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U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Donald C. Cook Nuclear Plant Unit 2
2016 STEAM GENERATOR TUBE INSPECTION REPORT

Technical Specification (TS) 5.6.7 of Appendix A, to the Donald C. Cook Nuclear Plant (CNP) Unit 2 Operating License, requires a report to be submitted within 180 days after initial entry into Mode 4 following the completion of an inspection performed in accordance with TS 5.5.7, Steam Generator (SG) Program. CNP Unit 2 entered Mode 4 on December 21, 2016. This report details specific attributes of the inspection in accordance with TS 5.6.7. Consistent with these requirements, Indiana Michigan Power Company, the licensee for CNP Unit 2, is submitting the Unit 2 2016 SG Tube Inspection Report as an enclosure to this letter.

There are no new regulatory commitments made in this submittal. Should you have any questions, please contact Mr. Michael K. Scarpello, Regulatory Affairs Manager, at (269) 466-2649.

Sincerely,

Q. Shane Lies
Site Vice President

DB/kmh

Enclosure: Unit 2 2016 Steam Generator Tube Inspection Report

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Enclosure to AEP-NRC-2017-13

Unit 2 2016 Steam Generator Tube Inspection Report

Introduction

UNIT 2
In October/November of 2016, steam generator (SG) inservice inspections were conducted on Donald C. Cook Nuclear Plant (CNP) Unit 2. In accordance with the reporting requirements of CNP Technical Specification (TS) 5.6.7; the results of the inspection are provided herein.

Unit 2 SG Description
The four replacement Westinghouse SGs were initially placed in service in March of 1989.

Each SG contains 3,592 thermally treated alloy 690 tubes with an outside diameter of 0.875 inches, and a nominal wall thickness of 0.050 inches. The tubes are arranged in a square pitch pattern of 47 rows and 98 columns. All tubes in the eight innermost rows were thermally stress relieved after tube bending to reduce residual stress.

The tube support structure consists of seven 1.12 inch thick support plates with quatrefoil-shaped tube holes, and three sets of anti-vibration bars that are located in the U-bend region of the tubes. There is a flow distribution baffle located between the tubesheet and the first support plate. The flow distribution baffle is 0.75 inches thick with octafoil-shaped tube holes. The support plates, anti-vibration bars, and the flow distribution baffle are made of type 405 stainless steel.

The tubesheet is composed of ASME SA-508 Class 2a low alloy steel forging material and is 21.18 inches thick (without cladding). The surface of the tubesheet in contact with reactor coolant is clad with 0.20 inches of Inconel weld material, making the overall nominal tubesheet thickness with cladding, 21.38 inches. Tubes are hydraulically expanded along the full depth of the tubesheet, with the exception of nine tubes. These tubes lack hydraulic expansion in either the hot leg or cold leg tubesheet due to a manufacturing oversight.

At the time of the 2016 inspection, the SGs had accumulated approximately 230.1 effective full power months of operation since their first inservice inspection and approximately 86.1 effective full power months of operation in the second sequential inspection period as defined in TS 5.5.7.d.2.a and b. The SGs operated approximately 49.5 effective full power months since they were all last inspected.

As detailed in item "A" which follows, the 100% inspection scope of the 2016 examination coupled with the previous inspection completed in the spring of 2012 which was also under the second period, exceeds the 100% TS inspection requirement for the second inspection interval.

A. The scope of inspections performed on each SG

Primary Side Eddy Current Inspection Scope Summary:

Full Length Inspections:

- 100% inspection of the inservice tubes using a combination of bobbin coil and bobbin coil/rotating coil (+Point™) examinations in all four SGs.

Targeted Inspections (Top of Tubesheet):

- 25% inspection of the inservice tubes in the hot leg and cold leg top of tubesheet region (+/- 3.0") in SGs 21, 23 and 24 using a rotating coil (+Point™).

- 100% inspection of the inservice tubes in the hot leg and cold leg top of tubesheet region (tube end to 1st support) in SG 22 using an Array probe.

Special Interest Examinations:

- Rotating coil (+Point™) and Array probe inspections of selected special interest locations as determined from the results of the bobbin coil examination and historical indications of interest.

Note: As described on Page 11, Section E of this report, one tube was deplugged, examined by bobbin for investigative purposes and then replugged. In order to separate the results of this tube from the inservice tubes, it is called out separately in the last row of the table below.

