UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

November 28, 2018

Mr. Richard D. Bologna
Site Vice President
FirstEnergy Nuclear Operating Company
Beaver Valley Power Station
Mail Stop A-BV-SSB
P.O. Box 4, Route 168
Shippingport, PA 15077

SUBJECT: SUMMARY OF NOVEMBER 1, 2018, TELECONFERENCE WITH FIRSTENERGY NUCLEAR OPERATING COMPANY REGARDING FALL 2018 STEAM GENERATOR INSPECTIONS AT BEAVER VALLEY POWER STATION, UNIT 2 (EPID L-2018-LRO-0034)

Dear Mr. Bologna:

On November 1, 2018, a teleconference was held between the U.S. Nuclear Regulatory Commission (NRC) and representatives of FirstEnergy Nuclear Operating Company (the licensee) regarding the ongoing steam generator inspection activities at the Beaver Valley Power Station, Unit 2. The list of participants is provided as Enclosure 1. The teleconference summary is provided as Enclosure 2. The list of questions discussed is provided as Enclosure 3.

Based on the information provided by the licensee, the NRC staff did not identify any issues that warranted immediate followup action. However, the NRC staff asked to be notified if any unusual conditions were detected during the remainder of the outage.

Please direct any inquiries to me at (301) 415-2328 or Jennifer.Tobin@nrc.gov.

Sincerely,

Jennifer C. Tobin, Project Manager
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-412

Enclosures:
1. List of Participants
2. Teleconference Summary
3. Steam Generator Tube Inspection Discussion Points

cc: Listserv

LIST OF PARTICIPANTS

NOVEMBER 1, 2018, TELECONFERENCE WITH

FIRSTENERGY NUCLEAR OPERATING COMPANY

BEAVER VALLEY POWER STATION, UNIT 2

FALL 2018 STEAM GENERATOR INSPECTIONS

Names	**Participants**
Alan Huynh	U.S. Nuclear Regulatory Commission (NRC)
Paul Klein	NRC
Andrew Johnson	NRC
Booma Venkataraman	NRC
Jennifer Tobin	NRC
Jeffrey Kulp	NRC
Phil Lashley (Licensing)	FirstEnergy Nuclear Operating Company (FENOC)
Dave McCreary (Licensing)	FENOC
Mark Manoleras (Engineering Director)	FENOC
Pat Pauvlinch (Design Engineering Manager)	FENOC
Gary Alberti (Steam Generator Engineer)	FENOC
Tim Saibena (Steam Generator Engineer)	FENOC
Jay Smith	Westinghouse
Brad Carpenter	Westinghouse

SUMMARY OF TELECONFERENCE
WITH BEAVER VALLEY POWER STATION, UNIT 2
REGARDING THE FALL 2018
STEAM GENERATOR TUBE INSPECTIONS
DOCKET NO. 50-412

On November 1, 2018, the U.S. Nuclear Regulatory Commission (NRC) staff from the Chemical, Corrosion, and Steam Generator Branch of the Division of Materials and License Renewal, Office of Nuclear Reactor Regulation, participated in a teleconference with FirstEnergy Nuclear Operating Company, Inc. (the licensee) regarding the ongoing steam generator (SG) tube inspection activities at Beaver Valley Power Station, Unit 2. Prior to the outage call, NRC staff provided discussion points to the licensee; in response, the licensee provided draft information the morning of the call (Enclosure 3).

Beaver Valley Power Station, Unit 2, is a three-loop plant with Westinghouse Model 51M SGs. Each SG contains 3,376 mill-annealed Alloy 600 tubes with a nominal outside diameter of 0.875 inches and a nominal wall thickness of 0.050 inches. The tubes are supported by a number of carbon steel tube support plates and Alloy 600 anti-vibration bars. The tubes were roll-expanded for the full depth of the tubesheet. The entire length of tube interior within the tubesheet was shot-peened on both the hot-leg and cold-leg side of the SG prior to operation. In addition, the U-bend region of the small radius tubes were in situ stress relieved prior to operation.

