NEXTera® ENERGY
POINT BEACH

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TS 5.6.8

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Point Beach Nuclear Plant, Unit 2
Docket 50-301
Renewed License No. DPR-27

Fall 2012 Unit 2 (U2R32)
Steam Generator Tube Inspection Report

Pursuant to the requirements of Point Beach Nuclear Plant (PBNP) Technical Specification (TS) 5.6.8, "Steam Generator Tube Inspection Report," NextEra Energy Point Beach, LLC is submitting the 180-day Steam Generator Tube Inspection Report. The enclosure to this letter provides the results of the fall 2012, Unit 2 (U2R32) steam generator tube in-service inspections.

This letter contains no new Regulatory Commitments and no revisions to existing Regulatory Commitments.

If you have questions or require additional information, please contact Mr. Andrew Watry at 920/755-7393.

Very truly yours,

NextEra Energy Point Beach, LLC

Mike Millen
Licensing Manager

Enclosure

cc: Administrator, Region III, USNRC
Project Manager, Point Beach Nuclear Plant, USNRC
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ENCLOSURE 1

NEXTERA ENERGY POINT BEACH, LLC
POINT BEACH NUCLEAR PLANT, UNIT 2

FALL 2012 UNIT 2 (U2R32)
STEAM GENERATOR TUBE INSPECTION REPORT

6 pages follow

1.0 Introduction

Point Beach Nuclear Plant (PBNP) Unit 2 is a two loop Westinghouse-designed Pressurized Water Reactor (PWR) with Model D47F replacement steam generators (SGs). The original 44 Series SGs, which had mill annealed Ni-Cr-Fe Alloy 600 tubing, were replaced because of various types of tube degradation. The replacement SGs were installed in U2R22. They have been in service since August 1997 and have operated for 12.97 effective full power years (EFPY) by refueling outage U2R32.

The U2R32 inspection scope and plan were based on the Degradation Assessment prepared prior to U2R32 refueling outage. No crack-like indications were reported during the U2R32 SG eddy current inspection. The only damage mechanisms observed during the inspection were tube wear at anti-vibration bars (AVB) and at broached tube support plate (TSP) locations. No new degradation due to maintenance related activities was detected. No new wear due to suspected foreign objects was identified. The secondary side inspection showed no significant degradation.

All of the AVB wear depths identified were below the condition monitoring limit defined in the U2R32 degradation assessment. Therefore, condition monitoring was satisfied for AVB wear in SG 2A. No AVB wear was detected in SG 2B.

The depths of the wear indications at TSP were below the condition monitoring limit defined in the degradation assessment. Therefore, condition monitoring was satisfied for tube wear at TSPs in SG 2A. No TSP wear was detected in SG 2B.

No primary-to-secondary leakage was reported during normal operation in the last three operating cycles. This satisfied the performance criterion for leakage integrity during normal operation.

In summary, all SG performance criteria were satisfied.

2.0 Scope of Inspections Performed

2.1 Inspection for Steam Generator A and Steam Generator B consisted of:

a. Bobbin Inspection – All Accessible Tubes:

- 100% bobbin full length examination of tubes, except for Rows 1 and 2 which were inspected from tube end to the top TSP from both the hot leg (HL) and cold leg (CL).

b. Motorized Rotating Pancake Coil (MRPC) Inspection +Point™:

- 33% +Point™ examination of Row 1 and Row 2 U-bends.
- +Point™ examination of all peripheral tubes (2 tubes deep within the "no tube lane" and 3 tubes deep at the circumference) on the HL and CL top of tubesheet (TTS) (+/-3 inches) for loose part wear.