The following table details the above noted inspections and the number of tubes examined.

EDDY CURRENT EXAMINATION SUMMARY

Scope	Probe	Exam Extent	SG 21 Tube Count	SG 22 Tube Count	SG 23 Tube Count	SG 24 Tube Count
Full Length	Bobbin	Tube End Cold (TEC) to Tube End Hot (TEH)	3200	3198	3200	3196
Hot Leg Straights	Bobbin	Upper Hot Leg Support (7H) to TEH	195	192	190	196
Hot Leg Straights/Ubend	Bobbin	Upper Cold Leg Support (7C) to TEH	196	196	196	196
Cold Leg Straights	Bobbin	7C to TEC	391	388	386	392
Row 1-2 U-bends	+Point™	7H to 7C	195	192	190	196
Hot Leg Top of Tubesheet	Array	First Hot Leg Support (1H) to TEH	0	3586	0	0

Scope	Probe	Exam Extent	SG 21 Tube Count	SG 22 Tube Count	SG 23 Tube Count	SG 24 Tube Count
Cold Leg Top of Tubesheet	Array	First Cold Leg Support (1C) to TEC	0	3586	0	0
Hot Leg Top of Tubesheet	+Point™	Hot Leg Top of Tubesheet (+/- 3")	937*	0	924*	936*
Cold Leg Top of Tubesheet	+Point™	Cold Leg Top of Tubesheet (+/- 3")	927*	0	920*	921*
Special Interest & Bounding	Array	6th Hot Leg Support (6H) to TEH	0	32	0	0
Hot Leg Special Interest	Array	Tube Sheet Hot to TEH	0	8	0	0
Cold Leg Special Interest	Array	Tube Sheet Cold to TEC	0	14	0	0
Hot Leg Special Interest	+Point™	Various	36	67	141	25
Cold Leg Special Interest	+Point™	Various	7	80	43	3
U-bend Special Interest	+Point™	Various	5	20	5	8
Special Interest Foreign Object	Array	Various	0	0	0	22
De-Plugged Tube	Bobbin	TEC to TEH	0	1	0	0

** Hot and cold leg counts vary between the different legs as well as the different steam generators due to differing indications of interest in each area that were included within the individual examination plans*

Full Length Examinations:
Full length examinations were accomplished in five examination plans.

Plan one consisted of tubes inspected using a bobbin coil probe in a single full length pass (i.e. TEC to TEH). This inspection included the inservice tubes in rows five though forty-seven. This population ranged from 3196-3200 tubes, per steam generator.

Plan two consisted of the tubes inspected from 7H to TEH using a bobbin coil probe. Tubes in this "hot leg straight" plan were from rows one and two and accounted for 190 - 196 tubes per steam generator.

Plan three consisted of tubes inspected using a bobbin coil probe from 7C to TEH. Tubes in

this "hot leg candy cane" plan were from rows three through four and accounted for 196 tubes per steam generator.

Plan four consisted of tubes inspected using a bobbin coil from the TEC to 7C. This inspection included the inservice tubes in rows one through four and accounted for 386 - 392 tubes per steam generator.

Plan five utilized a rotating coil (+Point™) probe to inspect the inservice row one and two tubes from 7H to 7C. This test plan population ranged from 190 - 196 tubes per steam generator.

This inspection plan was necessary as plans one through four present an un-inspected gap from 7H to 7C in row 1 and 2. This is a result of the inspection difficulties presented by the tight row U-bends and use of the standard 720 bobbin probe. As downsizing the bobbin probe would invalidate the probe qualification, the rotating coil was used to fill this gap.

Targeted Examinations (Top of Tubesheet):
A nominal 25% hot/cold leg top of tubesheet inspection was conducted using a +Point™ probe in steam generators 21, 23 and 24. Unless otherwise programmed, the examination bounded top of tubesheet +/- 3" (in a few cases the extent was modified to obtain data on signals which fell outside the +/- 3" range).

With the detection of a small primary-to-secondary leak in SG 22 weeks before the inspection was scheduled to begin, the planned 25% +Point™ tubesheet inspection in that steam generator was superseded by a 100% tube end to first support, hot and cold leg inspection using an Array probe. Note: The primary-to-secondary leak is discussed further in a separate section titled "ADDITIONAL INFORMATION" at the end of this report.

