



October 12, 2017  
L-2017-146  
10 CFR 50.36

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D.C. 20555-00001

Re: Turkey Point Unit 3  
Docket No. 50-250  
Steam Generator Tube Inspection Report

The attached Turkey Point Unit 3 Cycle 29 Refueling Outage Steam Generator Tube Inspection Report is submitted in accordance with Turkey Point Technical Specification, 6.9.1.8 and within 180 days after the initial entry to MODE 4 following completion of the inspections performed in accordance with Technical Specification 6.8.4.j, Steam Generator (SG) Program.

Should there be any questions, please contact Mr. Mitch Guth, Licensing Manager, at (305) 246-6698.

Sincerely,

A handwritten signature in black ink, appearing to read 'Mitch Guth'.

Mitch Guth  
Licensing Manager  
Turkey Point Nuclear Plant

Attachments

cc: Regional Administrator, Region II, USNRC.  
Senior Resident Inspector, USNRC, Turkey Point Plant

AD47  
NRR

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Turkey Point Unit 3 (TP3-29)  
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## Background

This report is provided in accordance with Turkey Point Unit 3 Technical Specification Section 6.9.1.8, "Steam Generator Tube Inspection Report" for the inspection conducted in the Spring of 2017 during refueling outage twenty-nine (TP3-29). The TP3-29 outage designator is also commonly referred to as EOC-28 (End of the 28<sup>th</sup> Fuel Cycle). The TP3-29 inspection was the first inspection in the 4<sup>th</sup> Inspection Period (72 EFPM) and met the requirements of Turkey Point Unit 3 Technical Specification Section 6.8.4.j.d.2.c., NEI 97-06, and its referenced EPRI guidelines.

Turkey Point Unit 3 contains three (3) Westinghouse Model 44F steam generators (SGs), which were installed in 1981/82 to replace the original Unit 3 SGs. At the completion of Cycle 28 (CY-28), the Unit 3 SGs had accumulated 27.40 Effective Full Power Years (EFPY) of operation. The hot leg operating temperature (T-Hot) of Turkey Point Unit 3 is currently ~610 degrees F.

Following the TP3-29 refueling outage, Turkey Point Unit 3 initially entered HOT SHUTDOWN (MODE 4) on April 22, 2017. Pursuant to Turkey Point Unit 3 Technical Specification 6.9.1.8, this Steam Generator Tube Inspection Report is required to be submitted to the NRC within 180 days after initial entry into MODE 4.

Turkey Point Technical Specification Section 6.8.4.j.d.2.c contains the fourth inspection period requirements and requires that 100% of the tubes be inspected every 72 effective full power months (for this and all subsequent inspection periods). For the current (4th) inspection period of 72 EFPM, the Turkey Point Unit 3 SGs inspections completed/planned are shown below:

- TP3-28 in 2015 (Skip; secondary-side inspections only)
- TP3-29 in 2017 (SG Inspection Completed)
- TP3-30 in 2018 (Skip)
- TP3-31 in 2020 (SG Inspection Planned)

Implementation of TSTF-510 (Reference 1) was approved by License Amendments 255 and 251 (Reference 2) on Nov. 6, 2012, and incorporated into the Turkey Point technical specifications to make changes to the sections pertaining to SG tube integrity, the SG program (inspection frequency), and the SG tube inspection report.

On November 5th, 2012, the NRC approved License Amendments (Ref. 3) regarding permanent alternative repair criteria for service-induced degradation detected in the tubesheet region. Reference 3 states: "Tubes with service-induced flaws located greater than 18.11 inches below the top of the tubesheet do not require plugging".

The examination performed during TP3-29 met the requirements of the following:

- Technical Specification 6.8.4.j "Steam Generator (SG) Program"
- NEI 97-06 "Steam Generator Program Guidelines"
- Steam Generator Management Program: Pressurized Water Reactor Steam Generator Examination Guidelines: Revision 7. EPRI, Palo Alto, CA. 2007 TR-1013706.

## Steam Generator Tube Inspection Report

Each applicable reporting requirement of TS 6.9.1.8 is addressed below in items "a" through "j" for the TP3-29 inspection in 2017.

### a. The scope of inspections performed on each steam generator

(All three SGs were examined during TP3-29).

#### Bobbin Probe

- 100% full length in rows 3 and higher.
- 100% of the row 1 & 2 hot leg (HL) and cold leg (CL) straight sections.

#### +Point™ Probe

For all 50% samples within the +Point™ scope below, priority was given to selecting tubes or locations that were not inspected during the previous inspection (TP3-27).

