

April 12, 2002

Mr. Mano Nazar
Site Vice President
Prairie Island Nuclear Generating Plant
Nuclear Management Company, LLC
1717 Wakonade Drive East
Welch, MN 55089

SUBJECT: PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT 2 - SUMMARY OF
CONFERENCE CALLS WITH NUCLEAR MANAGEMENT COMPANY
REGARDING STEAM GENERATOR TUBE INSPECTION ACTIVITIES AT
PRAIRIE ISLAND UNIT 2 (TAC NO. MB4012)

Dear Mr. Nazar:

On February 12 and 19, 2002, the Nuclear Regulatory Commission (NRC) staff held conference calls with the Nuclear Management Company, LLC (NMC) staff at the Prairie Island Nuclear Generating Plant (PINGP). The purpose of these calls was to discuss the results of the steam generator tube inspections performed during the end-of-cycle 20 refueling outage at PINGP, Unit 2.

At the time of the conference call on February 12, 2002, the licensee reported that steam generator tube inspection activities were complete and repairs had commenced on February 11, 2002. The licensee also notified the staff that the inspection results placed the PINGP Unit 2 steam generators in Category C-3 in accordance with the station technical specifications. Topics discussed during the call included the inspection scope, the eddy current data analysis results, plugging and repair plans, the status of in-situ pressure testing, secondary side inspection plans, and actions taken in response to the Indian Point Unit 2 tube rupture event and NRC Information Notice 2000-02, "Recent Experience with Plugged Steam Generator Tubes."

The licensee provided a draft inspection summary that contains details of the topics discussed in support of the call (Enclosure 1). The licensee updated some of the information in this draft inspection summary during the call. Specifically, the licensee modified some in-situ pressure test limits and selection criteria, and acknowledged the number of anti-vibration bar (AVB) wear indications was not zero and was still being evaluated. The licensee also reported during the call that there was at least one tube with a leaking explosive plug that would be repaired with a welded plug; however, there were other indications of possible plug leakage that the licensee had not yet evaluated. In addition, the licensee indicated that the analyses were ongoing with respect to tube inspection history, AVB wear, loose parts, the in-situ pressure tests, as well as the U-bend region of low row tubes. The staff requested additional information related to leaking explosive plugs, steam generator tube inspection history, wear and loose parts indications, final in-situ pressure test results, and noise levels in the U-bend region of low row tubes. Following this call, the licensee provided an updated in-situ pressure test summary (Enclosure 2).

A follow-up conference call was held on February 19, 2002. The licensee identified two peripheral tubes in Steam Generator-22 (SG-22) with leaking Alloy 600 explosive plugs. The licensee could not confirm whether the leakage resulted from a gap between the plug and the tube wall or a flaw through the plug material. Neither tube was swollen and both plugs were replaced with welded plugs. With respect to other inspection results, the licensee plugged one tube in SG-22 as a result of an estimated 41 percent through-wall AVB wear indication and removed three visually confirmed loose parts. The loose parts did not appear to result in any damage to the tubes.

Regarding the procedures for addressing noise in the eddy current test data in the U-bend region of low row tubes, the licensee stated that the analysts use Electric Power Research Institute (EPRI) qualification data to evaluate inspection data quality. However, the licensee also stated that a noise acceptance criteria of two volts was used at Prairie Island Unit 2 (PI-2) for test frequencies of 300 and 400 kHz rather than the 1.1 to 1.2 volt criteria suggested by the EPRI qualification data. The NRC staff expressed a concern that noise levels of two volts or greater may mask valid flaw indications. The licensee justified their approach on the basis that the dominant noise in the PI2 U-bends is periodic (repeating) from one scan line to the next. The licensee maintains that flaws in this type of noise can be detected when the signal-to-noise ratios are as low as 0.5. This periodic noise contrasts with random noise for which signal-to-noise ratios as high as 2 may be necessary to detect a flaw signal.

No indications in the U-bend were found during this inspection; however, one indication was found at the tangent point in 1997 and another one was found at the tangent point in 2000. The licensee used the EPRI "noise widget" to simulate the range of noise signals at PI2 and evaluated the detectability of one of the previously detected flaws within this noise. This previous indication had a peak-to-peak voltage of 2.17 volts and a maximum vertical amplitude of 0.92 volts. The licensee stated that this signal was detectable over the full range of noise conditions at PI2. Two volts also corresponds to the minimum voltage that the licensee calculated must be detectable to ensure that significant flaws are detected.

At the conclusion of the call, the NRC staff reiterated the concern regarding the noise level criteria and expressed an interest in better understanding the licensee's methodology for ensuring flaw detection in the U-bend region of low row tubes with high eddy current noise levels. As a result, the staff requested that the licensee include in the upcoming 30-day report a more detailed explanation of the criteria and the methodology for detecting flaws in data with high noise levels relative to the detection of all potentially significant flaws.

Mr. M. Nazar

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If you have any questions regarding this matter, please contact me at (301) 415-1392.

Sincerely,

/RA/

Tae Kim, Senior Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-306

Enclosures: As Stated

cc w/encl: See next page

Mr. M. Nazar

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