Special Interest Examinations:
The following special interest examinations were conducted using a +Point™ probe (unless otherwise noted) on reported indications meeting the following criteria:

- All wear at tube support plates, anti-vibration bars and the flow distribution baffle
- All bobbin loose part (PLP) and/or Array PLP indications
- All locations affected by historical loose parts
- All foreign object affected tubes as identified by secondary side visual inspection
- All bobbin I-codes and new bobbin signals – Array was used on these indications if they were located between the tube end and the first support in SG 22
- All manufacturing burnish mark history (MBH), freespan history (FSH), non-quantifiable history (NQH) or non-quantifiable signal (NQS) – Array was used on these indications if they were located between the tube end and the first support in SG 22
- All historical non-hydraulically expanded/bulge indications - Array was used in SG 22
- All bobbin dent/ding signals ≥ 2 volts at supports and all dent/ding signals ≥ 5 volts at other locations
- All indications of proximity and/or freespan wear
- All historical permeability variation (PVN) indications

Channel Head and Plug Visual Inspections

Each of the steam generator channel heads (hot and cold leg) was visually inspected in line with recommendations made in Westinghouse Nuclear Safety Analysis Letter (NSAL) 12-1. Key areas of interest included the low lying areas, the channel head cladding and the divider plate-to-channel head weld. The inspections looked for evidence of gross defects such as indications in welds, missing weld filler material, a breach in the weld material, unusual discoloration of the weld metal, dings or gouges. The results were noted as "satisfactory" meaning no problems, discrepancies and/or anomalous conditions were present. Additional visual inspections, outside of the NSAL scope were also performed. These inspections included views of the tube sheet cladding, and divider plate and nozzle dam ring. No degradation was identified from these inspections.

A visual inspection was performed on all prior installed plugs and those new plugs installed during the U2C23 inspection. No degraded plugs were identified.

In conjunction with the Inservice Inspection (ISI) Program and per ASME Code Case N-619 as amended by Regulatory Guide 1.147 (Revision 17) visual inspections were performed on the inner radius nozzles (inlet and outlet) on each steam generator. The results of these inspections were all termed acceptable.

Secondary Side Inspection Scope

Secondary side inspections were performed in all four SGs. The scope included visual inspections in all four steam domes as well as at the top of the hot and cold leg tubesheets. Areas examined included:

- Dryers/secondary side separators:
  Inspect for proper vane arrangement, drain operability, erosion/corrosion, debris or deposits, loose/ damaged components and cracked weld joints

- Primary side separators:
  Inspect for swirl vane and weld joint integrity, presence of tangential outlets/orientation and blockages of the perforated holes

- Feedwater ring (SG 23 was not inspected due to water level/dose issues):
  Inspect for J-Nozzle position/ orientation/ integrity, J-tube to feedring interface for flow assisted corrosion, support bracket integrity, overspray staining/ deposits

- Steam drum general area:
  Inspect each accessible deck noting condition of welds, ladders, supports, wedges, drain supports and hatch hinges and latches

- U-bend region:
  Inspect from the primary separator openings for observations of deposit accumulation and hardware conditions near the anti-vibration bars and upper most support plate

- Post water lance inspections of the top of tubesheet:
  This included the annulus, no-tube lane, blowdown piping, and shroud / flow distribution baffle plate condition

- Inner bundle top of tubesheet passes:
  Performed on the hot and cold leg top of tubesheet areas to monitor the status of the sludge pile and water lancing effectiveness

No abnormalities were identified by the above inspections. The post water lance top of tubesheet inspection did identify the presence of hard sludge/collars in each of the hot leg tubesheets. However, this is not considered a new or abnormal condition.

In addition to the above inspections, foreign object locations and possible loose part signals from eddy current were visually investigated where accessible. Retrieval efforts successfully removed the three new foreign objects that were confirmed through these actions.

Water Lancing
Water lancing was performed in each SG and removed a total of 87 pounds of material from the four SGs.

B. Degradation mechanisms found

The degradation mechanisms detected during the inspection were structure wear (anti-vibration bars and tube support plates) and two volumetric indications.

The table below summarizes the number of indications recorded in each SG during the inspection for the various mechanisms. The specific indication locations and their associated percent through-wall (%TW) depths are provided in the response to report item "D".

