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GO2-11-135

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 August 26, 2010, NRC to SK Gambhir (Energy Northwest), "Request for Additional Information for the Review of the Columbia Generating Station, License Renewal Application for Fatigue Monitoring Program, Time-Limited Aging Analysis Exemptions, Metal Fatigue Time-Limited Aging Analysis, Cumulative Fatigue Damage Cast Austenitic Stainless Steel, and Structural (TAC No ME3058)" (ADAMS Accession No. ML 102220373)
 - 3) Letter dated November 11, 2010, SK Gambhir (Energy Northwest) to NRC, "Response to Request for Additional Information License Renewal Application," (GO2-10-164)

Dear Sir or Madam:

By Reference 1, Energy Northwest requested the renewal of the Columbia Generating Station (Columbia) operating license. Via Reference 2, the Nuclear Regulatory Commission (NRC) requested additional information related to the Energy Northwest submittal. In Reference 3, Energy Northwest responded to Reference 2. Following the conversation held on August 3, 2011 with Mr. Arthur Cunanan, NRC License Renewal Project Manager, and other NRC staff members, Energy Northwest decided to supplement the response to RAI 4.3-03 provided in Reference 3.

Enclosure 1 contains Amendment 40 to the Columbia License Renewal Application. No new commitments are included in this response.

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NRC

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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,

A handwritten signature in black ink, appearing to read "DA Swank", written over the word "Respectfully,".

DA Swank

Acting Vice President, Engineering

Enclosure: License Renewal Application Amendment 40

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

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Enclosure 1

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**LICENSE RENEWAL APPLICATION
AMENDMENT 40**

Section Number	Page Number	RAI Response
A.1.3.2.2	A-33	Supplement to RAI 4.3-03

Review of the RPV internals in association with power uprate determined that stresses on the vessel internals remained well below all limits. No recalculation of cumulative usage factors was determined to be required. Columbia manages fatigue using the Fatigue Monitoring Program to track transient cycles and require corrective action before any analyzed number of cycles is reached.

Disposition

The effects of aging on the intended functions of the RPV internals will be adequately managed for the period of extended operation by the [Fatigue Monitoring Program](#).

Jet Pump Fatigue Analyses

In August 2000, Columbia operated for a period of time with the recirculation pumps in an unbalanced mode (pump speeds different by more than 50 percent). The effect of that flow imbalance on the jet pumps was an additional accumulation of fatigue usage.

As a result of inspections during the Spring 2001 outage (R-15), a fatigue analysis of the jet pumps was performed and cumulative usage factors were determined.

Jet pump clamps were installed during the 2005 outage (R-17) to minimize flow induced vibration. These clamps greatly reduced the future potential for riser brace fatigue.

As a result of evaluations after the 2007 outage the usage factors were extended to 60 years. The maximum CUF of the jet pump risers for 60 years of operation is projected to remain below the fatigue limit. Columbia manages fatigue using the Fatigue Monitoring Program to track transient cycles and require corrective action before any analyzed number of cycles is reached. The Fatigue Monitoring Program ~~will also monitor the occurrence of design cycles and will monitor the jet pump gaps, effectively managing the fatigue of the jet pumps through the period of extended operation.~~

manage

credits
the BWR
Vessels
Internal
Program
to

gaps. Together, these actions effectively

Disposition

The effects of aging on the intended functions of the jet pumps will be adequately managed for the period of extended operation by the [Fatigue Monitoring Program](#).

A.1.3.2.3 Reactor Coolant Pressure Boundary Piping and Piping Component Fatigue Analyses

The Class 1 boundary encompasses all reactor coolant pressure boundary piping (pipe and fittings) and in-line components subject to ASME Section XI, Subsection IWB, inspection requirements. Fatigue analyses of Class 1 piping are based on the transients found in the Columbia piping specifications that are in turn based on the design transients listed in [FSAR Section 3.9](#).

Potential high energy line break (HELB) intermediate locations can be eliminated based on CUFs of less than 0.1 if other stress criteria are also met. The usage factors, as