



For Reply

Luis A. Reyes
Regional Administrator
U. S. Nuclear Regulatory Commission
Atlanta Federal Center
61 Forsyth Street, S. W., Suite 23185
Atlanta, GA 30303

Re: Turkey Point Unit 3
Docket No. 50-250

Steam Generator Tube Plugging Inservice Inspection 12-Month Special Report - Revision

References 1: NRC Letter L-2001-041 dated March 5, 2001
2: NRC Information Notice 2001-16: Recent Foreign And Domestic

Experience With Degradation Of Steam Generator Tubes And Internals

Reference 1 provided the Inservice Inspection 12-Month Report for the Turkey Point Unit 3 kind of Cycle 17 (EOC 17) inservice inspection of steam generator tubes. The content of this report was discussed recently in Reference 2. This letter provides a revision of the Reference 1 report, and is submitted in accordance with Turkey Point Technical Specification 4.4.5.3.b, pursuant to Technical Specification 6.9.2.

The Turkey Point Unit 3 steam generators were inspected from March 10, 2000, through March 13, 2000. A total of 69 steam generator tubes were plugged as a result of this inspection. Tube plugging for each steam generator is summarized in Table 1.

This report provides revised results based on a re-evaluation of circumferential and volumetric indications reported during the Unit 3 EOC 17 inspection. The re-evaluation incorporates applicable industry expertise and lessons learned from subsequent Unit 4 inspections. A discussion of the basis for the re-evaluation follows.

As discussed in Reference 1, the Unit 3 EOC 17 inspection included the first significant examination of the hot leg top-of-tubesheet region with rotating Plus Point® probes, which have enhanced detection capabilities. TPI believed that circumferential indications reported in the EOC 17 inspection were due to original manufacturing or possible corrosion degradation. However, since the nature of these indications could not be conclusively determined during the inspection, and no comparable baseline data was available, these tubes were conservatively assumed to be defective and were plugged on detection. After the Unit 3 inspection, TPI completed eddy current inspection of the Unit 4 steam generators (same design as Unit 3) in October 2000, and similar indications were reported near the top-of-tubesheet. As discussed with NRC during the Unit 4 inspection, the circumferential indications were conservatively shown by supplemental ultrasonic examinations to be minor geometric variations resulting from the tube-to-tubesheet joint fabrication process, and were not due to degradation. TPI also

determined that tubes removed from steam generators of similar design contained similar minor geometric variations. These variations resulted from the tube-to-tubesheet joint fabrication process, and produced circumferential indications such as those observed at Turkey Point Unit 3 & 4. This supports our conclusion that circumferential indications at Turkey Point Unit 3 & 4 are due to geometry and not degradation.

EPL also concluded that volumetric indications reported during the Unit 3 EOC 17 inspection are a result of an overly conservative analysis of the inspection data. A post-audit review by various industry experts, and subsequent re-analysis of the data supports this position. Additional support was gained from ultrasonic examination of two similar volumetric indications in the Unit 4 steam generators in October 2001. One indication exhibited minor OD wall loss consistent with wear from a prior foreign object. The second appeared as a simple OD pit-like indication, but was sharper and more defined than pit indications examined by ultrasonic techniques in another model F steam generator, i.e., did not contain incipient back wall attenuation accompanied by scattered mid-wall reflections. These results support our conclusion that volumetric indications observed at Turkey Point Unit 3 & 4 are not due to corrosion induced degradation.

Additional inspections were completed for the Unit 3 steam generator tubing during the EOC 18 refueling outage in October 2001. No additional circumferential, volumetric, or pit-like indications were reported in the top-of-tubesheet area. Those additional results further support our conclusion that the indications reported during the EOC 17 inspections are a result of manufacturing and installation processes, and demonstrates that our approach for disposition of the indications at Unit 3 was conservative. As required by regulations, the complete results for the Unit 3 EOC 18 inspections will be provided to the NRC in a separate report.

Finally, the results for tubes that were plugged due to mechanical wear at anti-vibration bars in the u-bend remain unchanged by this re-evaluation. The attached report provides the complete results for the re-analysis of the Unit 3 EOC 17 inspection. The results of this re-evaluation show that 27 tubes required plugging. Of these tubes, 26 contain volumetric or pit-like indications (possibly due to manufacturing and installation artifacts), and 1 contains mechanical wear degradation exceeding the Technical Specification limit of 40% through-wall. An additional 4 tubes with mechanical wear are approaching the Technical Specification limit and were preventively plugged. The remaining 38 tubes that were plugged during the Unit 3 EOC 17 inspection were determined by this re-evaluation to contain no degradation, and are listed as preventively plugged in the attached report. A comparison of original and revised results is summarized in Table 2.

