Dominion Energy Nuclear Connecticut, Inc.
Rt 156, Rope Ferry Road, Waterford, CT 06385
DominionEnergy.com

Dominion Energy®

APR 19 2018

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Serial No. 18-116
NSSL/MLC R0
Docket No. 50-423
License No. NPF-49

DOMINION ENERGY NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 3
END OF CYCLE 18 STEAM GENERATOR TUBE INSPECTION REPORT

In accordance with the Millstone Power Station Unit 3 Technical Specification (TS) Section 6.9.1.7, Dominion Energy Nuclear Connecticut, Inc. hereby submits the End of Cycle 18 (EOC18) Steam Generator (SG) Tube Inspection report. The report is submitted within 180 days after initial entry into MODE 4 following completion of the fall 2017 SG inspections performed in accordance with TS 6.8.4.g, "Steam Generator (SG) Program." Initial entry into Mode 4 occurred on November 11, 2017.

Attachment 1 contains the EOC18 SG Tube Inspection report. Attachment 2 contains a list of acronyms.

The report addresses the following reporting requirements:

a. The scope of inspections performed on each SG,
b. Degradation mechanisms found,
c. Nondestructive examination techniques utilized for each degradation mechanism,
d. Location, orientation (if linear), and measured sizes (if available) of service induced indications,
e. Number of tubes plugged during the inspection outage for each degradation mechanism,
f. The number and percentage of tubes plugged to date and the effective plugging percentage in each steam generator,
g. The results of condition monitoring, including the results of tube pulls and in-situ testing,
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,
i. The calculated accident induced leakage rate from the portion of the tubes below 15.2 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 2.49 times the maximum operational primary to secondary leakage rate, the report should describe how it was determined; and

IE01
NRR

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.

If you have any questions or require additional information, please contact Mr. Jeffry A. Langan at (860) 444-5544.

Sincerely,

J. R. Daugherty
Site Vice President – Millstone

Attachments:

1) Millstone Power Station Unit 3, End of Cycle 18 Steam Generator Tube Inspection Report

2) Acronyms

Commitments made in this letter: None

cc: U. S. Nuclear Regulatory Commission
Region I
2100 Renaissance Blvd, Suite 100
King of Prussia, PA 19406-2713

R. V. Guzman
Senior Project Manager – Millstone Power Station
U. S. Nuclear Regulatory Commission
One White Flint North, Mail Stop O8 C2
11555 Rockville Pike
Rockville, MD 20852-2738

NRC Senior Resident Inspector
Millstone Power Station

Serial No. 18-116
Docket No. 50-423

Attachment 1

Millstone Power Station Unit 3
End of Cycle 18 Steam Generator Tube Inspection Report

MILLSTONE POWER STATION UNIT 3
DOMINION ENERGY NUCLEAR CONNECTICUT, INC. (DNC)

End of Cycle 18 Steam Generator Tube Inspection Report

Transmittal of this report satisfies Millstone Power Station Unit 3 (MPS3) Technical Specification (TS) 6.9.1.7 which specifies that a report shall be submitted within 180 days after the initial entry into MODE 4 following completion of an inspection performed in accordance with TS 6.8.4.g, Steam Generator (SG) Program. During MPS3's fall 2017 refueling outage (3R18), steam generator inspections were completed in accordance with TS 6.8.4.g. Initial entry into Mode 4 occurred on November 11, 2017; therefore, this report is required to be submitted to the NRC by May 10, 2018.

This attachment provides a summary of the MPS3 steam generator inspection results and specific responses to each of the TS 6.9.1.7 reporting requirements. Attachment 2 contains a list of acronyms.

Introduction

MPS3 is a four loop Westinghouse pressurized water reactor with Westinghouse Model F SGs. Each SG was fabricated with 5626 U-bend thermally treated Inconel 600 tubes. The tubing is nominally 0.688 inches outside diameter with a 0.040 inch nominal wall thickness. During SG fabrication, the tubes were hydraulically expanded over the full depth of the 21.23-inch thick tubesheet. The tubesheet was drilled on a square pitch with 0.98 inch spacing. There are 59 rows and 122 columns in each SG. The radius of row 1 U-bends is 2.20 inches. U-bends in rows 1 through 10 were stress relieved after being formed. Secondary side tube support structures include a flow distribution baffle, seven plate supports with broached holes on the vertical section of the tubes, and six anti-vibration bars (AVBs) on the U-bend section of the tubes.

