include three locations.~~ 100% of each sample will be inspected each 10-year ISI interval, with the breakdown of inspections between outages within the interval per ASME Section XI, Subsection IWB, Program B.

If a qualified non-destructive volumetric examination technique does not become available for socket welds, destructive examination will be conducted. Opportunistic destructive examination will be performed when socket welds are removed from service for other considerations, such as plant modifications. If socket welds do not become available on opportunistic bases prior to the scheduled inspections within the 10-year interval, then socket welds will be selected for planned destructive examinations.

Unacceptable inspection findings will be evaluated by the Columbia corrective action process. The evaluation of indications will include determining the extent of condition by the expansion of the sample size.