- 50% minimum of all in-service tubes in rows 1 and 2, from 06H to 06C.
- 50% minimum of all in-service hot leg freespan ding and dent locations, greater than 5 volts.
- 50% minimum of all in-service hot leg ding and dent locations at structures .
- 50% minimum of all u-bend ding and dent locations, greater than 5 volts.
- 100% of potential high residual stress (2-sigma signature tubes), at the hot leg tubesheet to the extent of TSH +3.00 to TEH.
- 25% of potential high residual stress (2-sigma signature) tubes, at TSP & FDB intersections. This included all HL, and top TSP on CL side(06C).
- In SG B, at the 02C location for tubes adjacent to plugged tubes Row 6 Column 45 and Row 7 Column 45, to continue monitoring for presence of a foreign object or associated wear at the 02C support elevation (previously discussed in EOC 24 Tube Inspection Report, Reference 4).
- One tube (SG B, Row 43 Column 58) was examined full length using a combination of bobbin and +Point probe. This was due to a historical restriction in the tube above the 05H broached TSP.

Note: The combination of the two bobbin probe inspections and the +Point™ probe inspection of Row 43 Column 58 resulted in 100% of the tube being inspected full length.

- Diagnostic "special interest" +Point™ examinations as required based on the results of the bobbin coil and/or array coil.
- Selected wear indications were profiled with line-by-line +Point™ sizing to provide additional information for Condition Monitoring (CM) and Operational Assessment (OA) purposes.

#### Array Probe

- 50% of the hot leg (HL) in-service tubes to the extent of 01H to TEH; (priority selection is given to those tubes not examined in the tubesheet region during EOC-26)

Note 1: The approved H\* depth for Unit 3 is TSH-18.11".

Note 2: This inspection scope included 50% of the bulges (BLG) and over-expansions (OXP) in the HL tubesheet down to the H\* depth.

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- All HL Periphery Tubes to the test extent of 01H-TEH.
- All CL Periphery Tubes to the test extent of 01C-TEC.

NOTE: "Periphery Tubes" are defined as the three outer-most peripheral tubes exposed to the annulus, and all open row 1, 2, and 3 tubes in columns 1-92.

- All tubes (including a 1-tube bounding) with possible loose part (PLP) indications reported during EOC-26.
- All tubes (including a 1-tube bounding) or previous Foreign Objects reported during the EOC 27 FOSAR examination in 2015.

Plug Visual Inspection

- Visual inspection in each SG of all installed tube plugs.

All of the previously installed hot-leg and cold-leg plugs in all three steam generators were visually examined. All plugs were present in their correct locations and were free from degradation and visible signs of leakage.

Supplemental Primary Side Inspections to address Westinghouse NSAL 12-01

- Visual inspection in each SG of the channel heads in response to NSAL 12-1 "Steam Generator Channel Head Degradation" January 5, 2012

The channel head bowls of all three steam generators were visually scanned to address the Westinghouse NSAL 12-01 letter; no corrosion or other types of degradation were observed in any of the three SG channel heads.

Secondary Side Inspection (SSI) and Cleaning

Secondary Side Inspection (SSI) and cleaning operations were completed in each SG and included the following activities:

- Upper Bundle Flush
- Sludge Lance
- Foreign Object Search and Retrieval (FOSAR)

The UBF and sludge lancing processes during TP3-29 resulted in the removal of the following amounts of sludge from the top of the tubesheet and top of the flow distribution baffle plate:

- 39.5 lbs of sludge from SG 3A
- 37.0 lbs of sludge from SG 3B
- 50.0 lbs of sludge from SG 3C.

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Post sludge lancing FOSAR was performed in all three steam generators. Two (2) newly identified foreign objects were reported during FOSAR operations. One of the foreign objects was reported in SG 3B and was identified as a machine curl, the other object was reported in SG 3C and was identified as possible weld slag. Both objects were retrieved. There was no tube degradation associated with the retrieved foreign objects. There were no newly identified foreign objects identified in SG 3A.

Several historical foreign objects (including sludge scale or hardened sludge fragments) are tracked at each inspection. All foreign objects remaining in the SGs are being tracked, and foreign object evaluations have been completed for those remaining foreign objects. The integrity of the steam generators until the next scheduled inspection is not affected by the foreign objects that remain in the SGs. Foreign objects removed from the steam generators during FOSAR examinations are entered into the plant's Corrective Action Program (CAP) for tracking.

Upper Steam Drum Inspections were also performed in one SG (SG 3B). The upper internal components inspected included primary separators, secondary separator perforated plates, drain pipes, and general areas. No corrosion or other types of degradation were noted during the upper steam drum inspection in SG 3B. During TP3-29, the feeding, feeding "T" and the J-Nozzles were also visually inspected. During the visual examination, some slight erosion was observed around the J-Nozzle bore holes (on the inside surface of the feeding). The condition was originally reported to the NRC on January 10, 2008 via FPL Licensing Letter L-2008-003 "Turkey Point Unit 3 Docket No. 50-250 Inservice Inspection Report" (ADAMS Accession No. ML080220439), and further discussed in the RAI Response for RAI # 2 of Reference 5. Other than the slight erosion around the J-Nozzles, no other degradation was noted during the upper steam drum inspection in SG 3B. The erosion around the J-Nozzles does not appear to have changed over time.