The SGs have accrued 24.76 Effective Full Power Years (EFPY) of operation as of the End of Cycle (EOC) 18 (October 2017).

TS 6.9.1.7 Reporting Requirements

This section provides responses to each of the reporting requirements specified in MPS3 TS 6.9.1.7. Bold wording represents TS verbiage. The required information is provided immediately following the restatement of each reporting requirement.

A report shall be submitted within 180 days after the initial entry into MODE 4 following completion of an inspection performed in accordance with TS 6.8.4.g, Steam Generator (SG) Program. The report shall include:

a. The scope of inspections performed on each SG,

One hundred percent of the operational tubes in SG A and SG C, a total of 11,181 tubes, were inspected full length using eddy current examination techniques. The majority of the tubing length was examined with bobbin probes. The U-bends of rows 1 and 2 (475 in-service tubes) were examined with a Motorized Rotating Probe Coil (MRPC) technique in addition to the bobbin probe examination of the straight legs of the tubes. An additional augmented sample of 608 tube locations was examined with a MRPC probe. The augmented sample inspections were performed in areas of special interest including hot leg

expansion transitions, tube overexpansion locations within the hot leg tubesheet, dents, as well as locations where the bobbin probe response was ambiguous. An additional augmented sample of 12,721 tube locations was inspected with an array coil probe. The array coil probe sample included 100% of the hot leg top-of-tubesheet (TTS) locations (11,181 tubes), and approximately 13% of the cold leg TTS locations (1,540 tubes). The extent of the TTS examinations was from the first support structure detected above the secondary face of the tubesheet to 15.2 inches below the secondary face of the tubesheet; except for the tubes categorized as high residual stress tubes. For the high residual stress tubes, the extent included the entire straight length of the tubes on the hot leg.

Table 1
3R18 ECT Examination Summary

	SG A	SG B	SG C	SG D	Total
Number of Installed Tubes	5626	5626	5626	5626	22504
Number of Tubes In-service at start of 3R18	5577	5601	5604	5535	22317
Number of Tubes Inspected w/Bobbin Probe	5577	N/A	5604	N/A	11181
Number of Tube Locations Inspected w/Array Probe	6363	N/A	6358	N/A	12721
Number of Exams Performed w/MRPC	542	N/A	541	N/A	1083
Previously Plugged Tubes	49	25	22	91	187
Tubes Plugged During 3R18	2	0	0	0	2

During 3R18, secondary side activities were performed in SGs A, B, C, and D and included the following:

- High pressure sludge lancing.
- Post-sludge lancing visual examination of the TTS annulus and no-tube lane to assess as-left material condition and cleanliness, and to identify and remove any retrievable foreign objects.
- Visual investigation of accessible locations having eddy current indications potentially related to foreign objects, and if present, removal of those retrievable foreign objects.
- Secondary side upper internal examinations within SG D as follows:
    - Steam drum visual inspections to evaluate the material condition and cleanliness of key components such as moisture separators, drain systems, and interior surfaces.
    - Drop down examinations (through the primary separators) of the upper tube bundle and AVB supports.
    - Visual inspections of feed ring internal interface for flow accelerated corrosion
    - Visual inspections of upper tube support plate (TSP) to assess material conditions and cleanliness.

The results of all secondary-side visual examinations performed were satisfactory, with no degradation detected.

b. Degradation mechanisms found,

Degradation mechanisms found during 3R18 included AVB wear, TSP wear, volumetric indications from fabrication and volumetric degradation from foreign object wear.

c. Nondestructive examination techniques utilized for each degradation mechanism,

Table 2 identifies the examination techniques used for evaluating degradation mechanisms applicable to the MPS3 SGs.

Table 2
Degradation Mechanisms and Inspection Techniques

Classification	Degradation Mechanism	Location	Probe Type
Existing	Tube Wear	Anti-Vibration Bars	Bobbin – Detection and Sizing
Existing	Tube Wear	Tube Support Plate	Bobbin – Detection +Point™ – Sizing
Existing	Tube Wear (foreign objects)	Freespan and TTS	Bobbin, Array and +Point™ – Detection +Point™ - Sizing
Existing	IGA/SCC	Tube Ends	N/A*
Existing	FAC	Feed Ring and J Tube to Feed Ring Interface	Visual Inspection
Existing	Tube Wear	Flow Distribution Baffle	Bobbin – Detection +Point™ – Sizing
Potential	ODSCC PWSCC	Hot Leg Top-of-Tubesheet And Sludge Region	Array - Detection +Point™ – Detection and Sizing
Potential	ODSCC PWSCC	Bulges, Dents, Manufacturing Anomalies, and Above-Tubesheet Overexpansions (OVR)	Array - Detection +Point™ – Detection and Sizing
Potential	PWSCC	Tubesheet Overexpansions (OXP)	Array - Detection +Point™ – Detection and Sizing
Potential	ODSCC PWSCC	Row 1 and 2 U-bends	Array - Detection +Point™ – Detection and Sizing
Potential	FAC	Moisture Separators	Visual Inspection
Potential	Plug Installation Problems	Plugs	Visual Inspection
Potential	Tube Slippage	Within Tubesheet	Bobbin Detection

