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GO2-11-189

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 September 26, 2011, NRC to DA Swank (Energy Northwest), "Request for Additional Information for the Review of the Columbia Generating Station, License Renewal Application," (ADAMS Accession No. ML11269A014)
 - 3) Letter dated November 1, 2011, DA Swank (Energy Northwest) to NRC, "Response to Request for Additional Information License Renewal Application," (GO2-11-175)

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. Via Reference 3, Energy Northwest sent a response to the NRC request for additional information.

Following a conference call on Nov. 28, 2011 with Mr. Arthur Cunanan, NRC License Renewal Project Manager, and other NRC staff members, Energy Northwest has decided to provide additional information for the response provided in Reference 3. This additional information is transmitted herewith in the attachment.

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NRC

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No new or revised commitments are included in this letter.

If you have any questions or require additional information, please contact John Twomey at (509) 377-4678.

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

Respectfully,

Handwritten signature of David Javorik in cursive script.

AL Javorik
Vice President, Engineering

Attachment: Response to Request for Additional Information

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)
MA Galloway – NRC NRR
RR Cowley – WDOH

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SUPPLEMENTAL INFORMATION

Issue

Reference 3 provided a set of Charpy V-notch upper shelf energy (USE) data and analysis related to SA-508 Class 1 forging material unirradiated (initial) USE. This material was used in the N12 nozzle forgings for Columbia and the data was compiled and provided by the original equipment manufacturer (OEM). During a conference call on 11/28/11, the NRC staff requested that Energy Northwest provide additional information to support the application of an initial USE value of 62 ft-lbs for the N12 nozzles at Columbia based on this data.

Discussion

Reference 3 provided detail regarding the statistical analysis of SA-508 Class 1 forging material Charpy V-notch upper shelf energy (USE) data used to determine a conservative lower bound initial USE value for an OEM 217 point data set. The table below provides Charpy V-notch data that is specific to Columbia's N12 SA-508 Class 1 forged nozzles (forging heats 219972 and 718259).

Heat No.	Sample Set	Temp (°F)	Energy Absorbed (ft-lbs)	% Shear
718259	436-1	-20	240	(1)
718259	436-1	-20	240	(1)
718259	436-1	-20	240	(1)
718259	436-2	-20	240	(1)
718259	436-2	-20	240	(1)
718259	436-2	-20	240	(1)
718259	436-3	-20	240	(1)
718259	436-3	-20	240	(1)
718259	436-3	-20	240	(1)
718259	436-4	-20	240	(1)
718259	436-4	-20	240	(1)
718259	436-4	-20	240	(1)
219972	(82-1) 1	-20	60	34
219972	(82-1) 1	-20	90	38
219972	(82-1) 1	-20	230	100
219972	(82-1) 2	-20	240	100
219972	(82-1) 2	-20	240	100
219972	(82-1) 2	-20	230	100

(1) Could not be determined as test specimens did not break at maximum applied energy of 240 ft-lbs as limited by the test equipment.

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The Columbia reactor vessel has four N12 water level instrument nozzles. All four are SA-508 Class 1 forgings; three of which were fabricated from heat 219972 and one from heat 718259. All Charpy V-notch tests were performed in accordance with the requirements of the SA-508 specification. Based on the above table, the Charpy V-notch test sample set with the lowest absorbed energy values is for heat 219972. The average absorbed energy for this sample set is 190 ft-lbs. The two lowest values in this sample set, and the corresponding percent shear values, are 60 ft-lbs (34% shear) and 90 ft-lbs (36% shear), and indicate that this heat is capable of significantly higher Charpy V-notch absorbed energy in the upper shelf region (100% shear). The remaining sample sets for the two heats confirm that the average absorbed energy values are well above 200 ft-lbs with corresponding percent shear values of either 100% or not determined due to specimens not breaking at maximum applied energy of 240 ft-lbs as limited by the test equipment.

In summary, the Columbia specific SA-508 Class 1 Charpy V-notch test data, as presented and discussed above, indicates that Columbia's N12 nozzle forging heats would be expected to have high initial upper shelf energy. The lowest Charpy absorbed energy value of the two heats is 60 ft-lbs and is significantly above the lowest value in the OEM 217 point data set. The 34% shear value corresponding to the 60 ft-lbs value indicates that this absorbed energy value is well below upper shelf for this material sample. The Charpy V-notch data provided in this supplement for the Columbia N12 forgings supports the application of 62 ft-lbs as a conservative lower bound initial USE value for Columbia's N12 nozzle forgings.