- 20% (excluding peripheral tubes) +Point™ examination at the HL TTS from TSH +/-3 inches. This sample population was taken from tubes that were not +Point™ inspected at the HL TTS during U2R24, U2R26, or U2R29.
- 100% +Point™ examination of all dings > 5 volts in the HL and U-bend, including all new dings > 5 volts identified during U2R32.
- +Point™ examination of PLP signals from U2R29.

c. Diagnostic and special interest (SI) inspections based on historical data and the results of the initial bobbin and MRPC inspections were performed to characterize and/or size any identified indications.

d. Installed tube plugs were visually inspected.

e. Visual inspection of the channel head bowl in both HL and CL as recommended in Nuclear Safety Advisory Letter 12-1 (NSAL-12-1).

2.2 Secondary Side

The following secondary side work was performed in both SGs:

- Sludge Lancing
- FOSAR above the tubesheet
- Upper Steam Drum Inspection on the following components: feedring, J-tubes, backing ring, thermal sleeves, and primary separators.

3.0 Degradation Mechanisms Found

The following degradation mechanisms were observed in the PBNP Unit 1 SGs during U2R32:

3.1. Tube Wear at Anti-Vibration Bar

There were eight indications of wear at the AVBs in six tubes in SG 2A. There were no tubes in SG 2B with indications of wear at the AVBs.

3.2. Tube Wear at Tube Support Plates (TSP)

i. The distorted support indications (DSI) reported by bobbin inspections were subjected to +Point™ inspection. There were two bobbin DSI calls which were confirmed by +Point™ inspection to be flaws due to tube wear. They were both in SG 2A, in Tubes R12C53 and R15C64.

ii. The DSI indication in Tube R12C53 was at the broached TSP designated as 06H, with two separate flaws at land contact points. The results of the sizing showed 3% through-wall (TW) and 2% TW wear depths in R12C53.

iii. The DSI in R15C64 was at the 05H broached support plate. The results of the sizing showed 1% TW in R15C64.

3.3. PLP (Possible Loose Part)

PLP signals were reported by the bobbin and top of the tubesheet +Point™ inspections. A +Point™ inspection was performed at all the PLP locations identified by bobbin. In addition to the identification of any PLPs, the +Point™ inspection also helped identify if any tube degradation had occurred due to the PLP. The PLP locations identified by +Point™ during U2R32 are shown below in Table 4-3. PLP signals are not a degradation mechanism.

4.0 Service Induced Flaws

4.1 Mechanical Wear Indications at Anti-vibration Bar (AVB)

4.1.1. Tube Wear at Anti-Vibration Bar

There were eight indications of wear at the AVBs in six tubes in SG 2A. There were no tubes in SG 2B with indications of wear at the AVBs. During the U2R29 outage, AVB wear was reported at seven locations in SG 2A. During the current inspection, AVB wear was reported at all seven of the prior locations and at one new location in the same SG. The data is shown below in Table 4-1.

Table 4-1 Wear at AVB - SG 2A

Row	Col	Loc	2012 U2R32 % TW	2008 U2R29 % TW	2003 U2R26 % TW	2000 U2R24 % TW	1998 U2R23 % TW
84	45	AV5	12	11	No Insp.	8	NDD
84	45	AV6	8	5	No Insp.	NDD	NDD
78	59	AV4	9	8	No Insp.	6	NDD
78	59	AV5	8	7	No Insp.	6	NDD
79	62	AV3	12	8	10	NDD	NDD
84	63	AV5	7	7	5	NDD	NDD
79	66	AV5	9	6	6	NDD	NDD
82	69	AV1	8	7	No Insp.	NDD	NDD

NDD - No degradation detectable

4.2 Wear at Support Plates

4.2.1. During the U2R29 outage, TSP wear was reported at one TSP location in SG 2A with two wear scars at two of the three contact lands in the trefoil broach hole. During the current inspection, TSP wear was reported at the prior locations and at one new location in the same SG as shown in Table 4-2. No TSP wear has been reported in SG 2B.