*Inspection for this mechanism was not necessary under the existing alternate repair criteria.

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

Tables 3 through 8 identify the AVB wear and non-AVB wear volumetric indications reported during 3R18.

Table 3
3R18 Volumetric Degradation Summary SG A (Excludes AVB Wear)

SG	Row	Col	Location	Max Depth	Cause	Foreign Object Remaining	Plugged & Stabilized?
SGA	2	17	05H -0.95	12	Tube Support Wear	NA	No
SGA	3	112	06C -1.05	32	Foreign Object Wear	NA	No
SGA	6	122	TSH +3.87	15	Foreign Object Wear	No	No
SGA	7	3	TSC -0.04	25	Foreign Object Wear	No	No
SGA	15	68	07C -0.98	31	Foreign Object Wear	No	No
SGA	15	74	07C -0.76	37	Foreign Object Wear	No	No
SGA	18	94	03H -0.09	9	Tube Support Wear	NA	No
SGA	20	97	08C -1.02	21	Foreign Object Wear	No	No
SGA	23	76	03C +0.11	17	Tube Support Wear	NA	No
SGA	24	7	04H +3.51	24	Foreign Object Wear	No	No
SGA	24	11	TSH +0.01	25	Foreign Object Wear	No	No
SGA	28	112	01H +0.3	36	Foreign Object Wear	No	No
SGA	29	109	TSC -0.05	20	Foreign Object Wear	No	No
SGA	29	110	01H +0.31	14	Foreign Object Wear	No	No
			TSC +0	19	Foreign Object Wear	No	No
SGA	35	71	08C -1.09	30	Foreign Object Wear	No	No
SGA	36	76	01H +0.27	10	Tube Support Wear	NA	No
SGA	43	103	TSC +0.6	17	Foreign Object Wear	No	No
SGA	45	100	01H -0.15	11	Tube Support Wear	NA	No
SGA	47	24	01C +0.74	28	Foreign Object Wear	No	No
			01C +1.01	18	Foreign Object Wear	No	No
SGA	47	25	01C +0.78	24	Foreign Object Wear	No	No
			01C +0.95	30	Foreign Object Wear	No	No
SGA	58	47	TSC +0.45	19	Sled	NA	No
SGA	58	55	08H -1.77	46	Foreign Object Wear	No	Yes
SGA	58	76	TSC +0.39	18	Sled	NA	No
SGA	59	60	08H -1.79	25	Foreign Object Wear	No	No

Table 4
3R18 Volumetric Degradation Summary SG C (Excludes AVB Wear)

