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October 30, 2020
L-20-276

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

Subject:
Beaver Valley Power Station, Unit No. 2
Docket No. 50-412, License No. NPF-73
Response to Request for Additional Information
Regarding Steam Generator Inspection Report (EPID L-2019-LRO-0042)

By correspondence dated July 28, 2020 (Accession No. ML20211L853), Energy Harbor Nuclear Corp. submitted to the Nuclear Regulatory Commission (NRC) information related to steam generator inspections performed during the Beaver Valley Power Station, Unit No. 2 spring 2020 refueling outage 21 (2R21). By email dated October 8, 2020 (Accession No. ML20290B008), the NRC requested additional information regarding the steam generator inspections. The Energy Harbor Nuclear Corp. response to the NRC request is attached.

There are no regulatory commitments contained in this submittal. If there are any questions or if additional information is required, please contact Mr. Phil H. Lashley, Manager - Fleet Licensing, at (330) 696-7208.

Sincerely,

Penfield, Rod 55166
site vp
Penfield, Rod 55166 I am approving this document
Oct 30 2020 7:18 AM

Rod L. Penfield

Attachment:
Response to Request for Additional Information

Beaver Valley Power Station, Unit No. 2

L-20-276

Page 2

cc: NRC Region I Administrator
NRC Resident Inspector
NRR Project Manager
Director BRP/DEP
Site BRP/DEP Representative

Response to Request for Additional Information

Page 1 of 4

By letter dated July 28, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20211L853), Energy Harbor Nuclear Corp. submitted the Generic Letter (GL) 95-05 Voltage-Based Alternate Repair Criteria (ARC) and Steam Generator (SG) F Star (F*) Reports for SG tube inspections that were performed during the Beaver Valley Power Station (Beaver Valley), Unit 2, spring 2020 refueling outage 21 (2R21).

To complete its evaluation of the information provided regarding implementation of the voltage-based ARC and the F* methodology during 2R21, the U.S. Nuclear Regulatory Commission (NRC) staff requested additional information in an October 8, 2020 email. The NRC staff requests for additional information are provided below in bold text and are followed by the Energy Harbor Nuclear Corp. response.

- 1. The GL 95-05 voltage-based ARC report for 2R20 reported a total of 1,161 (348 in SG-A, 449 in SG-B, and 364 in SG-C) distorted support indications (DSIs) in all three SGs (ADAMS Accession No. ML19035A607). Section 3.1, “2R21 Inspection Results,” of the GL 95-05 voltage-based ARC report for 2R21 states that there were 133 (43 in SG-A, 48 in SG-B, and 42 in SG-C) new DSIs identified in 2R21, which results in a total of 1,294 DSIs in all three SGs (1,161 + 133 = 1,294). However, the GL 95-05 voltage-based ARC report for 2R21 reports a total of 1,292 DSIs in all three SGs (390 in SG-A, 495 in SG-B, and 407 in SG-C). Please confirm the total number of DSIs in all three SGs and the number in each SG.**

Response:

For SG-A, 348 distorted support plate signals with possible indications (DSI's) were reported in 2R20. 43 new DSI's were reported in 2R21. This brings the total number of DSI's in SG-A to 391. However, one DSI reported in 2R20 (Row 13 Column 39, 5th hot leg support plate) was reported as an indication not reportable (INR) during 2R21 and was not counted in the 2R21 DSI population. Therefore, the total of 390 DSI's in SG-A is correct.

For SG-B, 449 DSI's were reported in 2R20. 48 new DSI's were reported in 2R21. This brings the total number of DSIs in SG-B to 497. However, one DSI reported in 2R20 (Row 2 Column 24, 2nd hot leg support plate) was in a tube plugged during 2R20. Therefore, this DSI would not carryover to 2R21. Another DSI reported in 2R20 (Row 13 Column 56, 3rd hot leg support plate) was inadvertently counted twice in the DSI database. This means there was one less DSI in SG-B than reported in the 2R20 Generic Letter (GL) 95-05 90 Day Report. Subtracting these two 2R20 DSI's from 497 yields the correct 2R21 total of 495 DSI's in SG-B.