TABLE 1
Turkey Point Unit 3 Steam Generator Tube Plugging

Steam Generator	SG 3A	SG 3B	SG 3C
Prior Tubes Plugged	20	28	35
EOC 17 Tubes Plugged	25	28	16
Total Tubes Plugged	45 (1.4%)	56 (1.7%)	51 (1.6%)

TABLE 2
Comparison of Original and Re-Evaluation Results

Re-Evaluation E/C 17 3/2000 Tubes Plugged	Original Evaluation E/C 17 3/2000 Tubes Plugged	Indication Type
0	14	ID Circumferential or Mfg. Artifact (1)
0	9	OD Circumferential or Mfg. Artifact (1)
7	41	OD Volumetric or Mfg. Artifact (1)
19	0	OD Pitting or Mfg. Artifact (1)
13	0	Circumferential Geometric Anomaly (2)
23	0	Geometry (Ding/Dent) (2)
2	0	Manufacturing Butt Mark (2)
4	4	Wear at U-Bend (2)
1	1	Wear at U-Bend (2)
69	69	TOTAL TUBES PLUGGED

1. Plugged on detection.
2. Preventatively Plugged.
3. Exceeds Technical Specification Plugging Limit (4.4.5.4.a.6)

The classification of results for this inspection, as defined in Technical Specification 4.4.5.2, remain unchanged by the re-evaluation, and are classified Category C-2 in steam generator A, Category C-3 in steam generator B, and Category C-1 in steam generator C.

Very truly yours,



John P. McElwain
Vice President
Turkey Point Plant

CLM

Attachment

cc: USNRC, Document Control Desk, Washington, D.C.
Senior Resident Inspector, USNRC, Turkey Point Plant

FORM NIS-BB OWNERS' DATA REPORT FOR EDDY CURRENT EXAMINATION RESULTS
As required by the provisions of the ASME CODE RULES

EDDY CURRENT EXAMINATION RESULTS

PLANT: Turkey Point Unit 3

Revision to Report CSI-NDE-00-026

EXAMINATION DATE: March 10, 2000 through March 15, 2000.

STEAM GENERATOR	TOTAL TUBES INSPECTED	TOTAL TUBES 20%-39%	TOTAL TUBES ≥40%, PIT & VOL	TUBES PREVENTIVELY PLUGGED (FTP)	TUBES PLUGGED TUBS OUTAGE	TOTAL PLUGGED TUBES IN S/G
3E210A (Bobbins)	1609	5 (1)	0	2 (0)	2 (0)	See RPC
3E210B (Bobbins)	1601	4 (1)	0	1 (0)	1 (0)	See RPC
3E210C (Bobbins)	1627	19 (0)	1 (0)	1 (0)	2 (0) (0)	See RPC
3E210A (RPC)	3194 (0)	0	9 (0)	14 (0)	23	45
3E210B (RPC)	3186 (0)	0	14 (0)	13 (0)	27	56
3E210C (RPC)	3179 (0)	0	3 (0)	11 (0)	14	51

LOCATION OF INDICATIONS
(20% - 100% PIT & VOL)

STEAM GENERATOR	AVB Bars	Tube Supports 1 thru 6 C/L	Tube Supports 1 thru 6 H/L	Freespan 6H thru 6C UBEND	Top of Tubesheet to #1 Support C/L	Top of Tubesheet to #1 Support H/L	Total Indications 20%-39%	Total Indications ≥40%, PIT VOL & FTP
3E210A (Bobbins)	7 (0)	0	0	0	0	0	7	2 (0)
3E210B (Bobbins)	8 (0)	0	0	0	0	0	6	1 (0)
3E210C (Bobbins)	33 (0)	0	0	0	0	0	31	3 (0) (0)
3E210A (RPC)	0	0	0	0	n/a	24	n/a	24 (0) (0)
3E210B (RPC)	0	0	0	0	n/a	27	n/a	27 (0) (0)
3E210C (RPC)	0	0	0	0	n/a	14	n/a	14 (0) (0)

Remarks:

- (1) Mechanical wear damage at anti-vibration bars (AVB) was depth sized using qualified bobbin coil sizing technique.
- (2) One tube was plugged due to AVB wear that exceeded the 40% Tech Spec limit based on bobbin coil results.
- (3) Two tubes in 3A, one tube in S/G 3B and one tube in S/G 3C were preventatively plugged for AVB wear progression.
(3a) One tube contained two AVB wear indication that exceeded the 40% Tech Spec limit based on bobbin coil results
- (4) Some tubes may have more than one indication reported.
- (5) Includes tubes in the dent, low row U-bend and hot leg tubesheet expansion transition programs.
- (6) Includes three tubes with volumetric (VOL) indications and six tubes with (PIT) indications.
(6a) Includes three tubes with three volumetric (VOL) indications and six tubes with seven (PIT) indications.
- (7) Includes one volumetric (VOL) and thirteen (PIT) indications.
- (8) Includes three tubes that were plugged due to volumetric (VOL) indications.
- (9) Includes indications that were determined to be circumferential single anomalies (CSA), clings (DNG) and geometry variations for tracking and remain preventatively plugged.

PTN-3 S/G "A"

OUTAGE: 03/00

Pluggable Indications

Attachment 2

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ROW	COL	QAL	VOLTS	DEG	CH	%	IND	SUPPORT	INCHES
2	40	AI0054	1.07	19	2	0	PTT	TSH	-0.08
10	31	AI0039	0.76	21	2	0	PTP	TSH	-0.15
16	64	AI0014	1.02	20	2	0	PTP	TSH	-0.09
17	15	AI0049	0.22	38	2	0	PTP	TSH	0.05
17	33	AI0044	0.12	85	2	0	PTP	TSH	0.17
18	83	AI0060	0.12	105	2	0	PTT	TSH	0.11
18	84	AI0039	0.23	102	P 1	0	PTT	TSH	0.16
19	84	AI0060	0.22	97	2	0	PTT	TSH	0.21
20	84	AI0060	0.26	99	2	0	PTT	TSH	0.46
21	87	AI0039	1	155	1	0	PTP	TSH	0.68
28	75	AI0077	0.39	93	P 1	0	PTT	TSH	0.15
29	75	AI0068	0.17	103	2	0	VOL	TSH	0.14
30	65	AI0077	0.2	16	1	0	PTP	TSH	-0.24
31	77	AI0056	0.14	120	P 1	0	PTT	TSH	0.1
32	23	AI0043	1.89	15	2	0	PTP	TSH	-0.03
32	51	AI0055	0.14	140	2	0	VOL	TSH	0.65
32	64	AI0010	0.06	120	2	0	PTP	TSH	-0.21
33	35	AI0045	0.07	91	2	0	PTT	TSH	-0.02
33	41	AC0002	1.37	0	P 2	0	PTT	AV3	0
33	78	AI0061	3.05	5	1	0	PTP	TSH	0.63
34	25	AI0045	1.34	16	2	0	PTP	TSH	-0.06
35	65	AI0062	0.51	9	1	0	PTT	TSH	0.36
36	69	AI0092	0.09	122	P 1	0	VOL	TSH	0.21
38	45	AC0002	1.88	0	P 2	0	PTP	AV3	6
38	65	AI0061	0.23	107	P 1	0	PTP	TSH	0.23
39	67	AI0062	0.07	112	P 1	0	PTP	TSH	-0.05

TOTAL INDICATIONS: 26

TOTAL TUBES: 28

Report Plugging Criteria: >= 40 %, L-Code, PTP, VOL, TBS

Indication Key:

PTP - Preventative Tube Plug

VOL - Volumetric Indication

PTT - Fit Indication

PTN-3 S/G "B"

