

November 8, 2002

Mr. J. A. Price
Site Vice President - Millstone
c/o Mr. David A. Smith
Dominion Nuclear Connecticut, Inc.
Rope Ferry Road
Waterford, CT 06385

SUBJECT: MILLSTONE POWER STATION, UNIT NO. 3 - SUMMARY OF CONFERENCE CALLS WITH DOMINION NUCLEAR CONNECTICUT, INC., REGARDING THE 2002 STEAM GENERATOR INSPECTION RESULTS AT MILLSTONE POWER STATION, UNIT NO. 3 (TAC NO. MB6183)

Dear Mr. Price:

The Nuclear Regulatory Commission staff participated in conference calls on September 18 and 20, 2002, with Dominion Nuclear Connecticut, Inc., representatives regarding the ongoing steam generator tube inspection activities at Millstone Power Station, Unit No. 3. Topics discussed during these calls were: background, initial eddy current testing scope, scope expansion plans, indications identified to-date, repair/plugging plans, new degradation findings, condition monitoring and operational assessment. Enclosed is a summary of these conference calls.

Sincerely,

/RA/

Victor Nerses, Sr. Project Manager, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-423

Enclosure: As stated

cc w/encl: See next page

November 8, 2002

Mr. J. A. Price
Site Vice President - Millstone
c/o Mr. David A. Smith
Dominion Nuclear Connecticut, Inc.
Rope Ferry Road
Waterford, CT 06385

SUBJECT: MILLSTONE POWER STATION, UNIT NO. 3 - SUMMARY OF CONFERENCE CALLS WITH DOMINION NUCLEAR CONNECTICUT, INC., REGARDING THE 2002 STEAM GENERATOR INSPECTION RESULTS AT MILLSTONE POWER STATION, UNIT NO. 3 (TAC NO. MB6183)

Dear Mr. Price:

The Nuclear Regulatory Commission staff participated in conference calls on September 18 and 20, 2002, with Dominion Nuclear Connecticut, Inc., representatives regarding the ongoing steam generator tube inspection activities at Millstone Power Station, Unit No. 3. Topics discussed during these calls were: background, initial eddy current testing scope, scope expansion plans, indications identified to-date, repair/plugging plans, new degradation findings, condition monitoring and operational assessment. Enclosed is a summary of these conference calls.

Sincerely,

/RA/

Victor Nerses, Sr. Project Manager, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-423

Enclosure: As stated

cc w/encl. See next page

DISTRIBUTION:

PUBLIC	SRichards	VNerses
PDI-2 Reading	JAndersen	MO'Brien
ZFu	LLund	CKhan
DLew	BPlatchek, RI	BMcDermott, RI

ADAMS Accession Number: ML023110528

OFFICE	PDI-2/PM	PDI-2/LA	PDI-2/SC(A)
NAME	VNerses	LCox for MO'Brien	JAndersen
DATE	11/5/02	11/5/02	11/6/02

OFFICIAL RECORD COPY

Millstone Power Station
Unit 3

cc:

Ms. L. M. Cuoco
Senior Nuclear Counsel
Dominion Nuclear Connecticut, Inc.
Rope Ferry Road
Waterford, CT 06385

Edward L. Wilds, Jr., Ph.D.
Director, Division of Radiation
Department of Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

First Selectmen
Town of Waterford
15 Rope Ferry Road
Waterford, CT 06385

Mr. P. J. Parulis
Manager - Nuclear Oversight
Dominion Nuclear Connecticut, Inc.
Rope Ferry Road
Waterford, CT 06385

Mr. W. R. Matthews
Vice President and Senior
Nuclear Executive - Millstone
Dominion Nuclear Connecticut, Inc.
Rope Ferry Road
Waterford, CT 06385

Ernest C. Hadley, Esquire
P.O. Box 1104
West Falmouth, MA 02574-1104

Mr. John Markowicz
Co-Chair
Nuclear Energy Advisory Council
9 Susan Terrace
Waterford, CT 06385

Mr. Evan W. Woollacott
Co-Chair
Nuclear Energy Advisory Council
128 Terry's Plain Road
Simsbury, CT 06070