SG	Row	Col	Location	Max Depth	Cause	Foreign Object Remaining	Plugged & Stabilized?
SGC	1	5	TSC +2.67	13	Foreign Object Wear	No	No
SGC	1	73	TSC +19.43	15	Foreign Object Wear	No	No
SGC	1	102	01C +4.46	17	Foreign Object Wear	No	No
SGC	2	103	02C -6.86	16	Foreign Object Wear	No	No
SGC	3	3	04C +16.08	9	Fabrication	NA	No
SGC	8	61	TSH +0.38	25	Foreign Object Wear	No	No
SGC	13	120	08C -0.8	29	Foreign Object Wear	No	No
SGC	20	72	02H +5.43	21	Fabrication	NA	No
SGC	35	78	08C -0.94	28	Foreign Object Wear	No	No
SGC	35	110	06C -1.25	24	Foreign Object Wear	No	No
SGC	36	13	TSC +0.29	19	Sled	NA	No
			TSC +0.46	15	Sled	NA	No
			TSC +0.46	19	Sled	NA	No
			TSC +0.46	16	Sled	NA	No
SGC	36	51	08C -0.88	28	Foreign Object Wear	No	No
SGC	36	75	08C -1.01	24	Foreign Object Wear	No	No
SGC	38	15	TSC +0.46	19	Sled	NA	No
SGC	44	102	TSC +0.47	16	Sled	NA	No
SGC	46	34	TSH +0.28	17	Foreign Object Wear	No	No
SGC	46	52	05C -0.46	15	Tube Support Wear	NA	No
SGC	47	34	TSH +0.29	17	Foreign Object Wear	No	No
SGC	47	61	06C -0.68	24	Foreign Object Wear	No	No
SGC	48	25	TSH +0.36	16	Foreign Object Wear	No	No
SGC	48	88	07C -0.81	27	Tube Support Wear	NA	No
SGC	54	64	TSH +0.07	26	Foreign Object Wear	No	No
SGC	55	68	TSH +0.53	21	Foreign Object Wear	No	No
SGC	56	41	TSH +0.4	21	Foreign Object Wear	No	No
SGC	56	65	06H +13.45	26	Foreign Object Wear	No	No
SGC	56	69	TSH -0.05	27	Foreign Object Wear	No	No
SGC	56	82	TSC +0.62	16	Sled	NA	No
			TSC +0.62	18	Sled	NA	No
SGC	57	44	TSH +0.36	17	Sled	NA	No
SGC	58	48	TSC +0.42	20	Sled	NA	No
			TSH +0.38	17	Sled	NA	No
SGC	58	49	TSC +0.43	17	Sled	NA	No
			TSH +0.38	17	Sled	NA	No
SGC	58	76	TSC +0.43	19	Sled	NA	No
			TSH +0.3	18	Sled	NA	No
SGC	59	55	TSC +0.4	17	Sled	NA	No
SGC	59	59	TSC +0.44	17	Foreign Object Wear	No	No
SGC	59	68	TSH +0.45	18	Sled	NA	No

Table 5
3R18 AVB Wear Listings, SG A – Repeat Indications

SG	Row	Col	Location	%TW
SGA	12	121	AV6	10
SGA	21	118	AV6	10
SGA	22	78	AV1	13
SGA	22	78	AV5	17
SGA	22	78	AV6	14
SGA	24	116	AV6	14
SGA	26	44	AV2	15
SGA	26	44	AV5	18
SGA	26	115	AV1	26
SGA	27	8	AV1	11
SGA	27	8	AV6	8
SGA	27	9	AV3	12
SGA	27	115	AV1	18
SGA	28	36	AV5	13
SGA	28	113	AV5	10
SGA	28	115	AV1	33
SGA	29	40	AV2	11
SGA	29	67	AV1	12
SGA	29	67	AV2	17
SGA	29	67	AV5	12
SGA	29	79	AV5	14
SGA	29	114	AV2	13
SGA	29	114	AV5	10
SGA	30	9	AV5	31
SGA	30	10	AV5	15
SGA	30	11	AV5	10
SGA	30	40	AV2	12
SGA	30	113	AV5	22
SGA	30	113	AV6	12
SGA	30	114	AV1	11
SGA	31	61	AV5	13
SGA	31	109	AV2	11
SGA	32	111	AV4	20
SGA	32	111	AV5	19
SGA	33	111	AV6	10
SGA	34	15	AV6	13
SGA	34	29	AV3	11
SGA	34	29	AV6	13
SGA	34	41	AV3	18

SG	Row	Col	Location	%TW
SGA	34	41	AV4	12
SGA	34	44	AV3	8
SGA	34	46	AV3	20
SGA	34	46	AV4	17
SGA	34	46	AV5	30
SGA	34	46	AV6	34
SGA	34	48	AV1	18
SGA	34	48	AV2	19
SGA	34	48	AV3	28
SGA	34	73	AV3	16
SGA	34	73	AV4	31
SGA	34	73	AV5	35
SGA	34	73	AV6	13
SGA	34	85	AV5	17
SGA	34	91	AV2	12
SGA	34	91	AV4	12
SGA	34	97	AV3	11
SGA	34	98	AV4	15
SGA	34	107	AV4	8
SGA	34	109	AV4	25
SGA	35	49	AV2	10
SGA	35	49	AV5	16
SGA	35	59	AV2	30
SGA	35	59	AV3	14
SGA	35	59	AV4	14
SGA	35	59	AV6	19
SGA	35	60	AV4	30
SGA	35	60	AV5	27
SGA	35	60	AV6	13
SGA	35	61	AV2	15
SGA	35	61	AV4	15
SGA	35	65	AV2	14
SGA	35	65	AV3	13
SGA	35	65	AV4	18
SGA	35	65	AV5	17
SGA	35	71	AV3	12
SGA	35	71	AV4	25
SGA	35	71	AV5	12
SGA	35	71	AV6	11