In addition to the depth-based tube repair criteria, the licensee is also authorized to apply the voltage-based tube repair criteria for predominantly axially-oriented outside diameter stress corrosion cracking (ODSCC) at the tube support plate elevations. In addition, the licensee is authorized to leave flaws within the tubesheet region inservice, provided they satisfy the F* alternate repair criterion (e.g. allowance of a particular degradation mechanism on an operating cycle-specific basis for repairs to ODSCC at tube-to-tube support plate intersections in Westinghouse-designed steam generators having drilled-hole tube support plates and alloy 600 steam generator tubing).

Additional information discussed during the teleconference that was not included in the responses to the discussion points (Enclosure 3) is summarized below:

- At the time of the call, the SG tube inspections were approximately 99% completed. The information in the table in Enclosure 3 reflected approximately 94-95% of the inspections completed.

- In response to discussion point 4, the licensee discussed that in the base inspection program the rationale behind the full length 0.720 inch bobbin and top of tubesheet rotating pancake coil inspections was to meet the alternate repair criteria guidance in Generic Letter 95-05 and F-STAR (F*). For the top of tubesheet inspections, the licensee performs a sampling of each SG on the cold leg side on a rotating basis. Low row inspections are performed to identify any low row cracking. The inspections of row 3 through row 10 U-bends are in response to operating

experience at the Diablo Canyon Nuclear Power Plant (described in NRC Information Notice 2003-13).

- In response to discussion point 5, the licensee stated that some of the scratches described under "Freespan Axial ODSCC" are visible during foreign object search and retrieval.

- In response to discussion point 5, the licensee stated that in accordance with Generic Letter 95-05, it is required to remove a tube during this outage if a tube is identified with a support plate indication voltage greater than 3 volts. As stated in Enclosure 3, the maximum bobbin coil voltage measured in all SGs was 1.46 volts. The licensee elected to defer tube removal until Refueling Outage (RFO) 21.

- In response to discussion point 4, the licensee stated that RFO 20 is the first implementation of Westinghouse Nuclear Safety Advisory Letter-12-1, Revision 1. During the channel head inspections, the licensee noted a dark spot on the channel head cladding surface on the cold leg side of SG C that was located slightly below the tubesheet and approximately 1 foot away from the divider plate. A review of video footage from the previous outage revealed that this indication was also present in RFO 19 and has not changed.

- In response to an NRC staff question, the licensee stated that no primary water stress corrosion cracking indications were detected during the inspections.

- In response to discussion point 6, the licensee indicated that at the time of the call, approximately 252 tubes were identified to be plugged or repaired, and that the majority of these tubes would be repaired by sleeving.

The NRC staff did not identify any issues that required followup action at this time; however, the NRC staff asked to be notified in the event that any unusual conditions were detected during the remainder of the outage.

STEAM GENERATOR TUBE INSPECTION DISCUSSION POINTS FOR BEAVER VALLEY POWER STATION, UNIT 2

The following discussion points have been prepared to facilitate the teleconference arranged with the licensee to discuss the results of the steam generator (SG) tube inspections to be conducted during the upcoming Fall 2018, Unit 2, refueling outage. This teleconference is scheduled to occur toward the end of the planned SG tube inspections but before the unit completes the inspections and repairs.

The following abbreviations are used in the responses provided by the licensee:

AVB – Anti-Vibration Bar
BLG – Bulge
BRT – Bottom Roll Transition
BVPS2 – Beaver Valley Power Station, Unit 2
DA – Degradation Analysis
DNI – Dent/Ding with Possible Indication
DSI – Distorted Tube Support Plate Signal with Possible Indication
EPRI – Electric Power Research Institute
EXP – Expansion
FENOC – FirstEnergy Nuclear Operating Company
FOSAR – Foreign Object Search and Retrieval
FS – Freespan
FSH – Freespan Signal History
GL – Generic Letter
MBH – Manufacturing Burnish History
NDE – Non-Destructive Examination
NSAL – Nuclear Safety Advisory Letter
ODSCC – Outside Diameter Stress Corrosion Cracking
PDA – % Degraded Area
PIP – Plug-in-Plug
PLP – Possible Loose Particles
PWSCC – Primary Water Stress Corrosion Cracking
SBH – Sleeve Bottom Hot
SG – Steam Generator
STH – Sleeve Top Hot
TEC – Tube End Cold
TSP – Tube Support Plate
TTS – Top of Tubesheet
TW – Through-Wall
V – Volts
Vvm – Vertical Max Voltage

The U.S. Nuclear Regulatory Commission (NRC) staff plans to document a publicly-available summary of the teleconference, as well as any material that is provided in support of the call.