Following Upper Bundle Flush (UBF), a visual inspection was performed in a single SG (SG 3B) to assess the effectiveness of the UBF process. Two inner bundle visual passes were made on the upper most tube support structure (6th broached TSP) during the Post-UBF inspection. Those passes were made between C77 and C78 in both the Hot and Cold Legs. Inner bundle conditions revealed light deposits and showed no signs of fouling or clogging in the tube support plate broach openings. There were also Post UBF visual inspections performed above the 5<sup>th</sup>, 4<sup>th</sup> and 3<sup>rd</sup> broached TSP's. The inspections revealed light deposits and showed no sign of fouling or clogging of the broaches in either the Hot or Cold Legs down to the 3<sup>rd</sup> broached TSP. Small amounts of tube scale in both the Hot and Cold Legs were observed during the visual inspection above the 3<sup>rd</sup> Broached TSP.

**b. Degradation mechanisms found**

The TP3-29 examination results for Turkey Point Unit 3 identified mechanical wear at the following structures:

- Anti-vibration bars (AVBs)
- Broached tube support plates (TSPs)
- Hot Leg Baffle Plates (FDBs)

Mechanical wear due to foreign objects was also reported near broached TSP edges.

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**c. Nondestructive examination techniques utilized for each degradation mechanism**

**Table 2**  
**Turkey Point Unit 3 Examination Techniques for TP3-29**

Technique		Industry Qualification (ETSS)	Type of Degradation	Demonstrated Applicability	Extended Applicability	Was the Technique Used for Sizing during TP3-29?
1	Bobbin	96004.1 Revision 13	Wear	Tube Supports (TSPs), Anti-Vibration Bars (AVBs)	None	Yes. Used to size AVB Wear for service.
2	Bobbin	96004.2 Revision 13	Wear	Tube Supports (TSPs), Anti-Vibration Bars (AVBs)	None	No
3	Bobbin	96005.2 Revision 9	Pitting	Freespan in the Presence of Copper	Detection of Pitting in Sludge Pile	No
4	Bobbin	24013.1 Revision 2	ODSCC	Freespan Dings $\leq 5.00$ Volts	U-bend Freespan and dented AVBs $\leq 5$ volts	No
5	Bobbin	I-28411 Revision 3	Axial ODSCC	Drilled TSP With or w/o Dents $\leq 2$ volts	None	No
6	Bobbin	I-28412 Revision 3	Axial ODSCC	Freespan with or without dents $\leq 2$ volts	None	No
7	Bobbin	I-28413 Revision 3	Axial ODSCC	Freespan, Sludge Pile, Broached TSP with or w/o Dents $\leq 2$ volts	None	No
8	Bobbin	27091.2 Revision 2	Foreign Object Wear	Foreign Object Wear (with Foreign Object not present)	Detection of Foreign Object Wear (with Foreign Object present)	No
9	+Point™	10908.4 Revision 1	Wear	Anti-Vibration Bars (AVBs)	None	Yes. Used to size one AVB Wear for service. SG 3A R37 C47 @AV3 Location
10	+Point™	96910.1 Revision 10	Wear	Broached TSP	Detection and Sizing of Wear at Flow Baffle Plate and Foreign Object Wear with Part Present	Yes Used to size Broached TSP Contact Wear. Also used to size Wear at Flow Baffle Plate for Service.

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**Table 2 (continued)**

Technique		Industry Qualification (ETSS)	Type of Degradation	Demonstrated Applicability	Extended Applicability	Technique Used for Sizing during TP3-29?
11	+Point™	96511.1 96511.2 Both Revision 16	PWSCC	Low Row U-bend	None	No
12	+Point™	111524 Revision 0	Circ PWSCC	Top of Tubesheet Expansion Transition	Detection of Circ PWSCC at Dents, Dings, Non-Dented Support Structures, Sludge Pile, Tubesheet	No
13	+Point™	20511.1 Revision 8	Axial PWSCC	Expansion Transition	Detection of Axial PWSCC at Non-Dented Support Structures, Tubesheet, Sludge Pile	No
14	+Point™	22401.1 Revision 4	Axial ODSCC	Dented Support Structures > 2.0 volts	Detection of Axial ODSCC at Tubesheet, Expansion Transition, Dents, Dings (including u-bends)	No
15	+Point™	21998.1 Revision 4	Volumetric	Freespan	None	No
16	+Point™	21410.1 Revision 6	Circ ODSCC	Expansion Transition	Detection of Circ ODSCC at TSP, Freespan, Sludge Pile, Tubesheet, Dents, Dings, U-bend	No
17	+Point™	27901.1 Rev. 1 27902.1 Rev. 2 27903.1 Rev. 1 27904.1 Rev. 2 27905.1 Rev. 2 27906.1 Rev. 1 27907.1 Rev. 2	Freespan Volumetric Degradation Morphology Dependent	Foreign Object Wear Shape Morphology Dependent (with Foreign Object not present)	Freespan Volumetric Degradation Morphology Dependent with Foreign Objects Present, Foreign Objects and TSP wear above and below the support edges (freespan)	Yes  27905.1 was used to size wear slightly away from the edges of Broached TSPs for service.
18	+Point™	I-28424 Revision 3	Axial ODSCC	Sludge Pile, Drilled TSP with or w/o dents ≤ 2.0 volts	None	No
19	+Point™	I-28425 Revision 3	Axial ODSCC	Freespan, Broached TSP with or w/o dents ≤ 2.0 volts	None	No