Mr. D. A. Christian
Senior Vice President - Nuclear Operations
and Chief Nuclear Officer
Innsbrook Technical Center - 2SW
5000 Dominion Boulevard
Waterford, CT 06385

Senior Resident Inspector
Millstone Nuclear Power Station
c/o U.S. Nuclear Regulatory Commission
P. O. Box 513
Niantic, CT 06357

Mr. G. D. Hicks
Director - Nuclear Station Safety
and Licensing
Dominion Nuclear Connecticut, Inc.
Rope Ferry Road
Waterford, CT 06385

Mr. D. A. Smith
Manager - Licensing
Dominion Nuclear Connecticut, Inc.
Rope Ferry Road
Waterford, CT 06385

Ms. Nancy Burton
147 Cross Highway
Redding Ridge, CT 00870

Millstone Power Station
Unit 3

cc:

Mr. William D. Meinert
Nuclear Engineer
Massachusetts Municipal Wholesale
Electric Company
Moody Street
P.O. Box 426
Ludlow, MA 01056

Mr. S. E. Scace
Director - Nuclear Engineering
Dominion Nuclear Connecticut, Inc.
Rope Ferry Road
Waterford, CT 06385

Mr. M. J. Wilson
Manager - Nuclear Training
Dominion Nuclear Connecticut, Inc.
Rope Ferry Road
Waterford, CT 06385

SUMMARY OF CONFERENCE CALLS
WITH
DOMINION NUCLEAR CONNECTICUT, INC.,
REGARDING THE SEPTEMBER 2002 STEAM GENERATOR INSPECTION RESULTS
AT MILLSTONE POWER STATION, UNIT NO. 3

The Nuclear Regulatory Commission (NRC) staff participated in a conference call on September 18, 2002, with Dominion Nuclear Connecticut, Inc., (the licensee or DNC) representatives regarding the ongoing steam generator (SG) tube inspection activities at Millstone Power Station, Unit No. 3 (MP3). Topics discussed during this conference call were: background, initial eddy current testing scope, scope expansion plans, indications identified to date, repair/plugging plans, new degradation findings, condition monitoring and operational assessment. At the time of the call the licensee was, approximately, 76% complete with their inspections in SG A and 87% complete in SG C.

Background

MP3 is a four-loop Westinghouse pressurized water reactor, with four Westinghouse Model F recirculating steam generators (A, B, C and D) with thermally treated Alloy 600 tubes, which are nominally 0.750 inches in diameter and have a nominal wall thickness of 0.043 inches. The tubes are hydraulically expanded for the full depth of the tubesheet at each end. The tubes are supported by a number of stainless steel tube support plates with quatrefoil shaped holes and V-shaped chrome plated Alloy 600 anti-vibration bars (AVBs). Prior to installation, the tubes in Rows 1 through 10 were treated in a furnace in order to relieve the stresses from bending the tubes.

Two modes of degradation have historically been observed in the MP3 steam generators, wear at the AVBs and wear from foreign objects.

Inspection Scope

During the September 2002 inspection, the licensee was using analysts and techniques qualified in accordance with the Electric Power Research Institute's (EPRI's) "PWR Steam Generator Examination Guidelines." Personnel were qualified to Appendix G of these guidelines and techniques were qualified to Appendix H.

The licensee planned to perform the following inspections in two of the four steam generators during the outage - SG A and SG C:

Full length bobbin examination of 100% of the inservice tubes.

Rotating probe (equipped with a plus-point coil) examination of 50% of the tubes from 3-inches above to 3-inches below the top of the hot-leg tubesheet. This examination would include the expansion transition.

Rotating probe (equipped with a plus-point coil) examination of the U-bend region of 50% of the tubes in Rows 1 and 2.

Rotating probe (equipped with a plus-point coil) examination of all the dents/dings on the hot-leg side of the steam generator that have bobbin voltages greater than 3 volts.

Rotating probe (equipped with a plus-point coil) examination of all indication calls from bobbin probe inspection.

