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May 8, 1992
PY-CEI/NRR-1491 L

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Perry Nuclear Power Plant
Docket No. 50-440
Feedwater Nozzle Weld
Indications (TAC No. M81879)

Gentlemen:

As noted in our March 4, 1992 letter (PY-CEI/NRR-1463 L), ultrasonic examinations of the indications previously reported on two of our Feedwater nozzles (nozzles N4C and N4E) were scheduled for mid-April, during Refuel Outage 3 (RFO-3). The ultrasonic examinations have since been completed, the mechanical stress improvement process (MSIP) has been applied to these nozzles, and post-MSIP ultrasonic examinations have been completed. In accordance with the reporting commitments made in response to Generic Letter (GL) 88-01, this letter provides the final results of our pre- and post-MSIP ultrasonic examinations and the accompanying engineering evaluation of the indications for continued plant operation (Attachment 1). The engineering evaluation included in Attachment 1 also serves as the case-specific evaluation required by PNPP's commitment to Regulatory Guide 1.84 (as it addresses use of Code Case N-411-1), which was utilized in conjunction with the snubber optimization efforts implemented during RFO-3. This case-specific evaluation is being submitted for NRC review even though the presence of intergranular stress corrosion cracking (IGSCC) could not be definitely confirmed based on the results of the examinations performed. Prompt NRC review is requested, as current schedules call for completion of RFO-3 (mode change into Operational Condition 2) on May 21, 1992.

The results of the pre-MSIP examinations were provided to the NRC staff during a teleconference with NRR and Region III on April 24, 1992, and are included, with correction of a minor rounding error, in Attachment 1, Table 1, page 8. A summary of the ultrasonic examination methods utilized during the pre- and post-MSIP examinations is included in Attachment 2. The post-MSIP examination results were provided to the NRC staff during a teleconference with NRR on April 29, 1992. These results are also included in Attachment 1, Table 1, page 8.

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As shown in Attachment 1, Table 1, Page 8, the RFO-3 pre-MSIP sizing results (manual ultrasonic examination sizing method) for the indicatio previously reported on Feedwater Nozzle N4C was 0.15 inches in depth (12.5% of wall thickness) and 2.9 inches in length (7.5% of circumference). The RFO-3 sizing results for the indication previously reported on Feedwater nozzle N4E was 0.15 inches in depth (12.5% of wall thickness) and 1.8 inches in length (4.7% of circumference).

Attachment 1, Table 1 identifies the previously-reported indication on nozzle N4E as indication "#1", because a second indication was also discovered in Feedwater nozzle N4E (indication #2) during the RFO-3 inspections. Indication #2 was found in the same location relative to the weld centerline as indication #1, but approximately 160° away from and totally independent of indication #1. Indication #2 was sized at 0.10 inches in depth (8.3% of wall thickness) and 0.80 inches in length (2.1% of circumference) and was evaluated as an allowable planar flaw in accordance with ASME Section XI, Table IWB 3514-2, and therefore acceptable for continued operation without the need for further evaluation.

Based on the results of the RFO-3 pre-MSIP ultrasonic examinations, the size of the indications on Feedwater nozzles N4C and N4E remained within the "30% of component thickness and 10% of component circumference" envelope. Based on the criteria contained in Generic Letter (GL) 88-01 and NUREG-0313, Rev. 2, flaws contained within the 30% depth/10% circumference envelope are considered to be mitigated by application of mechanical stress improvement and no additional crack growth calculations are required. Our March 4, 1992 letter had proposed that if the indications remained within the 30% depth/10% circumference envelope, MSIP would be applied without the need for additional supporting crack growth calculations and snubber optimization on the Feedwater lines would also be implemented (reference letter PY-CEI/NRR-1463 L, Enclosure 1, page 3 of 19). As stated above, application of mechanical stress improvement on the N4C and N4E nozzles has been completed. Snubber optimization has also been implemented on the affected portions of the feedwater system during RFO-3 as planned.

Post-MSIP ultrasonic examination of the subject nozzles revealed no significant change in the size of existing indications, and no new indications. As shown in Attachment 1, Table 1, page 8, the post-MSIP automated ultrasonic examination sizing results for the indication on Feedwater nozzle N4C was 0.15 inches in depth and 2.4 inches in length. The post-MSIP sizing results for indication #1 on Feedwater nozzle N4E was 0.15 inches in depth and 1.6 inches in length. Indication #2 on Feedwater nozzle N4E was sized at 0.10 inches in depth and 0.55 inches in length.

In summary, the subject indications remained within the 30% depth/10% circumference envelope following application of MSIP. Based on the guidance provided in GL 88-01 and NUREG-0313, Rev. 2, the flaw indications are therefore considered to be placed in compression and indication growth is considered to be fully mitigated. Therefore, as proposed to the NRC staff in the April 29, 1992 teleconference, the Cleveland Electric Illuminating Company will proceed

by foregoing the submittal of any additional supporting crack growth calculation results at this time, by reclassifying the subject Feedwater nozzle weldments from IGSCC Category F to IGSCC Category E in accordance with the guidance provided in GL 88-01 and NUREG-0313, Rev. 2, and by adhering to the recommended schedule provided therein for future inspection of IGSCC Category E weldments.

If there are any further questions, please feel free to call.

Sincerely,

Michael D. Lyster

MDL:CJF:ss

Attachments

cc: NRC Project Manager
NRC Resident Inspector Office
NRC Region III