



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

May 12, 2022

Mr. Daniel G. Stoddard  
Senior Vice President and  
Chief Nuclear Officer  
Dominion Energy Nuclear Connecticut, Inc.  
Millstone Power Station  
Innsbrook Technical Center  
5000 Dominion Boulevard  
Glen Allen, VA 23060-6711

SUBJECT: MILLSTONE POWER STATION, UNIT NO. 3 – SUMMARY OF CONFERENCE  
CALL REGARDING THE SPRING 2022 STEAM GENERATOR TUBE  
INSPECTIONS (EPID L-2022-NFO-0004)

Dear Mr. Stoddard:

On April 22, 2022, the U.S. Nuclear Regulatory Commission staff and representatives from Dominion Energy Nuclear Connecticut, Inc. participated in a conference call to discuss the ongoing steam generator tube inspection activities at Millstone Power Station, Unit No. 3, during refueling outage 21.

A summary of the conference call is attached as an enclosure to this letter.

If you have any questions, please contact me at 301-415-1030 or via email at [Richard.Guzman@nrc.gov](mailto:Richard.Guzman@nrc.gov).

Sincerely,

*/RA/*

Richard V. Guzman, Senior Project Manager  
Plant Licensing Branch I  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-423

Enclosure:  
Summary of Conference Call

cc: Listserv

SUMMARY OF APRIL 22, 2022, CONFERENCE CALL

DOMINION ENERGY NUCLEAR CONNECTICUT, INC.

MILLSTONE POWER STATION, UNIT NO. 3

DOCKET NO. 50-423

SPRING 2022 STEAM GENERATOR TUBE INSPECTIONS

On April 22, 2022, the U.S. Nuclear Regulatory Commission (NRC) staff participated in a conference call with Dominion Energy Nuclear Connecticut, Inc. (the licensee), regarding the ongoing steam generator (SG) tube inspection activities at Millstone Power Station, Unit No. 3 (Millstone 3) during refueling outage 21 (3R21).

Millstone 3 has four Westinghouse Model F recirculating SGs. Each SG has 5,626 thermally treated Alloy 600 tubes with a nominal outside diameter of 0.688 inches and a nominal wall thickness of 0.040 inches. The tubes are arranged in a square pitch pattern and are hydraulically expanded at each end for the full depth of the tubesheet. The tubes are supported by stainless steel tube support plates (TSPs) with quatrefoil-shaped holes and three sets of anti-vibration bars (AVBs) on the U-bend section of the tubing. There is a flow distribution baffle plate between the tubesheet and the first TSP. The U-bend region of the tubes installed in rows 1–10 was thermally treated after bending to reduce stress. The SGs have accrued 28.8 effective full-power years of operation.

Information provided by the licensee during the April 22, 2022, conference call is summarized below:

- At the time of the call, eddy current data acquisition and analysis were complete for SGs A and D, and approximately 15 and 32 percent for SGs B and C, respectively.
- No primary-to-secondary leakage during previous operating cycle.
- Secondary side pressure tests had not been performed or planned at the time of the call.
- No exceptions have been taken to the industry SG guidelines.
- Inspections were performed in all four SGs. The inspection scope included:
  - One hundred percent full length bobbin of all in-service tubes, except for the U-bends in rows 1 and 2, which were inspected with +Point™ probe.
  - Array probe inspections of 100 percent of the hot leg (HL) from the first support above the top of tubesheet (TTS) to the H\* distance, which is 15.2 inches below the TTS, all Tier 1 high stress tubes, and the 20 largest cold leg (CL) overexpansion indications. The licensee stated that there are 159 high-stress tubes (minus 2-sigma only) in the SGs, with no high stress tubes in rows 1–10.

- +Point™ probe inspections of dents and dings greater than or equal to 2 volts in the HL straight sections, dents and dings greater than or equal to 5 volts in the U-bend and CL straight sections, new or greater than or equal to 35 percent through-wall (TW) AVB wear indications, and two tube bounding of possible loose parts indications.
- Various other special interest examinations were performed.
- At the time of the call the following degradation mechanisms had been identified:
  - A total of 619 AVB wear indications have been recorded by the licensee. One tube had been plugged and stabilized due to a 40 percent through-wall (TW) AVB wear indication. The licensee stated that this AVB wear indication met condition monitoring.
  - Other wear indications included 16 due to TSPs, 18 due to historical foreign objects (FO), and 2 due to historic water lance equipment. The licensee noted that a legacy FO indication from 2005 had remained unchanged at 37 percent TW and met condition monitoring by the Monte Carlo Analysis.
  - A circumferential outside diameter stress corrosion cracking (ODSCC) indication was identified on tube row 10, column 63 in SG A. This is the first instance of stress corrosion cracking (SCC) found at Millstone 3. The crack was located at TTS+0.32 on the HL side (sludge pile region), and was 10 percent TW, 0.26 volts, 0.42 inches long, and had a percent degraded area of 1 percent. The licensee stated that this indication was seen with array probe, which prompted +Point™ probe inspection. The licensee discussed, given the indication's location, that it could be either SCC or sludge, however, based on the signal, they conservatively identified it as circumferential ODSCC. The licensee also stated that there was no precursor and that the ODSCC indication met condition monitoring by +Point™ voltage.
- No unexpected or unusual results had been identified.
- At the time of the call there were no plans for in situ pressure tests or tube pulls.
- All FOs that could affect SG tube integrity had been removed from the SGs and no new tube wear associated with the FOs had been identified. FOs found included small scale pieces, flexitallic gasket, sludge rocks and collars, and two small non-metallic objects.
- Visual examination of the channel heads, including cladding, welds, plates, stub runners, and tubesheets will be performed in all SGs.
- Secondary side inspection and maintenance activities included the following:
  - Visual inspection of steam drum components, including primary separators, secondary separator perforated plates, drainpipe, and feedring were completed in SG D and no degraded conditions were identified. The licensee plans to perform visual inspection of the steam drum components in the remaining SGs. Ultrasonic testing of the feedrings in SGs B and D were complete.

- High pressure sludge lancing (performed each inspection) prior to FO search and retrieval. The licensee uses an in-line strainer to capture any FOs from sludge lancing.
- For deposit loading purposes, the licensee performed a low frequency array probe inspection of 10 tubes in each SG evenly distributed over the tube bundle to determine where deposits were located on the outside of each tube. The licensee stated that they had recently performed two deposit minimization treatments and removed 12,000 pounds and 5,000 pounds on the first (3R16) and second (3R17) applications, respectively. In addition, the licensee stated that they have initiated polyacrylic acid addition.

After the April 22, 2022, conference call, the licensee informed the NRC staff that a total of four SG tubes were plugged during 3R21: three due to tube wear and the one tube in SG A with an ODSCC indication.

The NRC staff did not identify any issues that required follow-up action at this time.

SUBJECT: MILLSTONE POWER STATION, UNIT NO. 3 – SUMMARY OF CONFERENCE CALL REGARDING THE SPRING 2022 STEAM GENERATOR TUBE INSPECTIONS (EPID L-2022-NFO-0004) DATED MAY 12, 2022

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**\*by memorandum**

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| DATE   | 5/11/2022        | 5/11/2022             | 5/3/2022           |
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| NAME   | JDanna           | RGuzman               |                    |
| DATE   | 5/11/2022        | 5/12/2022             |                    |

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