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**Table 2 (continued)**

Technique		Industry Qualification (ETSS)	Type of Degradation	Demonstrated Applicability	Extended Applicability	Technique Used for Sizing during TP3-29?
20	+Point™	I-28431 Revision 2	Axial ODSCC	Sizing – Sludge Pile and Drilled TSP with or without Dents $\leq$ 2 volts	None	No
21	+Point™	I-28432 Revision 2	Axial ODSCC	Sizing – Freespan, Broached TSP with or without Dents $\leq$ 2 volts	None	No
22	+Point™	21409.1 Revision 7	Axial ODSCC	Support Structures, Freespan Region, Sludge Pile, and Tubesheet Crevice	Expansion Transition	No
23	+Point™	10411.1 10411.2 Both Revision 0	Axial ODSCC	Ubend Rows 3-5	All U-bends	No
24	Array	20400.1 Revision 5	Circ ODSCC	Expansion Transitions	Volumetric degradation (Foreign Object Wear) at Top-of-Tubesheet, support structures and Freespan with the Foreign Object Present. Pitting Axial ODSCC at Expansion Transition Circ ODSCC Freespan with/without Deposits (including sludge pile)	No
25	Array	20402.1 Revision 5	Axial ODSCC	Support Structures	Axial and Circ ODSCC @ dented support structures	No
26	Array	20403.1 Revision 5	Axial ODSCC	Freespan – Not associated with Deposits	Axial ODSCC Freespan – Deposits Present (including sludge pile) Circ ODSCC Freespan with/without Deposits (including sludge pile)	No
27	Array	20500.1 Revision 4	Circ PWSCC	Expansion Transition	OEX, BLG and OXP locations above and within the tubesheet	No
28	Array	20501.1 Revision 4	Axial PWSCC	Expansion Transition	OEX, BLG and OXP locations above and within the tubesheet	No

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**d. Location, orientation (if linear) and measured sizes (if available) of service induced indications**

Please see Attachments 2, 3 & 4 for indication listings for SG 3A, 3B and 3C respectively.

**e. Number of tubes plugged during the inspection outage for each degradation mechanism**

**Table 3  
 Turkey Point Unit 3 Tube Plugging EOC 28 (TP3-29)**

Reason for Plugging	SG 3A	SG 3B	SG 3C	Total
AVB Wear	1 <sup>(Note 1)</sup>	0	0	1
Broached TSP Edge Wear	1 <sup>(Note 2)</sup>	1 <sup>(Note 3)</sup>	0	2
Broached TSP Edge Wear w/PLP (Both of these tubes were also stabilized before plugging)	0	1 <sup>(Note 4)</sup>	1 <sup>(Note 6)</sup>	2
Restricted Tube	0	1 <sup>(Note 5)</sup>	0	1
Wear at Flow Distribution Baffle	0	0	0	0
<b>TOTAL</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>6</b> <sup>(Note 7)</sup>

**Table 3 Note 1:** R37, C47 plugged for AVB wear at AV3. Bobbin measured 35%TW.

**Table 3 Note 2:** R25, C19 plugged for Broached TSP wear at 05C. +Point measured 43%TW.

**Table 3 Note 3:** R24, C71 plugged for Broached TSP wear at 04H. +Point measured 23%TW, location was NDD in previous inspection (EOC-26).

**Table 3 Note 4:** R 7, C46 plugged due to 12%TW wear (+Point) at 02C coincident with PLP. (Tube also stabilized).

**Table 3 Note 5:** R43, C58 preventively plugged due to tube restriction above 05H.

**Table 3 Note 6:** R12, C44 plugged due to 15%TW wear (+Point) at 03H coincident with PLP. (Tube also stabilized).

**Table 3 Note 7:** Tube R25 C19 in S/G 3A was the only tube that was plugged for an indication which exceeded the Technical Specification plugging limit of 40% TW. The rest of the tubes were preventively plugged.

**f. The number and percentage of tubes plugged to date, and the effective plugging percentage in each steam generator**

No tube repair methods (i.e. sleeving) are approved for Turkey Point Unit 3 that would have an effect on the effective plugging percentages. Therefore, the applicable effective plugging percentage is synonymous with the % Plugged in Table 4 below:

**Table 4**

Turkey Point Unit 3 Steam Generator Cumulative Tube Plugging Summary TP3-29		
SG	# Plugged	% Plugged
3A	50	1.56%
3B	83	2.58%
3C	63	1.96%

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**g. The results of condition monitoring, including the results of tube pulls and in-situ testing**

All tubes satisfied the structural integrity and accident-induced leakage performance criteria based on the condition monitoring (CM) evaluation performed at the TP3-29 inspection. No tubes required in-situ pressure testing for either tube burst or leakage. Therefore, all tubes met the structural and leakage integrity requirements of the Turkey Point Technical Specifications.