INDICATION COUNTS

Wear Mechanism	SG 21	SG 22	SG 23	SG 24	Totals
Anti-Vibration Bar Wear	0	2	1	0	3
Tube Support Plate Wear	10	0	59	10	79
Volumetric	0	2	0	0	2

Anti-Vibration Bar (AVB) Wear
A total of three AVB wear indications were reported. Two of the indications were located in SG 22 and one was located in SG 23. The SG 22 indications were new and were sized at 8% TW and 11% TW. The indication in SG 23 was previously reported and was found to have grown from 11% TW in the previous inspection to 15% TW in 2016. All of the affected tubes were left in service.

Tube Support Plate (TSP) Wear
TSP wear was detected in three of the four steam generators as noted in the above table. Of the 79 total indications, 39 were new and 40 were repeat indications. All of the indications were

≤ 20% TW with the largest being 13% TW. All of the TSP wear indications were returned to service.

Volumetric (VOL)
Two volumetric indications were detected by the bobbin probe in SG 22 just above the 5th hot leg support in outer periphery tubes (R46/C62 and R47/C57). The two volumetric indications demonstrated a change from history in the bobbin voltage since the previous U2C20, 2012 inspection. That is, the bobbin voltage increased from 0.25 volts (V) to 1.21V in tube R47/C57 and from 0.50V to 1.20V in tube R46/C62.

The bobbin signals in the raw channels demonstrated excellent correlation using the phase angle sizing curves set on the calibration standing with the ASME flat bottom holes. The indication in tube R47/C57 measured: 14% through-wall (TW), 14% TW and 14% TW on the 400 kHz, 200 kHz and 100 kHz raw channels respectively. The indication in tube R46/C62 measured 11% TW, 11% TW and 12% TW on the same frequencies. Both of these bobbin signals were reported as non-quantifiable indications and required subsequent diagnostic testing using a +Point™ probe and elective testing with the Array probe to further characterize the indications.

Both locations were subsequently confirmed to be volumetric indications and found to exhibit wear-like degradation with no loose part present. The orientation (azimuthal position) of each indication was determined to be on the outboard side of the tube. That is, the indications were on the side of the tube facing the steam generator wrapper. Since this area was not accessible for visual inspection, conclusive visual determination of a loose part could not be confirmed.

Based on the indications' location (periphery) and the indications' shape and bobbin response, both indications appear to have been caused by a foreign object. A 30 tube bounding examination was conducted around the two indications using the Array probe and +Point™ probe and no evidence of any other degradation or loose parts was reported.

Both indications were sized using +Point™. The most appropriate Electric Power Research Institute (EPRI) technique was determined to be Examination Technique Specification Sheet (ETSS) 27904.1 based on the flaw shape. The indication in tube R46/C62 has a maximum depth of 39% TW while the indication in tube R47/C57 had a maximum depth of 38% TW.

Neither of the two indications exceeded the tech spec plugging limit of 40% TW or the condition monitoring limit. The indications did not meet any criteria that would require plugging; nevertheless, both tubes were plugged and stabilized.

C. Nondestructive examination techniques utilized for each degradation mechanism

The table below summarizes the nondestructive examination (NDE) techniques utilized for the degradation mechanisms identified in item "B" above.

SUMMARY OF INSPECTION TECHNIQUES

Technique	EPRI ETSS	Demonstrated Applicability - Degradation Mechanism	Extended Applicability	Depth Sizing Technique
Bobbin	96004.1	Support Wear (AVB, FDB, TSP)	Freespan Volumetric Wear, Loose Part Wear with part present	Bobbin /Absolute Mix Amplitude Analysis Detection Sizing For Service For Structure Wear
+Point™	27903.1 27904.1	PLP Wear at Freespan, TSP and Expansion Transition. Morphology Dependent (part not present)	Detection of foreign material based on material composition and proximity of foreign material to the tube, based on EPRI reports 1020631 and 1018561. For sizing of PLP Wear when part is present based on EPRI Report 1020631 on an as needed basis as yields conservative results.	Sizing For Service
+Point™ Diagnostic	96910.1	Broached TSP Wear	FDB Wear	+Point™ / Differential Mix Phase Analysis Detection

AVB Anti-Vibration Bar
EPRI Electric Power Research Institute
ETSS Examination Technique Specification Sheet
FDB Flow Distribution Baffle
PLP Possible Loose Part
TSP Tube Support Plate

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

Indication sizing is summarized below:

SG	Row	Column	Depth % TW	Location	Tube Disposition
21	3	47	5	5th hot leg support – 0.59"	Left in service
21	6	47	7	6th hot leg support – 0.64"	Left in service
21	6	51	6 12	5th hot leg support – 0.62" 6th hot leg support – 0.6"	Left in service
21	6	53	6 13	5th hot leg support – 0.53" 6th hot leg support – 0.6"	Left in service
21	6	54	10 8	4th hot leg support – 0.55" 5th hot leg support – 0.57"	Left in service
21	12	50	7	5th hot leg support – 0.64"	Left in service
21	47	57	7	7th cold leg support – 0.65"	Left in service
22	45	49	8	AV4+0.32"	Left in service
22	46	46	11	AV4+0.27"	Left in service
22	46*	62	39	5th hot leg support+0.85"	Stabilized and plugged
22	47*	57	38	5th hot leg support +1.63"	Stabilized and plugged
23	1	37	6 9	5th hot leg support – 0.65" 6th hot leg support – 0.67"	Left in service
23	1	42	6	6th hot leg support – 0.64"	Left in service
23	1	45	7 7	5th hot leg support – 0.65" 6th hot leg support – 0.64"	Left in service
23	1	47	6	5th hot leg support – 0.62"	Left in service
23	1	54	8	6th hot leg support – 0.62"	Left in service
23	3	38	3 5	5th hot leg support – 0.67" 6th hot leg support – 0.67"	Left in service
23	3	57	5 8	5th hot leg support – 0.62" 6th hot leg support – 0.62"	Left in service
23	3	75	7	5th hot leg support – 0.65"	Left in service
23	3	79	5	5th hot leg support – 0.67"	Left in service
23	4	55	7 8	5th hot leg support – 0.67" 6th hot leg support – 0.69"	Left in service
23	4	56	5 10	5th hot leg support – 0.65" 6th hot leg support – 0.67"	Left in service
23	4	57	7	6th hot leg support – 0.69"	Left in service
23	4	59	5 6	5th hot leg support – 0.65" 6th hot leg support – 0.69"	Left in service
23	4	64	6	5th hot leg support – 0.67"	Left in service
23	5	47	8	6th hot leg support – 0.67"	Left in service
23	5	49	7	6th hot leg support – 0.67"	Left in service

SG	Row	Column	Depth % TW	Location	Tube Disposition
23	5	50	7 6	5th hot leg support – 0.65" 6th hot leg support – 0.65"	Left in service
23	5	51	6 5	4th hot leg support – 0.58" 5th hot leg support – 0.62"	Left in service
23	5	89	8	5th hot leg support – 0.67"	Left in service
23	6	42	5	5th hot leg support – 0.64"	Left in service
23	6	50	6	6th cold leg support – 0.62"	Left in service
23	6	53	8	6th hot leg support – 0.67"	Left in service
23	6	82	5	4th hot leg support – 0.53"	Left in service
23	7	44	9 6 7 6	3rd hot leg support – 0.55" 4th hot leg support – 0.63" 5th hot leg support – 0.6" 6th hot leg support – 0.67"	Left in service
23	7	46	6 8 9 9	3rd hot leg support – 0.58" 5th hot leg support – 0.65" 6th hot leg support – 0.71" 7th hot leg support – 0.65"	Left in service
23	7	48	7 7 9	4th hot leg support – 0.67" 5th hot leg support – 0.67" 6th hot leg support – 0.67"	Left in service
23	7	49	7	6th cold leg support – 0.6"	Left in service
23	7	50	7	4th hot leg support – 0.56"	Left in service
23	7	51	7	6th hot leg support – 0.65"	Left in service
23	7	55	6	5th hot leg support – 0.6"	Left in service
23	9	43	6	7th hot leg support – 0.62"	Left in service
23	12	51	6	7th hot leg support – 0.65"	Left in service
23	12	54	6 9	4th hot leg support – 0.6" 7th hot leg support – 0.56"	Left in service
23	16	35	8	3rd hot leg support – 0.6"	Left in service
23	16	50	5	4th hot leg support – 0.59"	Left in service
23	17	45	8	3rd hot leg support – 0.58"	Left in service
23	28	47	6	7th cold leg support – 0.63"	Left in service
23	33	32	6	1st hot leg support – 0.54"	Left in service
23	35	58	4	7th cold leg support – 0.62"	Left in service
23	46	53	8	7th hot leg support – 0.69"	Left in service
23	46	59	7	7th hot leg support – 0.74"	Left in service
23	47	50	15	AV3-0.32"	Left in service
24	2	43	8	6th hot leg support – 0.67"	Left in service
24	2	47	8 8	5th hot leg support – 0.51" 6th hot leg support – 0.57"	Left in service
24	3	44	8 7	5th hot leg support – 0.59" 6th hot leg support – 0.63"	Left in service
24	4	45	10 7	5th hot leg support – 0.61" 6th hot leg support – 0.61"	Left in service

