ENERGY NORTHWEST

Alex L. Javorik
Columbia Generating Station
P.O. Box 968, PE04
Richland, WA 99352-0968
Ph. 509.377.8555 | F. 509.377.2354
aljavorik@energy-northwest.com

AUG 28 2014
GO2-14-128

10 CFR 50.90

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 RELATED TO LICENSE AMENDMENT REQUEST FOR CHANGING TECHNICAL SPECIFICATION TABLE 3.3.1.1-1 FUNCTION 7, "SCRAM DISCHARGE VOLUME WATER LEVEL – HIGH"**

References:

1) Letter, GO2-14-043, dated March 24, 2014, AL Javorik (Energy Northwest) to NRC, "License Amendment Request for Changing Technical Specification Table 3.3.1.1-1 Function 7, 'Scram Discharge Volume Water Level – High'" (ADAMS Accession No. ML14098A400)

2) Letter, GO2-14-076, dated May 8, 2014, AL Javorik (Energy Northwest) to NRC, "Supplemental Information Regarding License Amendment Request for Changing Technical Specification Table 3.3.1.1-1 Function 7, 'Scram Discharge Volume Water Level-High'" (ADAMS Accession No. ML 14141A538)

3) Letter dated July 31, 2014, CF Lyon (NRC) to ME Reddemann (Energy Northwest), "Request for Additional Information Related to License Amendment Request for Changing Technical Specification Table 3.3.1.1-1 Function 7, 'Scram Discharge Volume Water Level High' (TAC No. MF3673)"

Dear Sir or Madam:

By Reference 1, Energy Northwest submitted a License Amendment Request (LAR) to change Technical Specification (TS) Table 3.3.1.1-1 Function 7, Scram Discharge Volume Water Level - High. By Reference 2, Energy Northwest provided supplemental information to support its initial LAR at the request of the NRC. By Reference 3, the Nuclear Regulatory Commission (NRC) requested additional information related to the Energy Northwest submittal. Transmitted herewith in Attachment 1 is the Energy Northwest response to the request for additional information.

A001
NRR

No new regulatory commitments are being made in this submittal.

Should you have any questions or require additional information regarding this matter, please contact Ms. L.L. Williams, Licensing Supervisor, at (509)377-8148.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on this 27 **day of** August**, 2014**

Respectfully,

[illegible] acting for Alex Javorik.

A.L. Javorik
Vice President, Engineering

Attachment: 1) Response to Request for Additional Information

cc: NRC Region IV Administrator
NRC NRR Project Manager
NRC Sr. Resident Inspector - 988C
MA Jones - BPA/1399 (email)
WA Horin - Winston & Strawn (email)
RR Cowley - WDOH (email)
JO Luce - EFSEC (email)

Response to Request for Additional Information

EICB-RAI-1:

The calibration frequency in the TSs for CGS is defined as 18 months. In the supplemental letter dated May 8, 2014, Tables 2.1 and 2.2 show that a more conservative value of 24 months was selected for the instrument uncertainties and calibration calculation. Please explain why a frequency of 24 months was selected, since this is not the surveillance frequency defined in the TS, and the licensee has not submitted a license amendment request to modify the surveillance frequency. Also, please explain what calibration frequency was used to estimate instrument drift.

Energy Northwest Response:

The calibration frequency for scram discharge instrumentation is 18 months. The drift published by Rosemount for its 3152ND2 transmitter is ± (0.1 % Upper Range Limit + 0.1% of Span) per 30 months. For determination of total loop uncertainty, taking the full value of the vendor published drift was considered conservative. However, taking the full value of drift becomes non-conservative for calculation of the as found calibration tolerance. Therefore, CGS is recalculating the as found tolerance using the drift associated with 18 months.

In addition, a review of all calculations associated with the TSTF-493 functions indicates that the drift period considered in these calculations matches the Technical Specification (TS) calibration frequency with the exception of three functions where the drift period was 22.5 months (18 months plus 25% extension per TS Surveillance Requirement (SR) 3.0.2). CGS is recalculating the as found calibration tolerances for these three functions using the drift associated with their associated TS calibration periods.

On October 2, 2013, Energy Northwest submitted a license amendment request to adopt TSTF-493, Revision 4, Option A (Reference 1.1). In a letter dated April 30, 2014, the NRC requested Energy Northwest provide additional information related to this submittal (Reference 1.2). Specifically, the NRC requested a description of the methodology for calculating the limiting trip setpoints (LTSPs), As-Left Tolerance (ALT), and As-Found Tolerance (AFT) based on the analytical limits, where applicable. On June 19, 2014, Energy Northwest responded to this request (Reference 1.3). The response referenced the description of the methodology that was provided previous in letter GO2-14-076 (Reference 1.4). Specifically, Energy Northwest stated that "pages 7 through 13 of the enclosure to that letter provided a description of the methodology used to determine the AFT, ALT, and LTSP for a proposed change to the instrumentation that fulfils Function 7.b in Table 3.3.1.1-1. The basic methodology described in that enclosure exemplifies the methodology used for calculating the AFTs, ALTs, and LTSPs for all the functions that will include TSTF-493, Revision 4,

Surveillance Notes 1 and 2." As such, the response provided above to this latest RAI applies to the Reference 1.1 and 1.3 submittals as well.