No tube pulls were required.

**h. The primary to secondary leakage rate observed in each SG (if it is not practical to assign the leakage to an individual SG, the entire primary to secondary leakage should be conservatively assumed to be from one SG) during the cycle preceding the inspection which is the subject of the report**

No primary to secondary leakage was observed during Cycle 28.

**i. The calculated accident induced leakage rate from the portion of the tubes below 18.11 inches from the top of the tubesheet for the most limiting accident in the most limiting SG. In addition, if the calculated accident induced leakage rate from the most limiting accident is less than 1.82 times the maximum operational primary to secondary leakage rate, the report should describe how it was determined**

The accident induced leakage rate from the portion of the tubes below 18.11 inches from the top of the tubesheet is calculated from any observed normal operating leakage that cannot be attributed to a source other than the tubesheet expansion region. The technical basis for this calculation is contained in the H\* Alternate Repair Criteria (ARC) for the Turkey Point plant. For the operating period preceding the TP3-29 inspection, no operational primary-to-secondary leakage has been observed. Further, there are no existing degradation mechanisms that have the potential for leakage.

For Turkey Point Unit 3, the calculated accident induced leakage rate from the portion of the tubes below 18.11 inches from the top of the tubesheet is determined by multiplying any normal operating primary to secondary leakage by a factor of 1.82. This multiplying factor for leakage is based on H\* Alternate Repair Criteria (ARC) methodology. Since no operational primary-to-secondary leakage has been observed, the calculated accident induced leakage rate from the portion of the tubes below 18.11 inches from the top of the tubesheet is zero.

Therefore, neither the normal operating leakage limit nor the accident induced leakage limits will be challenged during the next operating period.

**j. The results of monitoring for tube axial displacement (slippage). If slippage is discovered, the implications of the discovery and corrective action shall be provided.**

Monitoring of tube slippage was completed during the TP3-29 inspections. No tube slippage was reported.

### **ADDITIONAL INFORMATION**

The following information is included to assist the staff's review of this report.

### **Abbreviations and Acronyms**

ARC	Alternate Repair Criteria
AVB	Anti-Vibration Bar
CL	Cold Leg
CM	Condition Monitoring
EPRI	Electric Power Research Institute
FOSAR	Foreign Object Search and Retrieval
HL	Hot Leg
OA	Operational Assessment
PLP	Potential Loose Part
PWSCC	Primary Water Stress Corrosion Cracking
SG	Steam Generator
TEC	Tube End Cold
TEH	Tube End Hot
TSH	Tube Sheet Hot
TSP	Tube Support Plate
UBF	Upper Bundle Flush
%TW	Percent Through Wall (Depth)
WAR	Mechanical Wear

### **Outage Designators**

TP3-28	=	EOC-27
TP3-29	=	EOC-28
TP3-30	=	EOC-29
TP3-31	=	EOC-30

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**References:**

1. NRC Document TSTF-510, Rev 2, "Revision to Steam Generator Program Inspection Frequencies and Tube Sample Selection".
2. NRC License Amendment 255 and 251, Letter dated November 6, 2012 "Turkey Point Nuclear Generating Station Unit Nos. 3 and 4 - Issuance of Amendments Regarding Adoption of TSTF 510, Revision to Steam Generator Program Inspection Frequencies and Tube Sample Selection (TAC NOS. ME9106 and ME9107)." (ADAMS Accession No. ML12297A240).
3. NRC License Amendment 254 and 250, Letter dated November 5, 2012 "Turkey Point Nuclear Generating Station Unit Nos. 3 and 4 - Issuance of Amendments Regarding Permanent Alternate Repair Criteria for Steam Generator Tubes (TAC NOS. ME8515 and ME8516)." (ADAMS Accession No. ML12292A342).
4. Turkey Point Unit 3 Docket No. 50-250 Steam Generator Tube Inspection Report. (ADAMS Accession No. ML11119A006).
5. Turkey Point Unit 3 Docket No. 50-250 Response for Additional Information Regarding Steam Generator Tube Inspection Report. (ADAMS Accession No. ML15119A221).

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**SG 3A**

<b>SG 3A Indication Listings</b>	
<b>Listing Description</b>	<b>Page No.</b>
Additional Tubes Plugged During TP3-29	2
Bobbin WEAR (WAR) at AVB locations 20-100%TWD	2
Bobbin WEAR (WAR) at AVB locations 1-19% TWD	3
+Point™ WEAR (WAR) 1-100% (Broached Support Plates)	4
+Point™ WEAR (WAR) 1-100% (H/L Baffle Plates)	4

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**SG 3A**

**Turkey Point Unit 3 (TP3-29)  
SG 3A**

**Additional Tubes Plugged During TP3-29**

ROW	COL	Reason for Plugging
====	====	=====
25	19	Wear at 05C Broached TSP
37	47	Wear at AV3 Anti Vibration Bar