1. Discuss any trends in the amount of primary-to-secondary leakage observed during the recently completed cycle.

RESPONSE: There has been no primary-to-secondary leakage reported during the most recently completed operating cycle.

2. Discuss whether any secondary side pressure tests were performed during the outage and the associated results.

   RESPONSE: None scheduled to date.

3. Discuss any exceptions taken to the industry guidelines.

   RESPONSE: No exceptions have been taken to any of the Electric Power Research Institute guidelines.

4. For each SG, provide a description of the inspections performed, including the areas examined and the probes used (e.g., dents/dings, sleeves, expansion-transition, U-bends with a rotating probe), the scope of the inspection (e.g., 100% of dents/dings greater than 5 volts (V) and a 20% sample between 2 and 5 V), and the expansion criteria.

   RESPONSE:

   Base Scope Programs:

   - 100% full length 0.720 bobbin inspection (except rows 1 and 2 U-bends) per Generic Letter (GL) 95-05 in non-sleeved tubes and from tube end cold (TEC) to 08C in sleeved tubes in rows 3 and 4.
   - 100% 0.720 bobbin inspection from cold leg tube end to sleeve top hot (STH) in sleeved tubes rows 5 and higher.
   - 100% 0.700 inch bobbin examination in U-bend region of rows 3 and 4.
   - 100% 0.630 wide groove bobbin examination from STH to 08H in sleeved tubes rows 2 through 4.
   - 100% hot leg top of tubesheet (TTS) +POINT probe inspection from 6 inches above to 3 inches below TTS in non-sleeved tubes.
   - 100% 0.610 gimbaled +POINT probe full length from STH +3 to sleeve bottom hot (SBH) -4 inches in sleeved tubes.
   - 100% row 1 and row 2 small radius U-bend +POINT probe inspection in each SG using mid-range +POINT coil.
   - 100% +POINT probe inspection at all dented (hot and cold leg) TSP intersections $\geq$5 V.
   - 100% +POINT probe inspection of all TSP distorted tube support plate signals with possible indication (DSI)/dent/ding with possible indication (DNI) signals $\geq$2 V.

- 100% +POINT probe inspection of all freespan (FS) dings (all reported voltages).

- 100% +POINT probe inspection of row 3 through row 10 U-bends in SG C (top TSP to top TSP).

- 25% +POINT probe inspection of row 3 through row 10 U-bends in SG A and SG B (top TSP to top TSP).

- 100% +POINT probe inspection of hot leg dents ≥2 but <5 V at 01H, 02H, 03H, and 04H.

- 25% +POINT probe inspection of hot leg dent ≥2 but <5V at 05H, 06H, 07H, and 08H.

- +POINT probe inspection of hot leg and cold leg tubes list in Table 4-1 of the 2R20 degradation analysis (DA) that contains tubesheet lower bottom roll transition (BRT) tubes. Testing extent to be from 6 inches above the tubesheet to 5 inches below.

Special Interest +POINT Probe (Mid-Range Unless Otherwise Noted) Inspections:

- 100% inspection of bobbin special interest I-codes, such as FS differential signals meeting change criteria.

- 100% inspection at TSP DSI signals >1 V (not required per GL 95-05).

- 25% inspection of all bobbin TSP mix residuals >1.5 V but <2 V plus 100% of ≥2 V mix residuals outside diameter stress corrosion cracking (ODSCC) concern. TSP mix residuals have bobbin phase angles >55 degrees.
- 100% inspection of all TSP residuals with bobbin phase angle <55 degrees and >1.25 V on the bobbin P1 mix channel primary water stress corrosion cracking (PWSCC) concern.

- High frequency +POINT probe testing of row 1 U-bends with noise values of 0.65 vertical max voltage (Vvm) and greater.