SG	Row	Column	Depth % TW	Location	Tube Disposition
24	6	47	7	5th hot leg support – 0.63"	Left in service
24	7	46	7	6th hot leg support – 0.61"	Left in service
24	7	54	9	6th hot leg support – 0.67"	Left in service

* Additional details on the two volumetric indications are contained in the table below:

SG	Row	Column	Location	ETSS	Max Depth % TW	Axial Length (in.)	Circ. Extent (degrees)
22	46	62	5th hot leg support +0.85"	Bobbin	12	N/A	N/A
				27904.1	39	0.32	80
				27903.1	25	0.32	80
22	47	57	5th hot leg support +1.63"	Bobbin	14	N/A	N/A
				27904.1	38	0.40	79
				27903.1	23	0.40	79

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

Degradation Mechanism	SG 21	SG 22	SG 23	SG 24	Total
Tube Support Wear	0	0	0	0	0
Anti-Vibration Bar Wear	0	0	0	0	0
Volumetric	0	2	0	0	2

In addition to the two tubes that were plugged in SG 22, one out of service tube in SG 22 (Row 8/Column 3) was unplugged on both ends, tested by bobbin and replugged with mechanical alloy 690 thermally treated plugs. The only notable bobbin signal was a large factory over expansion above the cold leg tubesheet. The original welded plugs were installed during steam generator manufacture to address the over expansion and were made of alloy 600 material. The replacement was a proactive measure to remove the alloy 600 plug material from the steam generator.

F. The number and percentage of tubes plugged to date, and the effective plugging percentage in each SG

The following table identifies the total number/percentage of tubes plugged for each SG to date:

SG Identifier	Number of Tubes/SG	Number of Tubes Plugged To Date	Plugging Percentage (%)
SG 21	3,592	1	0.028
SG 22	3,592	8	0.223
SG 23	3,592	6	0.167
SG 24	3,592	4	0.111
Total	14,368	19	0.132

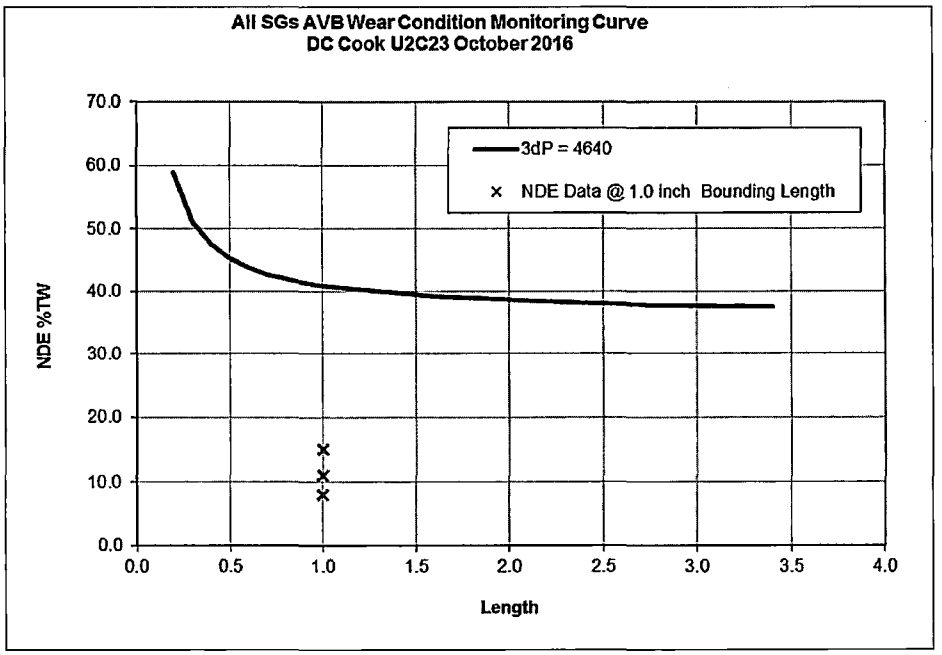
G. Results of condition monitoring, including the results of tube pulls and in-situ testing

Evaluation of the indications found during the 2016 inspection indicated that the condition monitoring requirements for structural and leakage integrity were satisfied.

