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

Prairie Island Nuclear Generating Plant Unit 2
Docket 50-306
License No. DPR-60

Response to Additional Request for Additional Information on Prairie Island Unit 2 Steam Generator Reports (TAC # MC0907)

By electronic mail dated June 29. 2004, and subsequent teleconference conducted July 7, 2004, the Nuclear Regulatory Commission (NRC) forwarded a Request for Additional Information (RAI) regarding Prairie Island Nuclear Generating Plant Unit 2 steam generator inspection reports. The Nuclear Management Company, LLC, response to the NRC RAI is enclosed.

Summary of Commitments

This letter contains no new commitments and no revisions to existing commitments.

Joseph M. Solymossy
Site Vice President, Prairie Island Nuclear Generating Plant
Nuclear Management Company, LLC

Enclosure

cc: Administrator, Region III, USNRC
Project Manager, Prairie Island, USNRC
Resident Inspector, Prairie Island, USNRC

ENCLOSURE 1

RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION
PRAIRIE ISLAND UNIT 2 STEAM GENERATOR REPORTS

Requested Information (Paragraph 1)

Refer to the response to question 1 on the 15-day report (in the June 21,2004 submittal). With eddy current uncertainty, the F* and EF* distances are 1.27- and 1.87-inches, respectively. In reviewing Figure 1 of the June 21, 2004 response, the width of a reroll appears to be less than 1.25-inches (e.g., 5.125 - 3.875 = 1.250; however, this distance includes an expansion transition directly above the 3.875-inch elevation which reduces the length of the "sound hard roll"). As a result, it would appear that in order to have 1.27-inches of sound hard-roll (accounting for uncertainty), any F*l tubes would have to have indications which are below the 3.00-inch RTR elevation (i.e., below 0.875-inch below 1BH). This does not appear to be the case for all tubes (e.g., steam generator 21, row 14 column 21). Please clarify if the 1.07-inch F* distance specifically accounted for the lower expansion transition associated with a reroll or whether it was simply determined based on assuming 1.07-inch of roll expanded tubing was not degraded.

Nuclear Management Company, LLC. (NMC) Response (Paragraph 1)
Figure 1 of the June 21, 2004 report is not an engineering drawing, but rather was prepared for use by the eddy current analysts for landmark identification.

The Project Description for Prairie Island Design Change 95L486 F-Star (F*) Alternate Repair Criteria & Additional Roll Expansion (Re-roll) of Steam Generator Tubes establishes the requirements for insuring dimensional uncertainties are addressed during the implementation of the F* criteria.

Dimensional uncertainties are applied to implementation either 1) by inspection, such as in the original hard roll region or 2) by additional roll expansion when a new hard roll is installed.

- A minimum eddy current uncertainty of 0.2 inches is applied during implementation by inspection. The actual eddy current uncertainty was determined from multiple measurements on known dimensional standards containing transition zones and EDM (Electrical Discharge Machining) notches. When the F* distance is implemented by eddy current measurement the F* distance becomes 1.07 inches plus at least 0.2 inches uncertainty which when rounded up is 1.3 inches.
- When an additional roll expansion is installed, the mechanical uncertainty is controlled by the length of the rolls in the roller and can be measured more accurately than eddy current distance. The effective length (the parallel surfaces of the roll pins) of the rolls is 1.25 inches and is controlled by inspection prior to use

during the re-rolling process. Any degradation found at any time in the additional hard roll expansion region will be unacceptable. Because the additional roll expansion process used at Prairie Island places new hard rolls above existing hard rolls with a space between the old and new roll, the upper and lower roll transitions of the new hardroll are both clearly visible during the eddy current examination.

Both the required inspection length and additional roll expansion length values exceed the required 1.07 inches.

The acceptance criteria are written as follows in the Prairie Island procedure used to control implementation of the F* criteria:

- For F* tubes implemented by eddy current measurement, there SHALL be a minimum length of sound roll expansion of 1.3 inches above the highest degradation in the tubesheet region and below the midplane of the tubesheet.
- For F* tubes implemented by Additional Roll Expansion, there SHALL be a minimum length of sound hard roll expansion of 1.2 inches above the highest degradation in the tubesheet region and below the midplane of the tubesheet (10.7 inches above the tube end)

Likewise for the EF* criteria, mechanical uncertainty is controlled by the length of the rolls in the roller and can be measured more accurately than eddy current distance. The effective length of the rolls is 2.0 inches, which provides substantial margin to the required 1.67 inches. The EF* region must be free of indications of degradation both before and after the additional rolling process.

Therefore, for tubes with additional roll expansions installed the minimum required F* Distance and EF* Distance is assured based on the effective length of the rolls exceeding the minimum required length and not allowing degradation within the F* or EF* Distance.

Requested Information (Paragraph 2)

The technical specifications indicate that the EF* distance applies to roll expanded regions when the top of the additional roll expansion is 2-inches or greater down from the top of the tubesheet. From this definition it would appear that all F* tubes are also EF* tubes since F* tubes are below the midplane of the tubesheet (greater than 2-inches down from the top of the tubesheet). Please clarify this situation (e.g., is EF* only applied to re-rolls above the mid-plane in which the top of the additional roll expansion is at least 2-inches down from the top of the tubesheet).

NMC Response (Paragraph 2)

The F* criteria is only applied to re-rolls below the mid-plane of the tubesheet and those tubes are always classified as F* tubes. Those tubes can not be classified as EF* tubes

because their EF* Distance is not in accordance with the Technical Specification. By reading the EF* criterion out of context from the entire Steam Generator Tube Surveillance Technical Specification, it could be construed that the EF* criterion shall be used for the entire tubesheet length. However, the F* criterion authorizes the shorter distance below the mid-plane of the tubesheet and therefore is not in conflict with the EF* criterion.

The Technical Specification and the implementation criteria (defined below) for elevated additional roll expansions as written do not prevent installation of an elevated re-roll in the lower region of the tubesheet. However, in practice to date, EF* has not been applied below the midplane of the tubesheet.

The acceptance criteria are written as follows in the Prairie Island procedure used to control implementation of the EF* criteria:

- For EF* tubes implemented by Elevated Additional Roll Expansion, there SHALL be a minimum length of sound hard roll expansion of 1.8 inches above the highest degradation in the tubesheet region and below 2 inches from the top of the tubesheet (19.4 inches above the tube end).

Requested Information (Paragraph 3)

In your reports, you indicate that several single axial indications **(SAD)** and multiple axial indications **(MAD)** were no longer detectable. You indicated that this may have resulted from the rerolling process. If the MAD and **SAD** indications are no longer detectable, was the "Elev from" field calculated based on the original location of the indication? That is, an indication in the original roll transition would have been measured from "TRH". If this indication was repaired by adding an additional roll and it was no longer detectable, the new reference point for this **MAD** or **SAD** indication in your reports would appear to be "1BH"; however since the indication is no longer detectable it is not clear whether how the location of the indication was determined.

NMC Response (Paragraph 3)

The Prairie Island eddy current analysis procedure states, "These prior indications no longer detectable will be called MAD or SAD at a single location within the prior location range. Historical INF [Indication Not Found], INR [Indication Not Reportable], MAD and SAD indications will be entered as MAD or SAD in the current inspection with a location as close as possible to historical location."

Therefore, the "Elev from" field(s) are calculated (TRH +0.0" is approximately equal to 1BH –1.0") based on the original location of the indication for current outage indications and the "Elev from" field(s) are duplicated from the historical location for prior outage indications.