- High frequency +POINT probe confirmatory testing of all U-bend PWSCC indications reported with the mid-range +POINT coil.

- 100% inspection of all dents at anti-vibration bar (AVB) sites (+/-1 inch of AVB).

- 100% inspection of all newly reported signals at AVBs plus any atypical growth (>6% through-wall (TW) growth for Cycle 19) AVB wear indications.

- 100% inspection of all FS signals not resolved as manufacturing burnish history (MBH)/FS signal history (FSH), or without historical review.

- 100% +POINT probe inspection of bulge (BLG) and expansion (EXP) bobbin reports in hot leg tubesheet below F* distance but above tubesheet neutral axis plus 100% +POINT probe inspection of cold leg BLG and EXP bobbin reports above the TTS.

- 20% inspection of the SG B cold leg TTS region from +6 to -3 inches using a targeted inspection region, including all SG B cold leg crevice depths >0.5 inch.

- 100% inspection of newly reported possible loose particles (PLP) signals (includes 2-tube box) plus locations adjacent to tubes plugged in prior outages for PLP interaction (2 tube box), plus one tube box around SG A 01C PLP signals from 2R19.

- +POINT probe inspection of tubes with newly identified foreign objects that have the potential to cause tube wear that are identified from secondary side visual inspections at the applicable elevation (includes 1 tube box).

- Additional special interest examinations in accordance with the FirstEnergy Nuclear Operating Company, Inc. (FENOC), Beaver Valley Power Station, Unit 2 (BVPS2) R20 SG decision tree logic charts.

Visual Inspections:

- Tube plug video inspection, including plug-in-plug (PIP) repaired plugs and PIP tack welds.
- Primary channel head visual inspections per Westinghouse Nuclear Safety Advisory Letter (NSAL)-12-1, Revision 1, which include.
    - Divider plate-to-channel head weld
    - Divider plate-to-stub runner weld
    - Tubesheet-to-channel head Z-seam area
    - Entire inside surface of the channel head bowl cladding
    - SG secondary side foreign object search and retrieval (FOSAR) of annulus and tube lane with FOSAR of in-bundle PLP reports from eddy current testing

5. For each area examined (e.g., tube supports, dent/dings, sleeves, etc.), provide a summary of the number of indications identified to date for each degradation mode (e.g., number of circumferential PWSCC indications at the expansion transition). For the most significant indications in each area, provide an estimate of the severity of the indication (e.g., provide the voltage, depth, and length of the indication). In particular, address whether tube integrity (structural and accident-induced leakage integrity) was maintained during the previous operating cycle. In addition, discuss whether any location exhibited a degradation mode that had not previously been observed at this location at this unit (e.g., observed circumferential PWSCC at the expansion transition for the first time at this unit).

RESPONSE:

All data as of 10/31/18 (0730 hours):

	SG A		SG B		SG C		2R20 Total To Date		2R19 Total
Degradation Mech.	**Ind.**	**Tubes**	**Ind.**	**Tubes**	**Ind.**	**Tubes**	**Ind.**	**Tubes**	**Ind.**
AVB Wear	48	30	95	42	6	5	149	77	145
AVB Wear >=40% TW	0	0	2	2	0	0	2	2	0
FS Volumetric at TTS	0	0	0	0	1	1	1	1	5
FS Volumetric at TSP	0	0	0	0	0	0	0	0	3
FS Volumetric in FS	0	0	1	0	0	0	1	0	1
TSP Axial ODSCC	331	272	423	352	361	307	1115	931	1098
TSP Axial ODSCC to Plug	0	0	1	1	0	0	1	1	0
TSP Axial ODSCC at 01H	0	0	1	1	0	0	1	1	0
TTS Circ ODSCC	77	77	95	94	52	51	224	222	212
TTS Axial ODSCC	6	6	6	6	0	0	12	12	15
TTS Mixed Mode ODSCC	0	0	0	0	0	0	0	0	2
FS Ding Axial ODSCC	0	0	0	0	0	0	0	0	5
FS Ding Circ ODSCC	0	0	1	1	0	0	1	1	1
FS Axial ODSCC	0	0	0	0	2	2	2	2	1

AVB Wear:

A total of 149 indications of AVB wear has been reported in 77 tubes in all three SGs, with the majority in SG A and SG B. Only 6 indications in 5 tubes have been reported in SG C. Two indications in separate tubes have exceeded the technical specification 40% TW repair limit, both in SG B. The largest indications were measured at 42% TW and 40% TW. All AVB wear indications satisfy the condition monitoring limit of 62% TW.