Visual examination of all tube plugs.

On the secondary side of the steam generator, the licensee planned to perform sludge lancing and a foreign object search and retrieval in each of the four steam generators.

Inspection Results

As indicated above, the inspections were, approximately, 76% complete in SG A and 87% complete in SG C on the day of the September 18, 2002, call. Based on the inspections performed, the following results were provided:

Wear at the AVBs

The licensee stated that they plugged all AVB wear greater than or equal to 37% through-wall (TW), and had detected seven pluggable indications at the time of the call. The licensee detected 2 wear indications greater than or equal to 40% TW in SG A. One indication was detected greater than or equal to 40% TW in SG C. The maximum depth was 45% TW. Four indications were detected between 37% TW and 40% TW.

The licensee stated that the AVB wear growth rate is very low. Specifically, for flaws greater than or equal to 37% TW in all steam generators, the average growth rate is 6.5% TW per two cycles and the maximum rate is 10% TW per 2 cycles. For SG A, considering AVB flaws of all depths, the average growth rate is 1.3% TW in 2 cycles and the maximum rate is 13% TW in two cycles. The licensee stated that the calculated growth rate for SG C is even lower.

Wear from Foreign Objects

The licensee detected a total of seven possible loose parts (PLPs) through eddy current testing most of which, were located up to 4 inches above the tubesheet. One of these was located in a tube in SG A and six were located in tubes in SG C. The licensee planned to attempt to retrieve all loose parts.

One single volumetric indication (SVI) was detected in SG A and four were detected in SG C. The licensee attributed these indications to wear due to loose parts. There was some correlation between the PLPs and the SVIs. The licensee stated that during this outage a new qualified sizing technique was used to depth size wear flaws caused by loose parts and that they intended to make plugging decisions based on the depth of the flaws.

Tube Repairs

The licensee plans to repair all tubes with AVB wear indications greater than or equal to 37% TW, all tubes with wear indications due to loose parts greater than 40% TW, and all tubes with cracks (if any are identified). Thermally treated Alloy 690 mechanical tube plugs will be used. For tubes with loose part wear indications less than 40%TW, the licensee does not plan to plug the tube if there is an associated loose part that can be removed. The bases for this approach are that 1) the flaw can be accurately depth sized; and 2) there would not be a driving force to further propagate the flaw. If a loose part cannot be retrieved, the licensee will perform an engineering evaluation to determine whether to plug the surrounding tubes.

Other

No new degradation mechanisms were identified to-date. The licensee was cognizant of the cracking indications identified at Seabrook and included the eddy current data from these indications in their site specific performance demonstration to train the eddy current analysts.

Ultrasonic testing was not planned for this outage, and based on the results to-date in-situ pressure testing and tube pulls were not needed. The licensee plans to follow industry guidelines to determine whether indications require an in-situ pressure test.

Based on the result's to-date, the licensee indicated that all tubes meet the structural and leakage integrity criteria and are projected to meet these criteria for the next two cycles (i.e., the next time the licensee plans to inspect SGs A and C).

NRC Observations

The NRC did not identify any issues with the scope or results of the examinations as a result of the information provided during the call. The NRC asked to be informed if any unusual findings (e.g., new degradation mechanisms' results not consistent with the above) were identified during the remainder of the inspections.

Additional Information

On September 20, 2002, the licensee called and updated the staff with respect to the SG inspection findings. The licensee indicated that additional SVIs were identified, two of which exceeded a depth of 40%TW and would be plugged. The licensee concluded that these indications did not challenge the structural and leakage integrity performance criteria. Although the deepest SVI was identified with the bobbin probe, the majority of the SVIs were small and only detectible with a rotating probe. Therefore, the licensee decided to expand the scope of their SG tube inspections with a rotating probe in the region near the top of the tubesheet. They decided to inspect an additional 20% of the tubes on both the hot and cold leg side since wear due to loose parts is equally as likely to occur on the cold-leg side as the hot-leg side.

The NRC did not identify any issues with the expanded scope or results of the examinations and determined that additional follow-up was not necessary.