

Dominion Nuclear Connecticut, Inc.
Millstone Power Station
Rope Ferry Road
Waterford, CT 06385



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U. S. Nuclear Regulatory Commission
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DOMINION NUCLEAR CONNECTICUT, INC., (DNC)
MILLSTONE POWER STATION UNIT 3
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION (RAI) REGARDING
STEAM GENERATOR TUBE INSPECTION SUMMARY FOR FALL 2002 OUTAGE

In letters dated October 7, 2002 and August 25, 2003, Dominion Nuclear Connecticut, Inc. (DNC) submitted to the U. S. Nuclear Regulatory Commission (NRC) the Fall 2002 refueling outage steam generator tube plugging report and the corresponding steam generator tube inservice inspection summary report for Millstone Power Station Unit 3. In a letter dated January 7, 2004, the NRC requested additional information to complete their evaluation of these reports. Attachment 1 of this letter is the response to the request for additional information.

If you should have any questions regarding this submittal, please contact Mr. Paul R. Willoughby at (804) 273-3572.

Very truly yours,

A handwritten signature in black ink, appearing to read "L. Hartz".

Leslie N. Hartz
Vice President – Nuclear Engineering

Attachment

Commitments made in this letter: None.

cc: U. S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406-1415

Mr. V. Nerses
Senior Project Manager
U. S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Mail Stop 8C2
Rockville, MD 20852-2738

Mr. S. M. Schneider
NRC Senior Resident Inspector
Millstone Power Station

ATTACHMENT 1

REQUEST FOR ADDITIONAL INFORMATION
STEAM GENERATOR TUBE INSPECTION SUMMARY
FALL 2002 OUTAGE

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Below is the response to the request for additional information:

NRC Question 1

On page two of your inservice inspection report, you indicated that the rotating pancake coil examinations in Steam Generator (SG) A resulted in 43 volumetric indications. Of these indications, 28 were determined to be manufacturing burnish marks (MBMs) and the remaining 15 were considered to be MBMs or loose part wear that could not be confirmed with bobbin coil. The last 15 indications were reported as single volumetric indications (SVI) and documented in Attachment 4 of your report. There seems to be a difference between the number of SVIs listed in Attachment 4 and the number of SVIs discussed in the report. A similar situation occurs for the number of SVIs in SG C. Please clarify the differences.

DNC Response

The number of indications reported in the inspection report is correct for each steam generator. That is, the rotating pancake coil examinations in Steam Generator 'A' resulted in forty-three (43) volumetric indications, of which twenty-eight (28) were determined to be manufacturing burnish marks (MBMs). The remaining fifteen (15) were considered to be MBMs or loose part wear that could not be confirmed with bobbin coil. In Steam Generator 'C' there were sixteen (16) volumetric indications of which eight (8) were determined to be manufacturing burnish marks. The remaining eight (8) were considered to be MBMs or loose part wear.

The applicable paragraphs of the inspection report identified that the fifteen (15) SVIs in Steam Generator 'A' and eight (8) SVIs in Steam Generator 'C' were documented in the associated attachments. In those attachments (i.e., 4 and 7) all observed SVIs were identified, including duplicative observations as a result of different instrument channel frequencies (i.e., use of channels 4 and p12). The apparent contradiction noted in the question is actually the result of the individual reporting of each measured indication. Duplication exists as each indication is reported twice, once for each channel. Line by line review of Attachments 4 and 7, requires that each SVI be checked as to channel and location.

The associated table below specifically identifies the row and column of each tube and the elevation of each indication, as identified on channel 4 and on channel p12. Although there were differences in the reported size of the indication (i.e., percent through-wall degradation) dependent on the channel used, the indication was categorized using the most conservative sizing.