Total Additional Tubes Plugged in SG 3A during TP3-29: 2

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SG 3A**

**Bobbin Wear (WAR) at AVB's 20-100%TWD**

ROW	COL	%TW	LOCATION
====	====	===	=====
28	59	27	AV2 +0.25
		21	AV3 -0.21
30	52	26	AV3 -0.21
31	44	21	AV3 +0.51
37	47	35	AV3 +0.21

Total Tubes : 4  
Total Records: 5

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**SG 3A**

**Turkey Point Unit 3 (TP3-29)  
SG 3A**

**Bobbin Wear (WAR) at AVB's 1-19%TWD**

ROW	COL	%TW	LOCATION
=====	=====	====	=====
9	62	10	AV4 +0.00
22	44	10	AV4 -0.09
24	10	8	AV4 -0.13
24	40	11	AV1 +0.36
		11	AV2 +0.21
25	67	10	AV2 -0.48
28	59	12	AV1 -0.21
		14	AV4 +0.17
31	13	6	AV1 +0.52
31	41	13	AV4 +0.00
31	44	10	AV3 -0.12
32	42	13	AV3 -0.28
33	43	9	AV2 +0.19
34	31	10	AV2 +0.10
34	46	10	AV3 +0.60
35	61	18	AV1 +0.22
37	47	8	AV2 -0.17
		13	AV4 +0.20
38	27	11	AV2 +0.20
38	65	15	AV3 -0.12

Total Tubes : 17  
Total Records: 20



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**SG 3A**

**Turkey Point Unit 3 (TP3-29)  
SG 3A**

**+Point™ Wear (WAR) At Broached Support Plates 1-100%TWD**

ROW	COL	IND	%TW	LOCATION
====	====	===	===	=====
4	11	WAR	13	04C -0.99
9	5	WAR	10	02H -0.82
11	11	WAR	8	02H -0.85
12	19	WAR	14	03H -0.75
13	4	WAR	6	05H -0.80
14	4	WAR	17	06C -0.78
25	19	WAR	43	05C -0.57
33	36	WAR	15	03H -0.67
37	24	WAR	10	03H -0.88
37	35	WAR	16	05H -0.67

Total Tubes : 10  
Total Records: 10

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SG 3A**

**+Point™ Wear (WAR) At H/L Baffle Plates 1-100%TWD**

There is no wear (WAR) reported at baffle plates in SG 3A.

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**SG 3B**

<b>SG 3B Indication Listings</b>	
<b>Listing Description</b>	<b>Page No.</b>
Additional Tubes Plugged During TP3-29	2
Bobbin WEAR (WAR) at AVB locations 20-100%TWD	2
Bobbin WEAR (WAR) at AVB locations 1-19% TWD	3
+Point™ WEAR (WAR) 1-100% (Broached Support Plates)	4
+Point™ WEAR (WAR) 1-100% (H/L Baffle Plates)	4

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Attachment 3**

**SG 3B**

**Turkey Point Unit 3 (TP3-29)  
SG 3B**

**Additional Tubes Plugged During TP3-29**

Three tubes (shown below) were plugged in SG 3B during TP3-29.

ROW	COL	Reason for Plugging
====	====	=====
7	46	Wear at 02C Broached TSP with PLP (This tube also had a stabilizer installed)
24	71	Wear at 04H Broached TSP
43	58	Tube Restriction above 05H TSP (Tube Preventively Plugged)

Total Additional Tubes Plugged in SG 3B during TP3-29: 3

**Turkey Point Unit 3 (TP3-29)  
SG 3B**

**Bobbin Wear (WAR) at AVB's 20-100%TWD**

ROW	COL	%TW	LOCATION
====	====	===	=====
30	42	23	AV2 +0.16
		27	AV3 +0.16
		22	AV4 +0.14
34	31	22	AV3 +0.68
34	53	26	AV1 +0.17
		29	AV2 +0.16
35	48	30	AV2 +0.25
		25	AV3 -0.21
		24	AV3 +0.25

Total Tubes : 4  
Total Records: 9

Turkey Point Unit 3 (TP3-29)  
Steam Generator Tube Inspection Report  
Attachment 3

SG 3B

Turkey Point Unit 3 (TP3-29)  
SG 3B

Bobbin Wear (WAR) at AVB's 1-19%TWD

ROW	COL	%TW	LOCATION
====	====	===	=====
17	31	11	AV3 -0.19
		6	AV4 -0.09
26	20	13	AV4 +0.28
26	50	15	AV4 +0.12
30	42	14	AV1 +0.15
30	43	11	AV2 +0.07
32	27	14	AV2 +0.18
32	35	10	AV4 -0.10
34	20	12	AV3 -0.60
34	31	10	AV1 -0.02
		18	AV2 -0.15
		13	AV4 +0.19
34	33	18	AV3 +0.18
34	52	16	AV4 +0.24
34	53	17	AV3 -0.10
34	59	8	AV1 +0.00
		18	AV2 +0.00
		11	AV4 +0.00
34	73	10	AV2 +0.00
35	62	16	AV1 +0.00
		17	AV2 +0.00
36	46	12	AV1 +0.66
37	32	13	AV2 +0.34
40	47	18	AV3 +0.16
41	34	11	AV2 +0.21
42	53	17	AV3 +0.22
		13	AV3 -0.18
		16	AV4 +0.19
44	37	6	AV4 +0.09
		7	AV4 +0.35
45	46	17	AV2 +0.21