Volumetric Indications:

There are two tubes reported to date with volumetric indications in the FS. Both are historical in nature, showing no change since initial detection. One tube contained a volumetric indication just above the cold leg tubesheet that measured at 31% through-wall (TW). This is a historical indication that has not changed, dating back to 2011 when it was first reported. This indication satisfies the condition monitoring limit of 62% TW. One tube contained a volumetric indication 2.6 inches above the cold leg tube support plate (TSP) 06C that measured 28% TW. This is a historical indication that has not changed, dating back to 1996 when it was first reported. This indication satisfies the condition monitoring limit of 62% TW. These tubes will remain in service during the next operating cycle.

Axial ODSCC Indications at TSPs (GL 95-05):

A total of 1,115 axial ODSCC indications are reported in all SGs: 331 in SG A, 423 in SG B, and 307 in SG C. The GL 95-05 voltage-based repair criteria is applicable to these indications. The maximum bobbin coil voltage measured in each SG is 1.46 V, 1.40 V, and 1.44 V, respectively, for SGs A, B, and C. The GL 95-05 upper voltage repair limit is 4.60 V and any indication that conforms with the +POINT probe that exceeds 2.0 V. All indications are below the repair limits. The voltage distributions are bound by previous inspection results.

One axial ODSCC indication was found within a flow distribution baffle location that is not encompassed by the GL 95-05 voltage-based ARC. The indication had a maximum voltage of 0.48 V on the 300 kilohertz (kHz) +POINT probe with a maximum depth of 65% TW using the Electric Power Research Institute (EPRI) Appendix I amplitude-based sizing technique. The measured length of the indication was 0.41 inch. The maximum voltage is less than the in situ pressure test screening criteria 0.5 V, and no portion of the indication exceeds the second tier voltage screen of 0.4 V over 0.6 inches. The indication was depth-profiled, and the average depth and length was determined to be 55.8% TW and 0.23 inch. This satisfies the condition monitoring limit of 62% TW.

Axial and Circumferential ODSCC at Expansion Transitions:

A total of 222 circumferential ODSCC indications has been reported at the hot leg expansion transition region: 77 in SG A, 95 in SG B, and 52 in SG C. The +POINT probe 300 kHz voltages range from 0.04 V to 0.34 V. All are below the in situ pressure test initial voltage screening criteria of 0.5 V. The largest % degraded area (PDA) was determined to be 35.6%, which satisfies the condition monitoring limit of 47% PDA, including non-destructive examination (NDE) uncertainties. The range of maximum depth measurements by phase analysis is 0% TW to 98% TW. It should be noted that phase-based depth assessment of small voltage signals can be inaccurate due to the expansion transition geometry. The indicated circumferential crack arc lengths range from 11 degrees to 304 degrees.

A total of 12 axial ODSCC indications have been reported at the hot leg expansion transition region: 6 in SG A, 6 in SG B, and none in SG C. The +POINT probe 300 kHz voltage ranges from 0.07 V to 0.38 V. The in situ pressure test voltage screening criteria is 0.5 V. The measured axial crack lengths range from 0.11 inch to 0.24 inch. The critical crack length for structural integrity is 0.4 inch for a 100% TW flaw over the entire length; one tube in SG A contained both an axial and circumferential ODSCC indication at the expansion transition. These flaws were separated by a non-degraded ligament of 89 degrees (0.68 inch). Therefore, these flaws are not interacting and are treated as separate flaws for tube integrity.

