Niagara Mohawk

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NMP1L 1509

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

RE: Nine Mile Point Unit 1
Docket No. 50-220
DPR-63

Subject: ***Reactor Pressure Vessel Flaw Indication Evaluation (TAC No. MA6510)***

Gentlemen:

Enclosure 2 of Niagara Mohawk Power Corporation's (NMPC's) letter dated September 14, 1999 (NMP1L 1467), provided the results of evaluations of flaw indications in two reactor pressure vessel shell welds at Nine Mile Point Unit 1. During a telephone discussion on November 8, 1999, NMPC responded to an NRC Staff question concerning the information included in Enclosure 2 of the September 14, 1999, letter. The Attachment to this letter provides formal documentation of the NRC's question and NMPC's response.

Sincerely,

Richard B. Abbott
Vice President Nuclear Engineering

RBA/IAA/tmk
Attachment

xc: Mr. H. J. Miller, NRC Regional Administrator, Region I
Mr. G. K. Hunegs, NRC Senior Resident Inspector
Ms. M. K. Gamberoni, Acting Section Chief PD-I, Section 1, NRR
Mr. P. S. Tam, Senior Project Manager, NRR
Records Management

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ATTACHMENT

NRC's Request for Additional Information

NRC Question:

Figure 2-4 of Report GENE-B13-01805-124, Rev. 0 indicates that the applied K is not a function of S, the distance from the subsurface flaw to the surface. All figures in Appendix D of the same GE report do not include "S" as a variable either. Is the subsurface crack always assumed to be located at a certain depth to the surface? If so, your methodology would be non-conservative if the detected flaw is located closer to the surface than what you have assumed.

NMPC Response:

The methodology used in GENE-B13-01805-124, Revision 0, is conservative for the subsurface flaws that were identified in the Nine Mile Point Unit 1 reactor pressure vessel shell welds. "S" is not a constant but is a function of the flaw depth to thickness ratio "2a/t" and the flaw eccentricity ratio "2e/t". The ASME Code stress correction factor figures are limited to a "2e/t" of 0.6 for the Mm (membrane stress correction factor from Figure A-3300-2) and 0.7 for the Mb (bending stress correction factor from Figure A-3300-4). Therefore, postulated subsurface flaws were conservatively analyzed for the most limiting ASME Code Section XI proximity factors such that the allowable flaw depths are bounding for subsurface flaws, as discussed in Section 2.3 of the GE Flaw Evaluation Handbook. That is, Mm was determined using the limiting 2e/t of 0.6 and Mb was determined using the limiting 2e/t of 0.7.

For postulated flaws with 2e/t >0.6, this ASME Code limitation would typically introduce an overestimate of the allowable flaw size by 4% to 6% with the extreme being 20%. However, the flaw data for all of the flaws detected in the welds and evaluated in NMPC calculation SOVESSELM030 indicate that all of the flaw eccentricity ratios are less than 0.6. Therefore, the GE Flaw Handbook methodology is conservative for the evaluation of the flaws detected in the reactor pressure vessel welds. Additionally, the following conservative assumptions included in the evaluation, along with the substantial ASME Code margins, reasonably offset the Code limitation in the stress correction factor figures:

1. The flaws are evaluated for fluence at the surface regardless of the location of the subsurface flaw.

2. The mean radius was used for calculating the pressure stress.

3. The core shroud repair tie rod stress is conservatively included in the evaluation.

4. The most limiting (highest) reference temperature (RT_{NDT}) for any material within the weld and adjacent shell segments is assumed for the entire weld region.

5. Subsurface flaws are evaluated based on bounding proximity effects.