SG	Row	Col	Location	%TW
SGA	35	77	AV1	9
SGA	35	77	AV2	13
SGA	35	77	AV3	19
SGA	35	77	AV4	15
SGA	35	77	AV5	10
SGA	35	80	AV3	9
SGA	35	90	AV2	11
SGA	35	100	AV3	8
SGA	35	108	AV2	10
SGA	35	108	AV3	10
SGA	35	108	AV6	10
SGA	37	34	AV1	12
SGA	37	45	AV2	35
SGA	37	45	AV3	24
SGA	37	45	AV4	19
SGA	37	45	AV5	18
SGA	37	56	AV3	14
SGA	37	56	AV4	20
SGA	37	69	AV5	22
SGA	37	69	AV6	25
SGA	37	72	AV3	17
SGA	37	89	AV3	9
SGA	37	90	AV3	25
SGA	37	90	AV4	15
SGA	37	90	AV5	16
SGA	37	91	AV3	20
SGA	37	91	AV4	15
SGA	37	91	AV5	27
SGA	37	91	AV6	21
SGA	37	92	AV5	17
SGA	37	99	AV3	15
SGA	37	100	AV3	14
SGA	37	100	AV4	12
SGA	37	100	AV5	12
SGA	37	102	AV4	11
SGA	37	106	AV4	15
SGA	37	106	AV5	12
SGA	38	52	AV2	18
SGA	38	52	AV3	26
SGA	38	79	AV6	11
SGA	38	86	AV5	13

SG	Row	Col	Location	%TW
SGA	38	106	AV3	18
SGA	38	106	AV4	16
SGA	38	106	AV5	16
SGA	39	51	AV3	16
SGA	39	51	AV4	14
SGA	39	57	AV1	16
SGA	39	57	AV2	32
SGA	39	57	AV3	23
SGA	39	57	AV4	25
SGA	39	57	AV5	12
SGA	39	60	AV4	26
SGA	39	62	AV5	14
SGA	39	62	AV6	13
SGA	39	70	AV2	8
SGA	39	70	AV3	14
SGA	39	70	AV4	11
SGA	39	71	AV2	9
SGA	39	71	AV4	17
SGA	39	71	AV5	20
SGA	39	71	AV6	15
SGA	39	74	AV3	10
SGA	39	75	AV3	13
SGA	39	75	AV4	11
SGA	39	75	AV5	15
SGA	39	75	AV6	16
SGA	39	78	AV3	11
SGA	40	45	AV3	16
SGA	40	45	AV4	31
SGA	40	45	AV5	17
SGA	40	51	AV4	30
SGA	40	51	AV5	40
SGA	40	58	AV2	17
SGA	40	58	AV3	18
SGA	40	58	AV5	17
SGA	40	64	AV4	17
SGA	40	67	AV2	11
SGA	40	67	AV3	11
SGA	40	71	AV2	19
SGA	40	71	AV3	22
SGA	40	71	AV4	26
SGA	40	86	AV2	12

SG	Row	Col	Location	%TW
SGA	40	94	AV5	16
SGA	40	100	AV3	11
SGA	40	102	AV4	11
SGA	41	61	AV3	22
SGA	41	61	AV4	26
SGA	41	74	AV5	8
SGA	41	87	AV4	18
SGA	41	91	AV3	10
SGA	41	100	AV3	8
SGA	41	101	AV4	12
SGA	41	101	AV5	11
SGA	41	102	AV4	31
SGA	41	102	AV5	14
SGA	42	20	AV6	8
SGA	42	33	AV3	19
SGA	42	33	AV4	14
SGA	42	37	AV2	13
SGA	42	37	AV3	10
SGA	42	37	AV6	13
SGA	42	43	AV2	20
SGA	42	43	AV3	17
SGA	42	53	AV2	12
SGA	42	53	AV3	17
SGA	42	53	AV4	24
SGA	42	53	AV5	31
SGA	42	63	AV2	10
SGA	42	63	AV3	23
SGA	42	63	AV4	16
SGA	42	63	AV5	14
SGA	42	77	AV2	7
SGA	42	77	AV3	11
SGA	42	77	AV4	24
SGA	42	80	AV4	9
SGA	42	85	AV2	11
SGA	42	85	AV4	12
SGA	42	86	AV3	9
SGA	42	86	AV4	13
SGA	42	93	AV3	13
SGA	42	93	AV4	19
SGA	42	93	AV5	22
SGA	42	98	AV1	9