Total Tubes : 22  
Total Records: 31

**Turkey Point Unit 3 (TP3-29)**  
**Steam Generator Tube Inspection Report**  
**Attachment 3**

**SG 3B**

**Turkey Point Unit 3 (TP3-29)**  
**SG 3B**

**+Point™ Wear (WAR) At Broached Support Plates 1-100%TWD**

ROW	COL	IND	%TW	LOCATION
====	====	====	====	=====
5	45	WAR	17	02C +0.61
5	87	WAR	6	03H -0.61
7	46	WAR	12	02C +0.55 (Row 7, Column 46 also had a PLP indication at 02C)
21	42	WAR	7	03C +0.52
24	71	WAR	23	04H -0.58
26	41	WAR	11	03C +0.66
33	73	WAR	5	02H -0.61

Total Tubes : 7  
Total Records: 7

**Turkey Point Unit 3 (TP3-29)**  
**SG 3B**

**+Point™ Wear (WAR) At H/L Baffle Plates 1-100%TWD**

ROW	COL	IND	%TW	LOCATION
====	====	====	====	=====
42	44	WAR	9	BAH -0.41
45	45	WAR	7	BAH -0.19

Total Tubes : 2  
Total Records: 2

**Turkey Point Unit 3 (TP3-29)  
Steam Generator Tube Inspection Report  
Attachment 4**

**SG 3C**

<b>SG 3C Indication Listings</b>	
<b>Listing Description</b>	<b>Page No.</b>
Additional Tubes Plugged During TP3-29	2
Bobbin WEAR (WAR) at AVB locations 20-100%TWD	2
Bobbin WEAR (WAR) at AVB locations 1-19% TWD	3
+Point™ WEAR (WAR) 1-100% (Broached Support Plates)	4
+Point™ WEAR (WAR) 1-100% (H/L Baffle Plates)	4

**Turkey Point Unit 3 (TP3-29)  
Steam Generator Tube Inspection Report  
Attachment 4**

**SG 3C**

**Turkey Point Unit 3 (TP3-29)  
SG 3C**

**Additional Tubes Plugged During TP3-29**

ROW COL Reason for Plugging  
=====

12 44 Wear at 03H Broached TSP with PLP (This tube also had a stabilizer installed)

Total Additional Tubes Plugged in SG 3C during TP3-29: 1

**Turkey Point Unit 3 (TP3-29)  
SG 3C**

**Bobbin WAR at AVB's 20-100%TWD**

ROW COL %TW LOCATION  
=====

21	38	23	AV2 +0.25
24	59	21	AV1 +0.19
24	63	26	AV3 -0.20
25	62	23	AV2 +0.22
		26	AV3 +0.23
26	58	23	AV1 +0.25
		29	AV2 +0.33
		24	AV3 -0.20
28	48	34	AV2 +0.21
30	31	26	AV3 +0.07
		23	AV1 -0.21
		26	AV2 +0.02
30	61	28	AV2 +0.21
33	32	34	AV3 +0.25
		23	AV2 +0.43
33	43	23	AV2 +0.21
		27	AV3 +0.28
34	31	29	AV2 +0.24
		36	AV3 +0.20
34	41	22	AV1 +0.28
		25	AV2 +0.23
		26	AV3 -0.18
		24	AV4 +0.20
34	44	29	AV3 -0.16
		23	AV4 +0.18
34	52	22	AV3 +0.25
35	35	24	AV3 +0.16
		20	AV4 +0.25
35	49	26	AV3 -0.23
		32	AV4 +0.45
38	61	20	AV2 +0.21
38	65	28	AV2 +0.24
		22	AV3 +0.25
		25	AV4 +0.20
38	71	20	AV3 -0.16
39	54	29	AV3 -0.09
		25	AV4 +0.22
40	25	26	AV2 +0.24
		29	AV3 -0.14
40	55	29	AV3 +0.00
		24	AV4 +0.00