Other Indications of Note:

ODSCC at FS dings:

Two indications of ODSCC at FS dings have been reported, as follows:

One circumferential ODSCC indication was detected at a 1.25 V historical FS ding at TSP 02C+25.37 inches. The +POINT probe 300 kHz voltage was 0.47 V and was less than the in situ pressure test 0.5 V screening criteria. The circumferential extent was measured at 27 degrees and is less than the critical flaw length of 169 degrees for a 100% TW flaw over the entire extent. The phase-based depth was 0% TW, as the ding signal component is affecting the phase of the flaw. Applying the EPRI Appendix I ETSS I28432 voltage to depth amplitude correlation, the maximum depth is 65% TW. This is a conservative depth since the voltage used includes the effects of the ding. Applying this depth to the entire circumferential extent results in a PDA of 3%. This satisfies the condition monitoring limit of 47% PDA.

One axial ODSCC indication was detected at a 0.81 V FS ding located at TSP 06C+40.3 inches in SG C. The indication was initially detected by the bobbin coil and was confirmed with the +POINT probe. The 300 kHz +POINT probe voltage was 0.34 V and is less than the in situ pressure test screening criteria of 0.5 V. The indication was measured at an axial length of 0.18 inch. The critical crack length for structural integrity is 0.4 inch for a 100% TW flaw over the entire length. Using the EPRI Appendix I ETSS 28432 amplitude depth sizing technique, the maximum depth is 56% TW. This is less than the condition monitoring limit of 58% TW for a uniformly deep flaw.

Freespan axial ODSCC:

Two indications of axial ODSCC within the FS (non-ding locations) have been reported, as follows:

One axial ODSCC indication was detected at TSP 06H+39 inches and appears to be originated at a tube scratch that traverses axially along the tube. The 300 kHz +POINT probe voltage is 0.21 V and was the indication was measured at an axial length of 0.21 inch. The critical crack length for structural integrity is 0.4 inch for a 100% TW flaw over the entire length. The critical crack length for structural integrity is 0.4 inch for a 100% TW flaw over the entire length. Using the EPRI Appendix I ETSS 28432 amplitude depth sizing technique, the

maximum depth is 46% TW, satisfying the 58% TW condition monitoring limit for a uniformly deep flaw.

One axial ODSCC indication was detected in the U-bend of a row 35 tube. No stress risers (i.e., ding, scratch, geometry) were apparent. The 300 kHz +POINT probe voltage was 0.28 V and is less than the in situ pressure test 0.5 V screening limit. The indication was measured at 0.28 inch in axial length. The critical crack length for structural integrity is 0.4 inch for a 100% TW flaw over the entire length. Using the EPRI Appendix I ETSS 28432 amplitude depth sizing technique, the maximum depth is 53% TW, satisfying the 56 TW condition monitoring limit for a uniformly deep flaw.

6. Describe repair/plugging plans.

   RESPONSE: A number of tubes in all three SGs will be either plugged or sleeved, depending on the type and location of the indication. All crack indications not addressed by an alternate repair criteria (F* and GL 95-05) will be plugged or sleeved. Sleeving will occur for a number of tubes with indications at the top of the tubesheet expansion transition region. Circumferential indications at the top of the tubesheet not sleeved will plug with a stabilizer installed. Wear type indications (i.e., AVB wear and volumetric wear indications) will be plugged at the technical specification plugging criteria of 40% TW.

   To date, there are approximately 252 tubes to plug or sleeve. The majority of these are candidates for sleeving.

7. Describe in situ pressure test and tube pull plans and results (as applicable and if available).

   RESPONSE: All indications will be screened for and tested in situ pressure testing in accordance with the EPRI SG in situ pressure test guidelines. To -date, no tubes are required to be in situ pressure tested.

8. Discuss the following regarding loose parts:

   - What inspections are performed to detect loose parts?

     RESPONSE: Secondary side visual inspections (annulus, tube lane, selected, and random in-bundle locations) and eddy current examinations.

   - A description of any loose parts detected and their location within the SG (including the source or nature of the loose part, if known).

     RESPONSE: Three metallic objects were found during the secondary side tubesheet visual and FOSAR inspections: two in SG A, one in SG C, and none in SG B. All objects were smaller than the evaluated size limits for acceptable operation for at least two cycles of operation, without causing significant tube degradation if located in the worst case flow regime within the SG:

     - SG A: Wire measuring (2" x 0.1" diameter). Located in-bundle on the hot leg tubesheet adjacent to tubes RR26C26, R26C27, and R27C26. No tube wear

was detected by the +POINT probe on these tubes or adjacent tubes. The wire was wedged in place and was unable to be retrieved. The three affected tubes are planned to be preventatively plugged and stabilized.