Pluggable Indications

OUTAGE : 02000

Attachment 2

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ROW	COL	CAL	VOLTS	DEG	CH	%	IND	SUPPORT	INCHES
1	14	EH023	0.93	24	2	0	PTP	TSH	-0.28
7	92	EH053	0.07	102	2	0	PTP	TSH	0.57
17	17	EH073	0.73	26	2	0	PTP	TSH	-0.06
19	10	EH004	0.13	99	2	0	PTT	TSH	0.24
19	12	EH0050	0.21	106	2	0	PTT	TSH	0.54
19	13	EH028	0.61	90	2	0	PTT	TSH	0.23
19	14	EH004	0.39	182	1	0	PTT	TSH	0.99
30	10	EH051	0.11	88	2	0	PTT	TSH	0.03
30	12	EH028	0.13	125	2	0	PTT	TSH	0.21
30	13	EH006	0.19	100	2	0	PTT	TSH	0.08
31	56	EH073	1.03	74	1	0	PTP	TSH	0.63
22	23	EH070	0.08	84	2	0	PTT	TSH	0.53
28	7	EH028	0.09	104	2	0	PTT	TSH	0.58
25	34	EH006	0.08	90	2	0	PTT	TSH	0.3
36	71	EH050	0.28	123	1	0	PTT	TSH	0.12
33	70	EH004	0.11	97	2	0	PTT	TSH	-0.06
34	46	EH001	1.91	0	1	0	PTT	AVS	0
34	57	EH040	0.33	90	1	0	PTT	TSH	0.1
37	46	EH037	0.26	113	2	0	PTT	TSH	0.04
38	39	EH037	0.5	91	2	0	VOL	TSH	0
38	48	EH037	0.23	107	2	0	PTT	TSH	0.18
38	46	EH038	0.19	99	2	0	PTT	TSH	0.29
39	39	EH044	0.08	117	1	0	PTT	TSH	0.19
41	43	EH050	0.42	77	2	0	PTT	TSH	0.24
41	65	EH041	0.12	89	1	0	PTT	TSH	0.03
42	33	EH039	0.13	69	2	0	PTT	TSH	0.14
44	42	EH006	0.1	130	2	0	PTT	TSH	0.4
45	47	EH042	0.1	67	1	0	PTT	TSH	0.64

TOTAL INDICATIONS: 39

TOTAL TUBES: 36

Report Plugging Criteria: >= 40%, 1-Code, PTP, VOL, TRS

Indication Key:

PTP - Preventative Tube Plug

VOL - Volumetric Indication

PTT - PTT Indication

PTN-3 S/G "C"

OUTAGE: 03/00

Pluggable Indications

Attachment 2

17/03 2:21:53 PM

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ROW	COL	CAL	VOLTS	DEG	CH	%	IND	SUPPORT	INCHES
1	20	CH068	1.29	21	2	0	PTP	TSH	-0.12
3	46	CH068	0.9	22	2	0	PTP	TSH	-0.08
7	3	CH062	0.15	113	P 1	0	PTP	TSH	0.00
15	44	CH068	0.02	34	2	0	PTP	TSH	0.03
22	7	CH069	0.29	119	2	0	PTP	TSH	0.55
23	7	CH060	0.34	112	P 1	0	PTP	TSH	0.59
30	60	CH061	1.17	14	2	0	PTP	TSH	-0.03
31	24	CH047	0.14	111	2	0	VOL	TSH	0.16
34	40	CH075	0.51	13	2	0	PTP	TSH	-0.08
34	66	CH077	0.02	123	P 1	0	PTP	TSH	0.23
35	43	CO002	1.2	0	P 2		PTP	AV3	0
35	44	CO002	1.58	0	P 2	43		AV3	0
35	44	CO002	1.57	0	P 2	42		AV2	0
36	74	CH076	0.38	13	0	0	PTP	TSH	-0.07
36	49	CH079	0.36	125	P 1	0	VOL	TSH	-0.01
40	49	CH072	0.17	87	2	0	VOL	TSH	0.06
45	49	CH072	0.04	73	2	0	PTP	TSH	2.89

TOTAL INDICATIONS: 17

TOTAL TUBES: 16

Report Plugging Criteria: >= 40 %, I-Codes, PTP, VOL, TRS

Indication Key:

PTP - Preventative Tube Plug

VOL - Volumetric Indication

PT - Fit Indication

PTN-3 S/G "A"

OUTAGE: 0300

Attachment 3

Row Line Volts Deg Chan Indr Percent Location U01 U02 Cal Probe

28	59	0.06	P-2	23	AV2	RS	ACORN A-TOMAWAC	THRTIC	THRTIC	THRTIC	15-080	3/1/00
29	15	0.66	P-1	29	AV1	SC	ACORN A-TOMAWAC	THRTIC	THRTIC	THRTIC	15-080	3/1/00
30	41	1.57	P-1	34	AV3	RS	ACORN A-TOMAWAC	THRTIC	THRTIC	THRTIC	15-080	3/1/00
31	41	0.87	P-1	26	AV1	RS	ACORN A-TOMAWAC	THRTIC	THRTIC	THRTIC	15-080	3/1/00
32	47	1.01	P-2	32	AV2		ACORN A-TOMAWAC	THRTIC	THRTIC	THRTIC	15-080	3/1/00
33	45	0.29	P-2	14	AV3	RS	ACORN A-TOMAWAC	THRTIC	THRTIC	THRTIC	15-080	3/1/00
34	45	1.85	P-2	17	AV2	RS	ACORN A-TOMAWAC	THRTIC	THRTIC	THRTIC	15-080	3/1/00