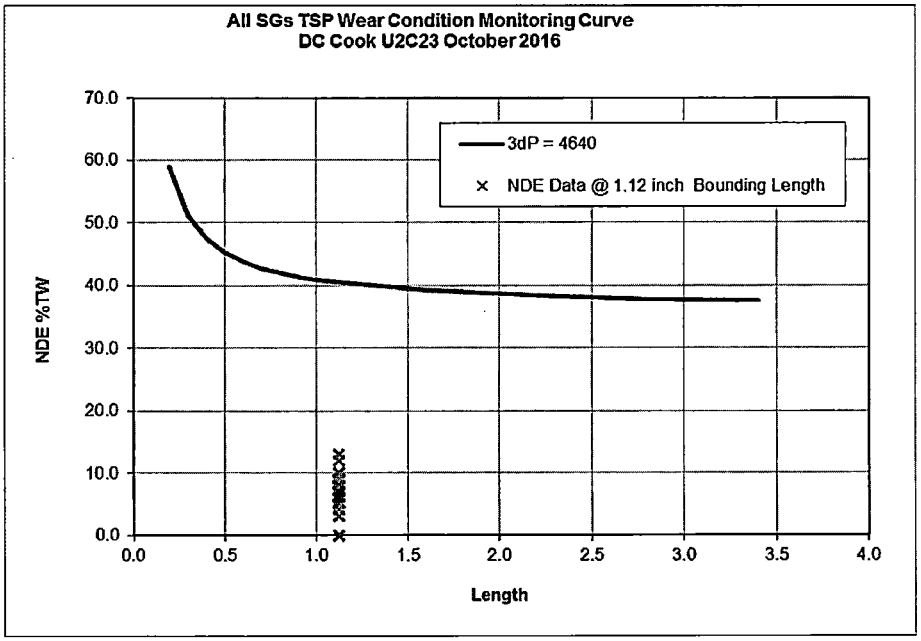
Degradation specific condition monitoring limits were applied to the indications for each degradation mode (anti-vibration, tube support wear and volumetric). As shown in the figures below, no degradation exceeded the technical specification repair limit of 40% TW or the structural condition monitoring limits. As wear indications will leak and break at essentially the same pressure differential, leakage integrity for anti-vibration and tube support plate wear at a much lower faulted differential pressure (2,560 psid) was also demonstrated.

If the volumetric indications are treated as a form of wear-like indication, the same methodology applies, thus the leakage integrity is also demonstrated by the volumetric curve below. Since the volumetric indications resemble an elliptical patch of degradation, leakage due to pop-through was also considered. That is, when considering the worst case accident differential, the largest volumetric indication continues to remain bounded by the pop-through curve at a bounding 0.5 inch length as illustrated in the last figure, thus confirming leakage integrity is satisfied for both volumetric indications.