References:

1.1 Letter, GO2-13-138, dated October 2, 2013, AL Javorik (Energy Northwest) to NRC, "License Amendment Request for Adoption ofTSTF-493, Revision 4, Option A"

1.2 Letter, dated April 30, 2014, CF Lyon (NRC) to ME Reddemann (Energy Northwest), "Columbia Generating Station – Request for Additional Information related to License Amendment Request to Adopt TSTF-493, Revision 4, Option A (TAC No. MF2863)"

1.3 Letter, GO2-14-103, dated June 19, 2014, AL Javorik (Energy Northwest) to NRC, "Proposed Revision to License Amendment Request for Adoption ofTSTF-493, Revision 4, Option A and Response to Request for Additional Information"

1.4 Letter, GO2-14-076, dated May 8, 2014, AL Javorik (Energy Northwest) to NRC, "Supplemental Information Regarding License Amendment Request for Changing Technical Specification Table 3.3.1.1-1 Function 7, 'Scram Discharge Volume Water Level-High'"

EICB-RAI-2:

Tables 2.1 and 2.2 of the supplemental information provided instrument uncertainties and drift design inputs in terms of accuracy of calibrated span. Please provide the vendor-published values representing the appropriate accuracies associated with the minimum calibrated span, the maximum calibrated span, and the licensee's proposed calibrated span.

Energy Northwest Response:

Tables 2.1 and 2.2 below provide the requested information for CRD-LT-13C & D and CRD-LS-613C & D, respectively. Note that uncertainty and drift inputs which are independent of the design of the replacement instruments are not included in the tables. For each design input, the table shows the vendor published data, calculations at minimum, maximum and proposed spans. Where appropriate, assumptions are listed as part of the table data. The values (in terms of percentage of calibrated span) which were provided in Reference 2.1 are indicated by boxed text.

References:

2.1 Letter, GO2-14-076, dated May 8, 2014, AL Javorik (Energy Northwest) to NRC, "Supplemental Information Regarding License Amendment Request for Changing Technical Specification Table 3.3.1.1-1 Function 7, 'Scram Discharge Volume Water Level-High'"

Table 2.1 - Instrument Uncertainties and Calibration and Drift Design Inputs for CRD-LT-13C & D (Instrument Range 0-25" to 0-250" H_2O)

Design Input	Vendor Published Value	Minimum Span (25")	Maximum Span (250")	CGS Proposed Span (66")
RA = Reference Accuracy	± 0.2% of CS	± 0.2% of CS = ± 0.05"	± 0.2% of CS = ± 0.5"	± 0.2% of CS = ± 0.132"
DR = Drift	± (0.1% URL + 0.1% span) per 30 months[a]	± (0.1% x 250 + 0.1% x 25) = ± 0.275" = ± 0.275÷ 25 x100 = ± 1.1% CS	± (0.1% x 250 + 0.1% x 250) = ± 0.5" = ± 0.5÷ 250 x100 = ± 0.2% CS	± (0.1% x 250 + 0.1% x 66) = ± 0.316" = ± 0.316 ÷ 66 x 100 = ± 0.48% of CS
Drift for 18 months	(Vendor Published Value above for 30 months) x 18 ÷30	± 0.275 x 18 ÷30 = ± 0.165" = ± 0.165÷ 25 x100 = ± 0.66% CS	± 0.5 x 18 ÷30 = = ± 0.3" = ± 0.3÷ 250 x100 = ± 0.12% CS	± 0.316 x 18 ÷30 = ± 0.1896" = ± 0.1896÷ 66 x 100 = ± 0.28% CS
PSE = Power Supply Effect	± 0.005% of span per volt	±.005% of span x 2.4[b] = ± 0 .012% of CS = ± 0.012% x 25 = ± 0.003"	± 0 .012% of CS = ± 0.012% x 250 = ± 0.03"	± 0.012% of CS = ± 0.012% x 66 = ± 0.0792"
RE = Radiation Effect	±0.25% of URL during and after initial exposure to a TID of 1 Mrad at a dose rate of 0.1 Mrads/hr.	± 0.25% of URL x 0.84.[c] = 0.25% x 250 x 0.84 = 0.525" = ± 0.525 ÷ 25 x 100 = ± 2.1 % CS	± 0.25% of URL x 0.84 = ± 0.25% x 250 x 0.84 = ± 0.525" = ± 0.525 ÷ 250 x 100 = ± 0.21 % CS	± 0.25% of URL x 0.84 = 0.25% x 250 x 0.84 = ± 0.525" = ± 0.525 ÷ 66 x 100 = ± 0.80 % CS

