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Fax: 724-643-8069February 11, 2010
L-10-013ATTN: 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
Steam Generator Tube Inspection Report – Technical Specification 5.6.6.2.4

In accordance with Technical Specification 5.6.6.2.4, FirstEnergy Nuclear Operating Company hereby submits a report containing tube inspection results for Beaver Valley Power Station, Unit No. 2, steam generators. The attachment to this letter provides information required by the technical specification that was obtained during inspections conducted during the fall 2009 refueling outage.

There are no regulatory commitments contained in this letter. If there are any questions or if additional information is required, please contact Mr. Thomas A. Lentz, Manager – Fleet Licensing, at (330) 761-6071.

Sincerely,



Paul A. Harden

Attachment:

Beaver Valley Power Station Unit No. 2 Steam Generator Tube Inspection Report

A001
NRR

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cc: Nuclear Regulatory Commission Region I Administrator
Nuclear Regulatory Commission Resident Inspector
Nuclear Reactor Regulation Project Manager
Director Bureau of Radiation Protection/Department of Environmental Protection
(BRP/DEP)
Site BRP/DEP Representative

Attachment
L-10-013

**Beaver Valley Power Station Unit No. 2
Steam Generator Tube Inspection Report**
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This report is provided pursuant to Technical Specification (TS) 5.6.6.2.4 with respect to steam generator (SG) tube inspections conducted during the fall 2009 refueling outage (2R14).

During the 2R14 outage, the Plus Point probe was used to inspect the hot leg top of the tubesheet region. The inspection scope was 100 percent of the active hot leg tubes in all SGs. The inspection distance was from 6.0 inches above the top of tubesheet to 3.0 inches below the top of tubesheet, including examination of the F* distance below the bottom of roll expansion transition. Ten tubes with roll expansion transitions at lower than nominal elevations were inspected to a depth of 5.0 inches below the top of tubesheet to ensure that the F* distance was adequately examined.

Tables A through C provide tabulations of inspection results found in the tubesheet region. Consistent with the reporting requirements of TS 5.6.6.2.4, each of the tables provides the following information for the respective SG:

- a. Total number of indications, location of each indication, orientation of each indication, severity of each indication, and whether the indications initiated from the inside or outside surface,
- b. The cumulative number of indications detected in the tubesheet region as a function of elevation within the tubesheet,
- c. The projected end-of-cycle accident-induced leakage from tubesheet indications.

All indications observed were plugged upon detection. All circumferential indications were stabilized prior to installing the hot leg plug. None of the indications that were removed from service during 2R14 represented a leakage potential at postulated main steam line break conditions during Cycle 14.

Tables D through F provide inspection results for indications found in non-tubesheet regions of the SGs.

The following is a summary of the degradation observed during the 2R14 tubesheet region examinations.

SG "A" Hot Leg:

Thirty-six tubes were plugged for indications reported during the hot leg tubesheet region examination. Of the 36 tubes, 33 tubes were reported with either single or multiple circumferential outside diameter stress corrosion cracking (ODSCC) indications located at or slightly below the top of tubesheet, 2 tubes were reported with single axial ODSCC indications located above the top of tubesheet, and 1 tube was reported with a single circumferential ODSCC indication located above the top of tubesheet. Table A provides a tabulation of these results.