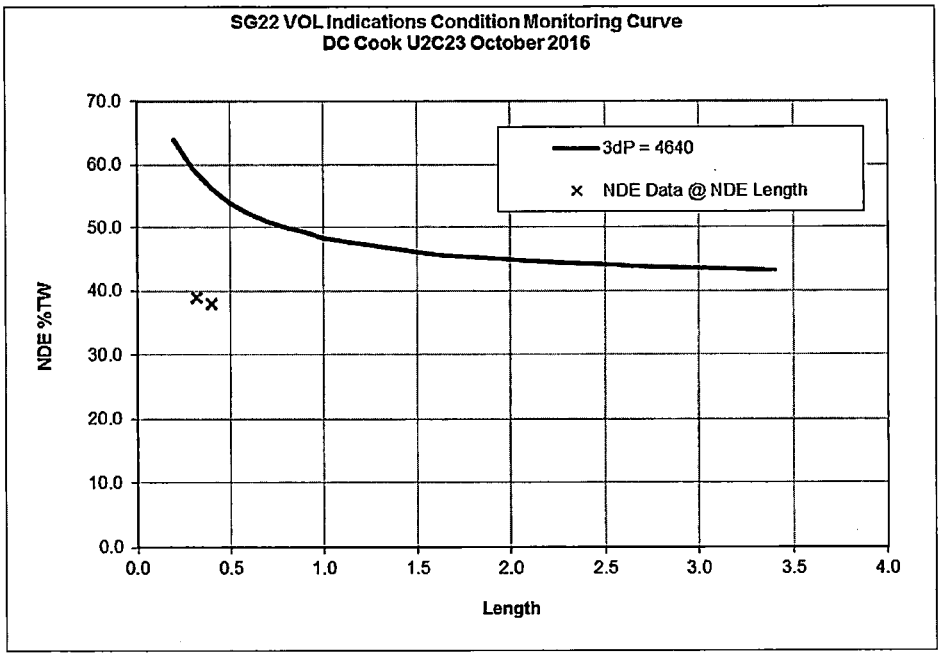
ANTI-VIBRATION BAR WEAR
CONDITION MONITORING LIMIT
ETSS 96004.1



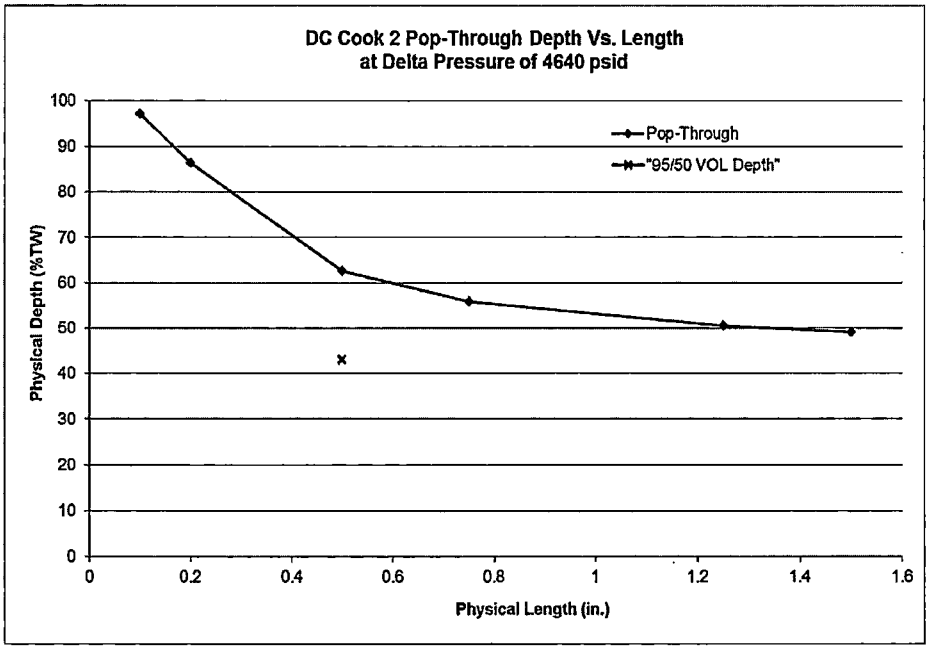
TUBE SUPPORT PLATE WEAR CONDITION MONITORING LIMIT ETSS 96004.1



VOLUMETRIC CONDITION MONITORING LIMIT ETSS 27904.1



POP-THROUGH CURVE
FOR LARGEST VOLUMETRIC INDICATION



The inspection found no indications that met the criteria for in-situ pressure testing and no tubes were required to be pulled.

ADDITIONAL INFORMATION

On August 12, 2016, a small (0.04-0.08 gallons per day) primary to secondary leak was detected prior to the scheduled unit shutdown of CNP Unit 2. The leak was subsequently linked to SG 22 and as a result, the eddy current inspection scope for that steam generator was revised to include a 100% Array probe inspection from the tube end to the first support in both the hot and cold legs. This was based on the supposition that the leak was most likely foreign object related as this steam generator had no detectable degradation during the previous inspection and alloy 690 tubing has demonstrated resistance to degradation forms other than wear. However, the full length bobbin examination, the Array inspection and the secondary side visual inspections failed to identify the source of the leak. Upon unit restart and replacement of two damaged fuel assemblies, the leak became undetectable. Plant operations continue with normal leakage monitoring/response actions in place.