[a] Upper Range Limit = 250
[b] The power supply stability is assumed to be ± 10% of the nominal 24 VDC loop supply voltage.
[c] TID in zone 522B is of 8.4E5 Rads. Assuming the effect is linearly proportional to TID, it will be .25 % of URL x 8.4E5/1E6

Table 2.1 - Instrument Uncertainties and Calibration and Drift Design Inputs for CRD-LT-13C & D (continued)

Design Input	Vendor Published Value	Minimum Span (25")	Maximum Span (250")	CGS Proposed Span (66")
TE = Temperature Effect	Transmitter: ±(0.15% URL + 0.6% span) per 100°F temperature shift[d]	= ± (0.15% URL + 0.6% span) ÷ 2[e] = ± (0.15% x 250 + 0.6% x25) ÷ 2 = ± 0.262"	= ± (0.15% URL + 0.6% span) ÷ 2 = ± (0.15% x 250 + 0.6% x250) ÷ 2 = ± 0.937"	= ± (0.15% URL + 0.6% span) ÷ 2 = ± (0.15% x 250 + 0.6% x66) ÷ 2 = ± 0.385"
	Remote seal with DC704 silicone oil: ±(1.4 in wg for first 5 ft of capillary + 0.7 in wg for each additional 5 ft of capillary) per 100°F temperature shift	= ± (1.4 in wg for first 5 ft of capillary + 0.7 in wg for each additional 5 ft of capillary)[f] ÷ 2 = ± [1.4" + 0.7 x (40-5) ÷ 5] ÷ 2 = ± 3.15"	= ± 3.15" (It is not span dependent)	= ± 3.15" (It is not span dependent)
		The combined temperature effect is: $= (.262^2 + 3.15^2)^{1/2}$ = ± 3.16" = 3.16 ÷ 25 x 100 = ± 12.64 % of CS	The combined temperature effect is: $= (0.937^2 + 3.15^2)^{1/2}$ = ± 3.29" = 3.29 ÷ 250 x 100 = ± 1.32 % of CS	The combined temperature effect is: $= (0.385^2 + 3.15^2)^{1/2}$ = ± 3.17" = 3.17 ÷ 66 x 100 = ± 4.80 % of CS[g]

[d] Maximum temperature shift from calibration temperature is 34°F
[e] Specification for transmitter and the remote seal can be linearly interpolated down to 50°F
[f] Capillary length is 40ft.
[g] Reference 2.1 previously reported 6.96% of CS the change to 4.8% of CS is due to updated vendor specifications on the Remote Diaphragm Seal

Table 2.2 - Instrument Uncertainties and Calibration and Drift Design Inputs for CRD-LS-613C & D (Instrument Range 4-20 mA)

Design Input	Vendor Published Value	Minimum Span (25")	Maximum Span (250")	CGS Proposed Span (66")
RA = Reference Accuracy	± 0.1% of CS	± 0.1% of CS =.025"	± 0.1% of CS =0.25"	± 0.1% of CS = ± 0.066"
DR = Drift	None[h]	1.0% of CS = 0.25"	1.0% of CS = 2.5"	1.0%of CS = 0.66"
PSE = Power Supply Effect	± 0.15% of specified power variation	= ± 0.15% x 2.4[i] = ± 0.36% of CS = 0.36% x 25 = ± 0.09"	± 0 .36% of CS = 0.036% x 250 = ± 0.9"	± 0.36% of CS = 0.36% x 66 = ± 0.2376"
RE = Radiation Effect	None The component is located within the control room and radiation effect is negligible.	0.0% of CS	0.0% of CS	0.0% of CS
TE = Temperature Effect	Ambient Temperature Range: 0°F to 140°F Trip Point Stability and Drive: For 25 °F to 125 °F ± 0.01%/°F maximum ± 0.004%/°F typical[j]	0.0% of CS	0.0% of CS	0.0% of CS

[h] Per Energy Northwest's setpoint methodology, in the absence of a manufacturer's expression of drift, or a calculated expression of drift as derived from actual performance histories, the default value of 1.0% of CS bias should be used.

[i] The power supply stability is assumed to be ± 10% of the nominal 24 VDC loop supply voltage.

[j] The component is located within the control room, and is calibrated within the normal temperature range of the control room. The temperature effect is zero.