SG	Row	Col	Location	%TW
SGA	42	98	AV3	30
SGA	42	98	AV4	32
SGA	42	101	AV2	17
SGA	42	101	AV3	23
SGA	42	101	AV4	28
SGA	42	101	AV5	25
SGA	42	102	AV3	34
SGA	42	102	AV4	31
SGA	42	102	AV5	24
SGA	42	103	AV3	11
SGA	42	103	AV4	11
SGA	43	20	AV6	7
SGA	43	36	AV1	12
SGA	43	49	AV2	17
SGA	43	49	AV3	12
SGA	43	64	AV3	11
SGA	43	64	AV4	13
SGA	43	64	AV5	17
SGA	43	76	AV4	12
SGA	43	80	AV3	16
SGA	43	80	AV4	18
SGA	43	80	AV5	11
SGA	43	80	AV6	16
SGA	43	85	AV3	7
SGA	43	87	AV2	19
SGA	43	87	AV4	23
SGA	43	87	AV5	23
SGA	43	95	AV6	9
SGA	43	96	AV5	9
SGA	43	98	AV4	16
SGA	43	98	AV5	14
SGA	43	99	AV4	19
SGA	43	101	AV3	10
SGA	43	101	AV4	19
SGA	43	101	AV5	17
SGA	43	102	AV4	21
SGA	43	102	AV5	20
SGA	43	103	AV5	11
SGA	44	64	AV2	29
SGA	44	64	AV3	19
SGA	44	74	AV4	20

SG	Row	Col	Location	%TW
SGA	44	74	AV5	27
SGA	44	74	AV6	21
SGA	44	75	AV3	16
SGA	44	96	AV2	12
SGA	44	96	AV4	14
SGA	44	96	AV5	10
SGA	44	98	AV1	14
SGA	44	98	AV2	23
SGA	44	98	AV4	17
SGA	45	45	AV3	10
SGA	45	71	AV2	16
SGA	45	96	AV5	10
SGA	45	98	AV4	19
SGA	45	98	AV5	10
SGA	45	98	AV6	14
SGA	45	99	AV4	17
SGA	45	99	AV5	13
SGA	45	101	AV6	9
SGA	46	97	AV5	11
SGA	46	98	AV5	8
SGA	46	99	AV2	12
SGA	46	99	AV4	15
SGA	46	99	AV5	19
SGA	47	85	AV1	10
SGA	47	98	AV3	19
SGA	47	99	AV6	16
SGA	48	25	AV3	9
SGA	48	26	AV2	10
SGA	48	26	AV6	11
SGA	48	96	AV6	12
SGA	49	95	AV2	14
SGA	49	95	AV4	12
SGA	50	29	AV4	11
SGA	50	29	AV5	13
SGA	50	44	AV3	12
SGA	50	44	AV4	19
SGA	50	44	AV5	34
SGA	50	44	AV6	13

SG	Row	Col	Location	%TW
SGA	50	50	AV4	18
SGA	50	76	AV2	23
SGA	50	76	AV3	18
SGA	50	76	AV4	18
SGA	50	82	AV2	16
SGA	50	82	AV3	24
SGA	50	82	AV4	21
SGA	50	86	AV2	13
SGA	50	87	AV2	27
SGA	50	87	AV3	18
SGA	50	87	AV4	12
SGA	50	87	AV5	12
SGA	51	31	AV2	14
SGA	51	64	AV3	15
SGA	51	64	AV4	7
SGA	51	65	AV3	15
SGA	51	65	AV4	14
SGA	51	65	AV5	19
SGA	51	66	AV2	10
SGA	51	66	AV3	10
SGA	51	79	AV3	11
SGA	52	66	AV4	27
SGA	52	90	AV3	14
SGA	52	90	AV4	14
SGA	53	81	AV1	12
SGA	53	81	AV3	26
SGA	53	81	AV5	9
SGA	54	35	AV4	16
SGA	54	35	AV5	23
SGA	54	49	AV2	16
SGA	54	49	AV3	12
SGA	56	41	AV2	14
SGA	58	54	AV1	12
SGA	59	64	AV6	12