Table A
2R14 Tubesheet Indications - SG A

SG	Indication Location			Orientation**	Severity***			Initiation Surface/ Degradation	Projected Leakage
	Row	Column	Elevation*		Volts	Axial Length	Arc Length		
A	2	46	TSH +0.02"	SCI	0.09		56°	ODSCC	0
A	4	30	TSH -0.06"	SCI	0.18		201°	ODSCC	0
A	5	37	TSH -0.02"	SCI	0.16		40°	ODSCC	0
A	6	31	TSH -0.09"	SCI	0.13		43°	ODSCC	0
A	7	56	TSH -0.04"	SCI	0.25		137°	ODSCC	0
A	10	53	TSH -0.03"	SCI	0.14		63°	ODSCC	0
A	10	65	TSH -0.11"	SCI	0.11		71°	ODSCC	0
A	12	43	TSH -0.10"	SCI	0.16		46°	ODSCC	0
A	17	41	TSH -0.09"	SCI	0.13		40°	ODSCC	0
A	17	42	TSH -0.13"	SCI	0.15		151°	ODSCC	0
A	18	77	TSH -0.10"	SCI	0.13		50°	ODSCC	0
A	20	34	TSH -0.17"	SCI	0.16		59°	ODSCC	0
A	21	20	TSH -0.11"	SCI	0.17		63°	ODSCC	0
A	21	23	TSH -0.13"	SCI	0.15		100°	ODSCC	0
A	23	25	TSH -0.13"	SCI	0.10		59°	ODSCC	0
A	23	73	TSH -0.06"	MCI	0.15		158°	ODSCC	0
A	25	24	TSH -0.16"	SCI	0.09		108°	ODSCC	0
A	25	27	TSH -0.12"	SCI	0.11		40°	ODSCC	0
A	25	71	TSH -0.07"	SCI	0.13		20°	ODSCC	0
A	26	23	TSH -0.10"	SCI	0.33		167°	ODSCC	0
A	27	20	TSH -0.15"	MCI	0.13		124°	ODSCC	0
A	28	22	TSH -0.11"	MCI	0.13		164°	ODSCC	0
A	30	69	TSH -0.05"	SCI	0.24		84°	ODSCC	0
A	31	37	TSH -0.12"	MCI	0.09		126°	ODSCC	0
A	31	71	TSH -0.07"	SCI	0.26		199°	ODSCC	0
A	31	75	TSH -0.10"	SCI	0.09		48°	ODSCC	0
A	33	51	TSH -0.13"	SCI	0.05		30°	ODSCC	0
A	36	35	TSH -0.04"	MCI	0.11		90°	ODSCC	0
A	36	45	TSH -0.07"	SCI	0.24		175°	ODSCC	0
A	36	68	TSH -0.05"	MCI	0.26		121°	ODSCC	0
A	37	58	TSH +0.73"	SAI	0.09	0.22"		ODSCC	0
A	38	29	TSH +0.64"	SAI	0.09	0.38"		ODSCC	0
A	39	44	TSH -0.07"	SCI	0.14		45°	ODSCC	0
A	41	48	TSH -0.02"	SCI	0.31		103°	ODSCC	0
A	42	46	TSH +0.00"	SCI	0.14		110°	ODSCC	0
A	42	47	TSH -0.03"	SCI	0.10		21°	ODSCC	0

* TSH – Tubesheet (hot leg)

** MCI – Multiple circumferential indications
SAI – Single axial indication
SCI – Single circumferential indication

*** Reported using the 300 kHz Plus Point coil

SG "B" Hot Leg:

Eighteen tubes were plugged for indications reported during the hot leg tubesheet region examination. Of the 18 tubes, 11 tubes were reported with either single or multiple circumferential ODSCC indications located at or slightly below the top of tubesheet, 5 tubes were reported with single axial ODSCC indications located above the top of tubesheet, and 2 tubes were reported with single circumferential ODSCC indications located above the top of tubesheet. Table B provides a tabulation of these results.

Table B
2R14 Tubesheet Indications – SG B

SG	Indication Location			Orientation**	Severity***			Initiation Surface/ Degradation	Projected Leakage
	Row	Column	Elevation*		Volts	Axial Length	Arc Length		
B	5	39	TSH +0.56"	SAI	0.25	0.36"		ODSCC	0
B	6	54	TSH +0.10"	SAI	0.14	0.16"		ODSCC	0
B	8	36	TSH -0.17"	MCI	0.19		91°	ODSCC	0
B	9	34	TSH -0.08"	MCI	0.19		90°	ODSCC	0
B	9	41	TSH -0.07"	SCI	0.10		33°	ODSCC	0
B	10	42	TSH +0.03"	SCI	0.12		103°	ODSCC	0
B	11	48	TSH -0.05"	SCI	0.14		103°	ODSCC	0
B	16	11	TSH -0.09"	SCI	0.10		23°	ODSCC	0
B	17	26	TSH +0.09"	SAI	0.19	0.21"		ODSCC	0
B	17	27	TSH +0.07"	SAI	0.24	0.21"		ODSCC	0
B	17	30	TSH -0.12"	SCI	0.07		77°	ODSCC	0
B	18	27	TSH +0.04"	SAI	0.16	0.28"		ODSCC	0
B	20	43	TSH -0.11"	MCI	0.11		170°	ODSCC	0
B	30	49	TSH +0.03"	SCI	0.09		112°	ODSCC	0
B	32	38	TSH -0.03"	SCI	0.15		27°	ODSCC	0
B	32	46	TSH -0.04"	SCI	0.10		133°	ODSCC	0
B	35	46	TSH -0.11"	SCI	0.11		40°	ODSCC	0
B	36	52	TSH -0.15"	SCI	0.16		96°	ODSCC	0

* TSH – Tubesheet (hot leg)

** MCI – Multiple circumferential indications
SAI – Single axial indication
SCI – Single circumferential indication

*** Reported using the 300 kHz Plus Point coil

SG "C" Hot Leg:

Twenty-five tubes were plugged for indications reported during the hot leg tubesheet region examination. Of the 25 tubes, 23 tubes were reported with either single or multiple circumferential ODSCC indications located at or slightly below the top of tubesheet, 1 tube was reported with a single axial ODSCC indication located above the top of tubesheet, and 1 tube was reported with a single circumferential ODSCC indication located above the top of tubesheet. Table C provides a tabulation of these results.