For SG-C, 364 DSI's were reported in 2R20. 43 new DSI's were reported in 2R21. This brings the total number of DSI's in SG-C to 407. It was later determined that 42 DSI's

were erroneously reported on Page 3-3 of the 2R21 GL 95-05 90 Day Report as the number of new DSI's in SG-C during 2R21. The number of DSI's should have been 43. This means that the total number of new DSI's is 134 rather than 133, also reported on Page 3-3. No analyses or results are affected by this transcription error.

Therefore, the correct number of DSI's for all three SG's (390 + 495 + 407) is 1292 as reported in the 2R21 GL 95-05 90 Day Report.

2. Section 3.2, "Voltage Growth Rates," of the GL 95-05 voltage-based ARC report for 2R21 states that "Growth is determined when the same indication can be identified in two successive inspections. Since there can be new indications in one outage, the number of indications for which growth can be defined is less than the number of indications detected." As previously stated, the GL 95-05 voltage-based ARC report for 2R21 reported 407 DSIs in SG-C (this number may change based on Question 1). However, Table 3-6, "Voltage Growth Cumulative Distributions," of the same report shows 409 indications with growth and Table 3-7 shows 364 indications with growth. Please confirm the number of indications with growth for SG-C, the number that was used for the growth analyses, and, if necessary, discuss any impacts this may have had on the results of the growth analyses.

Response:

The 409 indications shown in Table 3-6 (Page 3-10) for SG-C was a transcription error. Table 3-6 should have reported 364 indications with growth for SG-C. Table 3-6 is hereby corrected as shown on Page 4 of this response.

The 409 value for number of DSI's with growth in SG-C was a transcription error and was not used in the evaluations for calculating leak rate and probability of burst. The correct growth distribution is shown in Figure 3-7 (Page 5 of this response) and is based on the correct number of DSI's with growth data which for SG-C is 364. Also, as seen from Figure 3-7, a bounding growth curve was used for the evaluations. Therefore, there is no impact on the growth distribution used as input to the 2R21 operational assessment. The incorrect 409 value is not reported elsewhere in the 2R21 GL 95-05 90 Day Report.

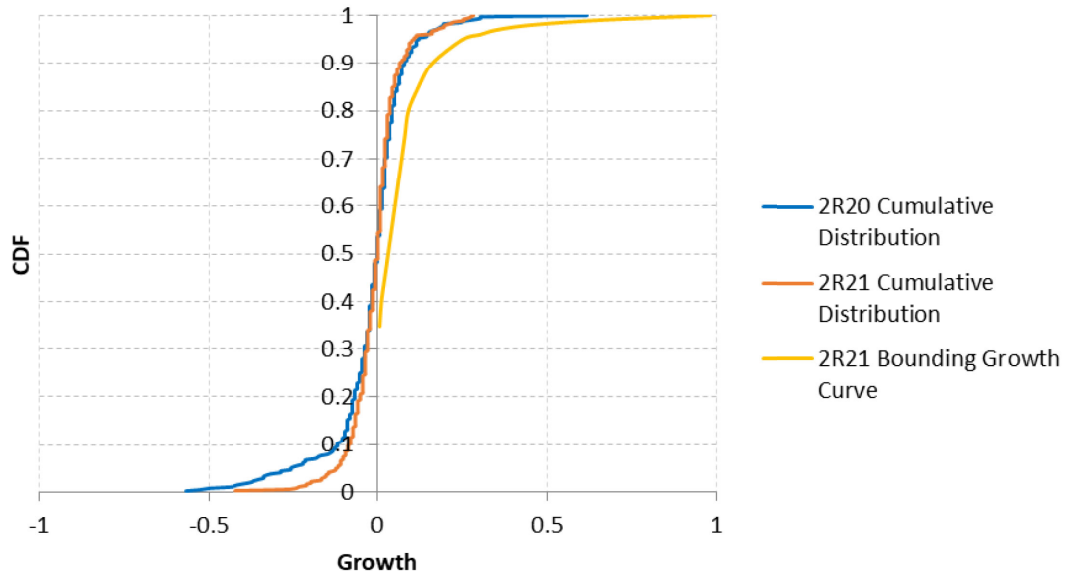
Further, the totals for DSI's with growth of 347 in SG-A and 447 in SG-B reported in Table 3-6 are consistent with the findings associated with addressing RAI No. 1 on Page 2 of this response.