Table 6
3R18 AVB Wear Listings, SG A – New Indications

SG	Row	Col	Location	%TW
SGA	18	72	AV1	11
SGA	34	73	AV1	12
SGA	34	73	AV2	10
SGA	34	91	AV3	11
SGA	35	59	AV5	12
SGA	35	60	AV3	14
SGA	35	90	AV3	15
SGA	35	108	AV4	10
SGA	37	90	AV2	12
SGA	37	102	AV5	10
SGA	37	106	AV3	10
SGA	38	52	AV4	19
SGA	39	60	AV5	13
SGA	39	71	AV3	11
SGA	40	51	AV2	19
SGA	40	84	AV6	12
SGA	41	72	AV2	16
SGA	41	72	AV3	14
SGA	41	74	AV4	13
SGA	41	95	AV3	10
SGA	41	104	AV6	12
SGA	41	105	AV6	13
SGA	42	53	AV6	16
SGA	43	89	AV3	12
SGA	43	99	AV5	11
SGA	45	68	AV1	11
SGA	45	71	AV1	13
SGA	46	99	AV6	10
SGA	47	71	AV2	11
SGA	51	65	AV1	16
SGA	51	65	AV2	19
SGA	51	65	AV6	14
SGA	52	90	AV2	14
SGA	54	35	AV6	19
SGA	58	73	AV6	11

Table 7
3R18 AVB Wear Listings, SG C – Repeat Indications

SG	Row	Col	Location	%TW
SGC	15	66	AV1	14
SGC	25	8	AV1	8
SGC	25	116	AV6	17
SGC	34	14	AV2	9
SGC	34	14	AV5	11
SGC	36	15	AV5	12
SGC	36	15	AV6	12
SGC	37	15	AV2	17
SGC	37	15	AV3	11
SGC	37	15	AV4	10
SGC	37	15	AV5	25
SGC	37	15	AV6	14
SGC	37	88	AV3	10
SGC	38	65	AV6	10
SGC	39	17	AV2	14
SGC	39	17	AV3	11
SGC	39	17	AV4	16
SGC	39	17	AV5	18
SGC	39	17	AV6	14
SGC	39	79	AV3	13
SGC	39	107	AV6	10
SGC	41	42	AV3	23
SGC	41	54	AV1	13
SGC	41	54	AV3	21
SGC	41	54	AV4	19
SGC	41	54	AV5	26
SGC	41	62	AV2	22
SGC	41	62	AV3	19
SGC	41	62	AV3	27
SGC	41	62	AV4	21
SGC	41	62	AV4	29
SGC	41	62	AV5	31
SGC	41	62	AV6	13
SGC	41	65	AV4	15
SGC	41	65	AV5	17
SGC	41	105	AV6	11
SGC	42	20	AV2	12
SGC	42	20	AV3	20

SG	Row	Col	Location	%TW
SGC	42	20	AV4	21
SGC	42	20	AV5	23
SGC	42	20	AV6	15
SGC	42	23	AV3	16
SGC	42	23	AV4	28
SGC	42	23	AV5	26
SGC	42	103	AV3	10
SGC	45	57	AV2	13
SGC	45	100	AV5	7
SGC	45	100	AV6	10
SGC	46	33	AV6	10
SGC	46	97	AV1	10
SGC	46	97	AV3	10
SGC	47	99	AV6	13
SGC	48	26	AV4	10
SGC	48	98	AV3	12
SGC	48	98	AV4	9
SGC	48	98	AV6	11
SGC	49	96	AV5	25
SGC	49	96	AV6	27
SGC	50	28	AV2	11
SGC	50	28	AV5	19
SGC	50	93	AV5	12
SGC	50	93	AV6	27
SGC	50	95	AV6	11
SGC	51	92	AV6	11
SGC	54	35	AV5	13
SGC	54	36	AV4	17
SGC	54	36	AV5	9
SGC	54	85	AV6	13
SGC	54	86	AV1	9
SGC	56	41	AV2	11
SGC	56	41	AV4	17
SGC	56	41	AV5	25
SGC	56	41	AV6	15
SGC	56	44	AV4	7
SGC	57	69	AV1	13
SGC	58	49	AV5	10

Table 8
3R18 AVB Wear Listings, SG C – New Indications

SG	Row	Col	Location	%TW
SGC	25	115	AV1	15
SGC	27	44	AV2	12
SGC	41	42	AV4	14

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

Based on inspection results, two tubes were plugged during 3R18 as shown in Table 9 below.