Table C
2R14 Tubesheet Indications – SG C

SG	Indication Location			Orientation**	Severity***			Initiation Surface/Degradation	Projected Leakage
	Row	Column	Elevation*		Volts	Axial Length	Arc Length		
C	1	55	TSH -0.10"	SCI	0.24		162°	ODSCC	0
C	2	53	TSH -0.12"	SCI	0.11		46°	ODSCC	0
C	4	30	TSH -0.13"	MCI	0.12		117°	ODSCC	0
C	5	20	TSH -0.09"	SCI	0.08		78°	ODSCC	0
C	6	40	TSH +0.55"	SAI	0.29	0.51"		ODSCC	0
C	7	57	TSH -0.09"	SCI	0.22		115°	ODSCC	0
C	9	70	TSH -0.12"	SCI	0.17		81°	ODSCC	0
C	11	44	TSH -0.14"	SCI	0.20		75°	ODSCC	0
C	15	21	TSH -0.04"	SCI	0.12		92°	ODSCC	0
C	15	24	TSH +0.00"	SCI	0.17		62°	ODSCC	0
C	15	41	TSH -0.09"	SCI	0.16		134°	ODSCC	0
C	16	24	TSH -0.05"	SCI	0.06		23°	ODSCC	0
C	18	49	TSH -0.07"	SCI	0.12		106°	ODSCC	0
C	19	60	TSH -0.10"	SCI	0.16		65°	ODSCC	0
C	19	70	TSH -0.06"	SCI	0.17		56°	ODSCC	0
C	21	39	TSH +0.09"	SCI	0.14		43°	ODSCC	0
C	28	25	TSH -0.19"	MCI	0.09		155°	ODSCC	0
C	29	42	TSH -0.09"	SCI	0.11		36°	ODSCC	0
C	33	66	TSH -0.11"	SCI	0.14		39°	ODSCC	0
C	34	48	TSH -0.08"	SCI	0.12		39°	ODSCC	0
C	34	52	TSH -0.12"	SCI	0.09		24°	ODSCC	0
C	35	47	TSH -0.11"	SCI	0.11		39°	ODSCC	0
C	35	49	TSH -0.11"	SCI	0.15		50°	ODSCC	0
C	36	54	TSH -0.10"	SCI	0.05		18°	ODSCC	0
C	37	58	TSH -0.09"	SCI	0.13		62°	ODSCC	0

- * TSH – Tubesheet (hot leg)
- ** MCI – Multiple circumferential indications
SAI – Single axial indication
SCI – Single circumferential indication
- *** Reported using the 300 kHz Plus Point coil

Non-Tubesheet Region:

Tables D, E, and F provide a list of tubes that were removed from service for degradation in other areas of the steam generators. This information is being submitted for completeness of the tube plugging performed during 2R14 and is not required by Technical Specification 5.6.6.2.4.

**Table D
Steam Generator A**

Indication Location				Orientation**	Severity***			Initiation Surface/ Degradation	Projected Leakage
SG	Row	Column	Elevation*		Volts	Axial Length	Arc Length		
A	32	47	1C +0.74"	SVI	0.12	0.16"	26°	WEAR	0
A	38	36	3H +0.01"	SAI	0.10	0.21"		ODSCC	0

**Table E
Steam Generator B**

Indication Location				Orientation**	Severity***			Initiation Surface/ Degradation	Projected Leakage
SG	Row	Column	Elevation*		Volts	Axial Length	Arc Length		
B	2	20	5H -0.01"	SAI	0.12	0.26"		ODSCC	0
B	17	31	3H +0.00"	SAI	0.28	0.44"		ODSCC	0
B	17	39	3H -0.04"	SAI	0.28	0.21"		ODSCC	0
B	21	52	2H +0.11"	SAI	0.11	0.31"		ODSCC	0
B	36	56	AV3 +0.00"	40%	6.13			WEAR	0

**Table F
Steam Generator C**

Indication Location				Orientation**	Severity***			Initiation Surface/ Degradation	Projected Leakage
SG	Row	Column	Elevation*		Volts	Axial Length	Arc Length		
C	3	26	3H +0.01"	SAI	0.12	0.44"		ODSCC	0
C	13	49	2H +9.70"	SCI	1.01		35°	ODSCC	0
C	19	35	3H -0.16"	SAI	0.10	0.20"		ODSCC	0
C	23	60	2H +0.03"	SAI	0.11	0.30"		ODSCC	0
C	32	71	2H +0.20"	SAI	0.12	0.26"		ODSCC	0
C	43	36	3H +2.70"	SCI	1.09		43°	ODSCC	0

* 2H, 3H, 5H = 2nd, 3rd, 5th Hot leg tube support plate
1C = 1st Cold leg tube support plate (flow distribution baffle)
AV3 = 3rd Anti-vibration bar

** MCI – Multiple circumferential indications
SAI – Single axial indication
SCI – Single circumferential indication
SVI – Single volumetric indication

*** Reported using the 300 kHz Plus Point coil
SG B, Row 36, Column 56 (AV3) voltage reported from bobbin coil