'A' Steam Generator			'C' Steam Generator		
Row/Column	Ch 4	P12	Row/Column	Ch 4	P12
R5-C121	+1.13	+1.13	R1 -C4	+2.86	+2.86
R5-C122	+0.51	+0.51	R1- C5	+3.12	+3.12
	+0.97	+0.97	R17-C113	-0.09	-0.03
	+1.71	+1.71	R54-C64	+0.16	+0.16
R6-C122	+4.12	+4.12	R54-C65	+0.05	+0.05
R7-C3	+0.09	+0.09	R55-C68	+0.69	+0.69
R8-C3	+0.5	+0.5	R56-C82	+0.49	+0.49
R10-C116 **	+0.26	+0.26		+0.56	+0.56
	+0.61	+0.61			
R24-C11	+0.1	+0.1			
R29 -C109	+0.8	+0.8			
R29 -C110	0.3	0.3			
	0.9	0.9			
	0.73	0.73			
R4 - C122**	0.65	0.65			

** Plug installed

NRC Question 2

On page four of your ISI report, you indicated that one tube in SG C was identified with an obstruction. Please describe the nature of the obstruction. Include in your response a discussion of whether the obstruction was service-induced and the extent and location of the obstruction (e.g., what was the largest size probe to be passed through the tube during this outage, and previous outages).

DNC Response

One tube, Row 1, Column 115, in 'C' Steam Generator, was identified with an obstruction. That obstruction occurred at 7.29 inches above the cold leg tube end or approximately 13 inches below the top of the tubesheet. The obstruction blocked the insertion of both the 560 and 540 probes. Smaller probes, such as the 520, were not attempted, as they would not have provided adequate fill factors. Consequently, the tube was removed from service. No further inspections were performed.

Historical eddy current data review determined that the tube had been inspected with a 560 probe pre-service (i.e., 1985), 3R01, 3R02, 3RO4, Mid-cycle 3R06, and 3RO6. Consequently, we conclude the obstruction was service induced.

NRC Question 3

On page four of your report, you indicate that an SVI was identified and is in contact with a non-retrievable loose part. Please discuss the nature of this part and discuss the results of evaluations performed to ensure the part would not damage other adjacent tubes. In addition, please discuss what other loose parts have been left in the SGs and the results of any evaluations performed to ensure these parts would not result in a loss of tube integrity for the period of time between inspections.

DNC Response

The subject foreign material, found on the secondary side of the 'C' steam generator, was categorized as a small section of flat stock which had become wedged between tubes. Review of historical ECT data identified that this small part had been at this location since 1989. Although only minor damage has been identified, conservative engineering decision-making dictated that the tube in contact with the foreign material be removed from service and stabilized. The stabilizer increases the damping of the tube, reducing flow induced vibrations, and prohibits interaction with adjacent tubes in the unlikely event of a complete severance.

The attached table identifies the current evaluation references for all known foreign material remaining in the steam generators. These references are maintained onsite for NRC review. Based on the evaluations performed, tubes were removed from service unless the evaluation determined that potential foreign material interaction would not result in unacceptable tube damage or catastrophic tube failure. Additionally, Millstone Unit 3 inspects every tube within five effective full power years in accordance with the standards established in NEI 97-06. Consequently, the tubes are monitored and removed from service prior to developing wall loss or damage that could exceed the tube structural integrity performance criteria.

S/G	Location	Description	Evaluation
A	Above tube support #1 in bundle	Small diameter wire(s)	ER-99-0094
A	Above tubesheet between column 23 and 24 near row 42 (cold side)	Machine curl	ER-99-0094
A	TTS+4HL, between R9-C107 and R10-C107	C shaped machine curl	CR-02-10007
A	R48-C48	Machine curl	CR-02-10007
A	R58-C68	Sludge rock	M3-EV-02-0035
B	Annulus of S/G tubesheet	Small metal shaving	CR 002998
B	Above tubesheet near R74-C97	Sludge rock (1/8"x1/8"x1/16")	ER-99-0094
C	Above tube support #2 visible from flow slot	Small diameter wire	ER-99-0094
C	Above tubesheet near R58-C47	Metal shaving (1/16"x3/4")	ER-99-0094
C	TTS at R1C4 cold leg, lodged between blowdown pipe and tube	Plate	Stabilized CR-02-09738
C	Secondary side	Locking clip (Removed R8)	CR-01-01537
D	Cold leg distribution baffle vicinity of tubes R57-C74, R57-C75, R58-C74, R58-C75	Possible piece of slag	CR-01-01537