Table 9
Tubes Plugged During 3R18

SG	Row	Col	Reason	Hot Leg	Cold Leg
SGA	40	51	40% TW Wear @AV5	Rolled Plug/Long Stabilizer	Rolled Plug
SGA	58	55	46% TW Foreign Object Wear	Rolled Plug	Rolled Plug

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

Table 10 provides the total number of tubes plugged to date and the effective plugging percentage in each SG.

Table 10
Number Tubes Plugged To Date

	SG A	SG B	SG C	SG D
Prior to 3R18	49	25	22	91
During 3R18	2	0	0	0
Total After 3R18	51	25	22	91
Percentage	0.906	0.444	0.391	1.617
Overall Percentage	0.84			

Since no sleeving has been performed in the MPS3 steam generators, the effective plugging percentage is the same as the actual plugging percentage.

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

No tubes were pulled and no in-situ pressure tests were performed. The condition monitoring assessment concluded that the structural integrity, operational leakage, and

accident induced leakage performance criteria were not exceeded during the operating interval preceding 3R18.

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 SG leakage was reported during Cycle 18.

i. The calculated accident induced leakage rate from the portion of the tubes below 15.2 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 2.49 times the maximum operational primary to secondary leakage rate, the report should describe how it was determined;

For the purposes of the condition monitoring assessment, and in accordance with the permanent alternate repair criteria, the accident leakage attributed to degradation within the tubesheet below the H* dimension must be estimated by applying a factor of 2.49 to the operational leakage. There was no recordable operational leakage during Cycle 18; hence, the leakage from this degradation during a limiting accident would have been zero (i.e., 2.49 x 0).

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.

Tube slippage monitoring was performed on SG A and SG C using the bobbin coil data during 3R18. There was no detection of slippage during the 3R18 examination.

Attachment 2

Acronyms

MILLSTONE POWER STATION UNIT 3
DOMINION ENERGY NUCLEAR CONNECTICUT, INC. (DNC)

Acronyms

AVB	Anti-Vibration Bar
BET	Bottom of the Expansion Transition
BLG	Bulge
C	Column
CL	Cold Leg
DDH	Ding or Dent Signal - Reviewed in History
DDI	Distorted Dent or Ding Indication
DDS	Ding or Dent Signal - Non-Confirming w/RPC
DNG	Ding
DNT	Dent Indication
ECT	Eddy Current Test
EFPY	Effective Full Power Years
EPRI	Electric Power Research Institute
ETSS	Examination Technique Specification Sheet
F/L	Full Length
FAC	Flow Accelerated Corrosion
FDB	Flow Distribution Baffle
FO	Foreign Object
FOTS	Foreign Object Tracking System
HL	Hot Leg
IGA	Intergranular Attack
INF	Indication Not Found
INR	Indication Not Reportable
LPI	Loose Part Indication
LPR	Loose Part Removed
LPS	Loose Part Signal
MRPC	Motorized Rotating Pancake Coil
NDD	No Detectable Degradation
NDE	Nondestructive Examination
NDF	No Degradation Found
NEI	Nuclear Energy Institute
NQH	Non-quantifiable Indication - Reviewed in History
NQI	Non-quantifiable Indication
OA	Operational Assessment
ODSCC	Outer Diameter Stress Corrosion Cracking
OVR	Above Tubesheet Over Expansion
OXP	Over Expansion
PID	Positive Identification
PLG	Tube is plugged
PLP	Possible Loose Part
PTE	Partial Tubesheet Expansion
PWR	Pressurized Water Reactor
PWSCC	Primary Water Stress Corrosion Cracking
R	Row
RAD	Retest Analyst Discretion
RBD	Retest - Bad Data
RIC	Retest - Incomplete
RRT	Retest - Restricted Tube
S/N	Signal-to-Noise Ratio
SAI	Single Axial Indication
SCC	Stress Corrosion Cracking
SCI	Single Circumferential Indication
SG	Steam Generator
SLG	Sludge
SSI	Secondary Side Inspection
SVI	Single Volumetric Indication
TEC	Tube End Cold Leg
TEH	Tube End Hot Leg
TFH	Tangential Flaw-Like Signal - Reviewed in History
TFS	Tangential Flaw-Like Signal - Non-Confirming w/RPC
TSC	Top of Tubesheet Cold Leg
TSH	Top of Tubesheet Hot Leg
TSP	Tube Support Plate
TTS	Top of Tubesheet
TWD	Through-Wall Depth
% TW	Percent Through-Wall
VOL	Volumetric Indication