Total Tubes: 5

Total Indications: 7

PTN-3

PTN-3 S/G "B"

OUTAGE: 0300

Attachment 3

Row Line Volts Deg Chan Indr Percent Location U01 U02 Cal Probe

31	34	1.19	P-2	23	AV3	LS	ACORN A-TOMAWAC	THRTIC	THRTIC	THRTIC	15-080	3/1/00
32	34	0.8	P-2	21	AV1	RS	ACORN A-TOMAWAC	THRTIC	THRTIC	THRTIC	15-080	3/1/00
33	46	1.21	P-2	34	AV3	RS	ACORN A-TOMAWAC	THRTIC	THRTIC	THRTIC	15-080	3/1/00
34	46	1.46	P-2	31	AV2	RS	ACORN A-TOMAWAC	THRTIC	THRTIC	THRTIC	15-080	3/1/00
35	61	1.41	P-2	31	AV2	RS	ACORN A-TOMAWAC	THRTIC	THRTIC	THRTIC	15-080	3/1/00
36	43	0.25	P-2	20	AV2	RS	ACORN A-TOMAWAC	THRTIC	THRTIC	THRTIC	15-080	3/1/00

Total Indications: 6

Total Tubes: 4

PTN-3

PTN-3 S/G "C"
OUTAGE: 03/06

07 Aug 02
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Description: 20% to 39%

Attachment 3

Row	Line	Volts	Deg	Chan	Indn	Percent	Location	Unit	Unit	Cal	Probe	Extent Req'd	Extent Tested	Dataset	Date
23	45	0.19	P2		23	AV2		LR	4	CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
24	43	0.21	P2		24	AV3		PS		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
25	42	0.47	P2		23	AV2		PS		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
26	58	0.1	P2		29	AV2		P1		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
26	58	0.4	P2		20	AV2		PS		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
28	48	0.2	P2		23	AV2		PS		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
30	31	0.46	P2		22	AV2		PS		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
30	31	0.5	P2		23	AV2		PS		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
30	41	0.39	P2		24	AV2		PS		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
33	31	0.46	P2		22	AV2		PS		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
33	43	0.51	P2		30	AV2	0.18	PS		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
33	43	0.55	P2		28	AV2		PS		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
34	31	0.60	P2		26	AV2		PS		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
34	31	0.50	P2		23	AV2		PS		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
34	41	0.76	P2		32	AV2		PS		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
34	43	0.78	P2		33	AV2		PS		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
34	41	0.62	P2		33	AV2		PS		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
34	41	0.78	P2		33	AV2		PS		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
34	44	0.43	P2		23	AV2		PS		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
35	36	0.51	P2		26	AV2		PS		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
35	36	0.59	P2		23	AV2		PS		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
35	42	0.9	P2		34	AV2		PS		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
35	43	0.42	P2		22	AV2		PS		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
35	43	1.2	P2		28	AV2		PS		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
35	43	0.74	P2		21	AV2		PS		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
35	44	0.53	P2		26	AV2		PS		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
35	49	1.41	P2		22	AV2		PS	4	CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
36	65	0.51	P2		23	AV2		PS		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
36	65	0.55	P2		26	AV2		PS		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
36	71	0.19	P2		27	AV2		PS		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00
40	23	0.39	P2		30	AV2	0.23	PS		CC001	A-750-MALC	TESTEC	TESTEC	15-IMP	3/10/00

Total Indications: 31

Total Tubes: 19

PTN-3/S/G "C"

OUTAGE: 03.00

Description: 40% to 100% Plagables

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Row	Col	Volts	Deg	Chan	Inda	Percent	Location	Unit	Unit2	Cal	Probe	Extant	Tested	Dataset	Date
36	44	1.64	7.2	43	AV3	LE	00012	A-220H/ULC	TEMPIC	IS-C60	33000				
36	44	1.67	7.1	43	AV3	LE	00013	A-220H/ULC	TEMPIC	IS-C60	33000				

Total Indications: 2

Total Tubes: 1