Table 3-6 – Voltage Growth Cumulative Distribution

Voltage Change : EOC-21 minus EOC-20	SG-A		SG-B		SG-C		Composite	
	Number of Indications	Cumulative Probability Distribution	Number of Indications	Cumulative Probability Distribution	Number of Indications	Cumulative Probability Distribution	Number of Indications	Cumulative Probability Distribution
$\Delta V < -0.79$	0	0.0	1	0.002237	0	0.0	1	0.002237
$-0.79 \leq \Delta V \leq -0.7$	0	0.0	1	0.004474	0	0.0	1	0.001727
$-0.69 \leq \Delta V \leq -0.6$	1	0.002882	0	0.0	0	0.0	1	0.002591
$-0.59 \leq \Delta V \leq -0.5$	0	0.0	2	0.008949	1	0.002747	3	0.006045
$-0.49 \leq \Delta V \leq -0.4$	2	0.008646	4	0.017897	0	0.0	6	0.011226
$-0.39 \leq \Delta V \leq -0.3$	1	0.011527	6	0.031320	3	0.010989	10	0.020725
$-0.29 \leq \Delta V \leq -0.2$	4	0.023055	21	0.078300	11	0.041209	36	0.051813
$-0.19 \leq \Delta V \leq -0.1$	21	0.083573	40	0.167785	35	0.137363	96	0.136442
$-0.09 \leq \Delta V \leq 0.0$	132	0.463977	191	0.595078	148	0.543956	471	0.546632
$0.01 \leq \Delta V \leq 0.1$	131	0.841499	129	0.883669	132	0.906593	392	0.889465
$0.11 \leq \Delta V \leq 0.2$	31	0.930836	33	0.957494	19	0.000000	83	0.985320
$0.21 \leq \Delta V \leq 0.3$	13	0.968300	15	0.991051	9	0.000000	37	0.000000
$0.31 \leq \Delta V \leq 0.4$	4	0.979827	1	0.993289	6	0.000000	11	0.000000
$0.41 \leq \Delta V \leq 0.5$	3	0.988473	1	0.995526	0	0.000000	4	0.000000
$0.51 \leq \Delta V \leq 0.6$	1	0.991354	1	0.997763	0	0.000000	2	0.000000
$0.61 \leq \Delta V \leq 0.7$	1	0.994236	0	0.0	0	0.0	1	0.000000
$0.71 \leq \Delta V \leq 0.8$	1	0.997118	0	0.0	0	0.0	1	0.000000
$0.81 \leq \Delta V \leq 0.9$	0	0.0	1	1.0	0	0.0	1	0.000000
$\Delta V > 0.9$	1	1.0	0	0.0	0	0.0	1	1.0
Number of Indications with Growth	347		447		364		1158	
Average Percentage Growth	16.5%		4.5%		3.9%		N/A	

Figure 3-7

DSI Voltage Growth/EPFY Curve for SG C



3. In the GL 95-05 voltage-based ARC report for 2R21, the third sentence in the fourth paragraph of Section 2, "Summary and Conclusions," states that "SG-B is predicted to be the limiting SG for leakage while SG-A is predicted to be the limited SG for probability of burst." The last sentence of the third paragraph in Section 1 of the same report indicates that SG-C is the limiting SG for probability of burst. Please confirm which SG is the limiting SG for probability of burst.

Response:

The third sentence of the fourth paragraph in Section 2 (Page 2-1) is incorrect as stated. The sentence is hereby corrected to state SG-C as the limiting SG for probability of burst (POB) instead of SG-A. This is consistent with the statement provided later in the same paragraph, as well as Section 1 (Page 1-1) and Table 7-1 (Page 7-2) which reports the leak rate and POB results.

4. In the GL 95-05 voltage-based ARC report for 2R21, the third and fourth columns in Table 7-2, "Operational Assessment Leak and Burst Results for EOC [End of Cycle]-22 (POD [Probability of Detection] = 0.6)," refer to EOC-21. Please confirm whether these columns should refer to EOC-21 or EOC-22.

Response:

The 3rd and 4th column labels of Table 7-2 (Page 7-2) are incorrect. The 3rd and 4th column labels are hereby corrected to read EOC-22 instead of EOC-21.

Revision 1 of the 2R21 Generic Letter 95-05 90 Day Report will be issued once these Energy Harbor Nuclear Corp. responses have been accepted and the need for additional information by the NRC is no longer required.