- SG A: A gasket piece (1.25" x0.125" x 0.03"). Located in-bundle on the hot leg tubesheet wedged between tubes R22C27 and R22C28. No tube wear was detected by the +POINT probe on these tubes or adjacent tubes. The gasket was wedged in place and was unable to be retrieved. The two affected tubes are planned to be preventatively plugged and stabilized.

- SG C: Weld slag (0.4" x0.2" x 0.06") located near the tube periphery near tube R30C42. No tube wear was reported on tubes near this location. The object is loose and can freely move between tubes. The object was unable to be retrieved as it moved behind the tube. No tubes are planned to be plugged due to this object, as it is small and likely migrated to lower flow regions of the SG. The object is smaller than the evaluated acceptable size limit for the worst case flow regime in the SG for at least two cycles of operation.

- If the loose parts were removed from the SG.

  RESPONSE: None of the metallic objects found (three) were removed from the SG.

- Indications of tube damage associated with the loose parts.

  RESPONSE: No tube degradation has been detected that was associated with foreign objects found during this outage. No new tube wear was found through eddy current testing.

9. Discuss the scope and results of any secondary side inspection and maintenance activities (e.g., in-bundle visual inspections, feedring inspections, sludge lancing, assessing deposit loading, etc.).

   RESPONSE: Post-sludge lance visual inspections at the secondary side tubesheet were performed in each SG. The hot leg and cold leg tubesheet annulus, no-tube lane, and all periphery tubes and tube gaps (looking into the tube bundle) were performed. Additional targeted in-bundle visual inspections were performed to investigate possible loose particles (PLP) signals reported from eddy current testing.

   No steam drum or upper bundle visual inspection were performed this outage.

10. Discuss any unexpected or unusual results.

    RESPONSE: During the NSAL-12-1, Revision 1, visual inspection of the primary channel head cladding surfaces, a "shadow" or dark spot was noted on the channel head cladding surface in SG C on the cold leg side. The spot was approximately ½" in length and 1/8" in width. There was no evidence of rust or oxides. From the initial video inspection performed, the character of the spot could not be determined (i.e., lighting effect, stain, cladding defect). Further investigation with alternate video/camera

equipment was planned to take place on November 2, 2018, to determine the nature of the spot.

11. Provide the schedule for SG-related activities during the remainder of the current outage.

    RESPONSE: The scheduled activities for the rest of the outage include data management closeout, tube sleeve installation and inspection, stabilizer installation, plug installation, channelhead closeout, and manway cover installation

SUBJECT: SUMMARY OF NOVEMBER 1, 2018, TELECONFERENCE WITH FIRSTENERGY NUCLEAR OPERATING COMPANY REGARDING FALL 2018 STEAM GENERATOR INSPECTIONS AT BEAVER VALLEY POWER STATION, UNIT 2 (EPID L-2018-LRO-0034) DATED NOVEMBER 28, 2018

DISTRIBUTION:

PUBLIC
PM File Copy
AJohnson, NRR
RidsNrrLALRonewicz
RidsACRS_MailCTR
RidsRgn1MailCenter
RidsNrrDmlrMccb
PKlein, NRR
JKulp, R-I
RidsNrrDorlLpl1
AHuynh, NRR
RidsNrrPMBeaverValley
JJohnston, NRR
JBowen, OEDO
CCook, OEDO
LBurkhart, OEDO
JTobin, NRR

ADAMS Accession No.: ML18325A023 *by memorandum

OFFICE	DORL/LPL1/PM	DORL/LPL1/LA	DMLR/MCCB*	DORL/LPL1/BC	DORL/LPL1/PM
NAME	JTobin	PTalukdar/ LRonewicz	SBloom	JDanna	JTobin
DATE	11/27/2018	11/27/2018	11/15/2018	11/28/2018	11/28/2018

OFFICIAL RECORD COPY