Total Tubes : 22  
Total Records: 41

**Turkey Point Unit 3 (TP3-29)  
Steam Generator Tube Inspection Report  
Attachment 4**

**SG 3C**

**Turkey Point Unit 3 (TP3-29)  
SG 3C**

**Bobbin WAR at AVB's  
1-19%TWD**

ROW COL %TW LOCATION

=====

13	39	7	AV3	-0.22
18	26	12	AV2	-0.17
		11	AV3	-0.44
20	37	6	AV2	-0.05
		9	AV3	-0.09
21	38	17	AV3	+0.28
21	62	14	AV1	-0.13
		16	AV2	+0.25
23	45	13	AV3	+0.11
23	49	6	AV3	+0.00
24	11	14	AV4	-0.18
24	12	11	AV1	+0.13
24	43	17	AV2	+0.18
		12	AV1	+0.19
24	57	16	AV2	+0.20
24	59	16	AV2	+0.26
		18	AV3	-0.26
		16	AV4	+0.53
24	63	18	AV2	+0.27
26	49	11	AV3	+0.00
26	82	5	AV3	-0.11
27	83	5	AV2	+0.25
28	12	12	AV1	+0.23
28	48	19	AV3	+0.22
		13	AV1	+0.16
28	60	13	AV2	+0.18
29	14	11	AV2	+0.16
		11	AV3	-0.02
30	18	18	AV1	-0.09
		12	AV3	-0.09
30	30	9	AV1	+0.20
		8	AV2	+0.25
		9	AV3	-0.21
		12	AV4	+0.18
30	43	15	AV2	+0.23
		15	AV1	+0.18
30	51	17	AV2	+0.23
30	60	9	AV2	+0.16
30	61	10	AV4	+0.00
31	15	11	AV1	+0.28
31	80	5	AV3	-0.21
33	24	9	AV3	+0.07
		10	AV4	-0.07
33	28	10	AV3	+0.16
33	31	7	AV2	+0.24
		16	AV3	+0.20
		7	AV4	-0.05
33	32	18	AV4	+0.18
33	38	15	AV3	+0.22
33	45	8	AV2	+0.18
33	46	14	AV3	+0.02

ROW COL %TW LOCATION

=====

33	54	10	AV4	-0.05
		7	AV3	+0.18
33	55	8	AV4	+0.22
		13	AV3	-0.14
33	63	10	AV4	-0.18
33	74	7	AV4	-0.02
34	32	9	AV3	-0.17
34	38	6	AV3	+0.20
		9	AV4	+0.20
34	45	11	AV2	+0.23
34	52	14	AV4	+0.23
34	56	9	AV3	+0.25
35	36	15	AV2	+0.17
		16	AV3	+0.22
35	51	13	AV2	+0.25
35	52	14	AV3	-0.11
35	54	16	AV2	-0.16
		8	AV1	+0.06
35	57	8	AV2	+0.23
36	54	12	AV2	-0.09
36	56	8	AV3	+0.00
36	73	8	AV3	+0.14
37	26	8	AV4	+0.02
37	27	7	AV3	+0.13
37	28	18	AV4	-0.09
		12	AV3	-0.07
37	29	14	AV4	-0.20
38	25	14	AV3	-0.12
38	50	11	AV2	+0.21
38	59	6	AV2	+0.14
38	63	19	AV2	+0.24
38	66	7	AV4	+0.16
		10	AV3	+0.23
39	24	7	AV3	+0.00
39	28	7	AV4	+0.02
39	55	13	AV2	+0.23
39	68	9	AV2	+0.21
40	28	14	AV4	+0.09
		13	AV3	+0.18
40	44	11	AV3	+0.24
		18	AV4	+0.00
40	46	8	AV4	-0.04
40	57	11	AV3	+0.18
		13	AV4	-0.14
40	59	5	AV3	+0.16
42	31	17	AV3	-0.22
42	35	7	AV3	-0.10
		9	AV4	+0.25
42	43	10	AV1	+0.18
42	55	12	AV1	+0.22
43	33	12	AV3	+0.20

ROW COL %TW LOCATION

=====

43	34	14	AV3	+0.13
43	35	17	AV3	-0.10
44	36	17	AV3	+0.18
44	37	15	AV3	+0.18

Total Tubes : 79  
Total Records: 106



**Turkey Point Unit 3 (TP3-29)  
Steam Generator Tube Inspection Report  
Attachment 4**

**SG 3C**

**Turkey Point Unit 3 (TP3-29)  
SG 3C**

**+Point™ Wear (WAR) At Broached Support Plates 1-100%TWD**

ROW	COL	IND	%TW	LOCATION	
====	====	===	====	=====	
5	68	WAR	16	03C	-0.64
5	69	WAR	14	03C	-0.64
12	44	WAR	15	03H	-0.69
15	82	WAR	18	03H	-0.90
18	84	WAR	7	05H	-0.75
20	61	WAR	7	04H	-0.75
20	62	WAR	13	03H	-0.84
23	71	WAR	9	06H	-0.66
24	70	WAR	12	03H	-0.90
27	21	WAR	15	02H	-0.86
29	71	WAR	5	03H	-0.71
29	73	WAR	14	02H	-0.87
32	19	WAR	6	03H	-0.50
35	68	WAR	6	03H	-0.81
36	68	WAR	9	03H	-0.87
38	34	WAR	13	03H	-0.70
38	44	WAR	13	04H	-0.67
38	56	WAR	19	04H	-0.66

(Row 12, Column 44 also had a PLP indication at 03H)

Total Tubes : 18  
Total Records: 18

**Turkey Point Unit 3 (TP3-29)  
SG 3C**

**+Point™ Wear (WAR) At H/L Baffle Plates 1-100%TWD**

There was no wear (WAR) reported at Baffle Plates in SG 3C.