Table 4-2 Wear at TSP SG 2A							
ROW	COL	LOC	2012 U2R32 % TW	2008 U2R29 % TW	2003 U2R26 % TW	2000 U2R24 % TW	1998 U2R23 % TW
12	53	06H	3	7	No Insp.	No size	NDD
12	53	06H	2	4	No Insp.	No size	NDD
15	64	05H	1	NDD	No Insp.	No size	NDD

4.3 Possible Loose Parts (PLP)

4.3.1. During the foreign object search and retrieval (FOSAR) operation, an attempt was made to find and verify PLP reported from the eddy current inspection. Two sludge rocks were observed at two PLP locations during FOSAR. The +Point™ inspection of the tubes with PLP and surrounding tubes showed no degradation in the tubes around the reported PLP locations.

Table 4-3 Possible Loose Parts Location – U2R32				
SG	Row	Column	Location	Elevation
A	32	7	TSC	+1.52"
B	3	40	TSH	+0.10"

5.0 NDE Techniques for Damage Mechanisms

The following is the list of EPRI technique sheets used for detection for the degradation modes that may be present during the steam generator inspection in U2R32.

AVB Wear	96004.1 Revision 13, (bobbin)(diff mode)
TSP/FDB Wear	96004.1 Revision 13, (bobbin); 96910.1 Revision 10 (+Point™)
Mechanical Wear	27091.2 Revision 0 (bobbin), 27901.3 through 27907.3 Revision 1 (+Point™)
Loose Part Wear	27091.2 Revision 0 (bobbin); 27901.3 through 27907.3 Revision 1 (+Point™), 21998.1 Revision 4 (+Point™)
Axial ODSCC at TTS and Expansion Transitions	I28424 Revision 3, I28425 Revision 3, I28431 Revision 3, I28432 Revision 3 (+Point™)
Circumferential ODSCC at Expansion transitions	21410.1 Revision 6 (+Point™)

Axial ODSCC at Ding/Dent, Freespan, and Supports	I28411 Revision 3, I28413 Revision 3 (bobbin), I28424 Revision 3, I28425 Revision 3, I28431 Revision 3, I28432 Revision 3 (+Point™)
Circumferential ODSCC at Ding/Dent, Freespan and Supports	21410.1 Revision 6 (+Point™)

6.0 Plugging

Two tubes were plugged during U2R23 due to minor loose parts wear. Two tubes were plugged administratively during U2R24 due to excessive noise in the eddy current test data. No other tubes have been plugged in the PBNP Unit 2 SGs.

Table 6-1
Total Tubes Plugged and Plugging Percentage

	SG 2A	SG 2B
Total Tubes Plugged	0	4
Plugging Percentage	0.000%	0.114%

7.0 Condition Monitoring Assessment Results

All of the AVB wear depths identified were below the condition monitoring limit. No AVB wear was detected in SG 2B. Therefore, condition monitoring was satisfied for AVB wear in SG 2A and 2B.

The depths of the wear indications at TSP were below the condition monitoring limit. No TSP wear was detected in SG 2B. Therefore, condition monitoring was satisfied for tube wear at TSPs in SG 2A and 2B.

No tube wear due to loose parts was reported during U2R32. Hence, condition monitoring was satisfied for this degradation mechanism in both SGs.

No primary-to-secondary leakage was reported during normal operation in the last three operating cycles. This satisfied the performance criterion for leakage integrity during normal operation.

In summary, all SG performance criteria were satisfied for the current outage.

8.0 Secondary Side Inspections/Cleaning

Secondary side sludge lancing and FOSAR above the tubesheet were performed in each SG during U2R32. In addition, a steam drum inspection was performed by manual entry into the SG through the secondary side manway. The upper steam drum along with the feedring, J-tubes, backing ring, thermal sleeves, and primary separators were visually inspected in both SGs and no anomalies were noted.

No anomalous conditions adverse to structural integrity were reported from the above inspections. The FOSAR operation was performed in the annulus and tube lane in both SGs. One foreign object (judged to be a piece of flexitallic gasket) was retrieved from the annulus region of SG 2A. The PLP indications, by eddy current testing, reported slightly above the top of the tubesheet location were subjected to FOSAR as access allowed. Sludge rocks were identified at the two PLP locations. The sludge rocks are benign to tubing and were not removed.