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SUBJECT: Addresses issues raised in insps required by GL 88-01, "NRC Position in IGSCC in BWR Austentic Stainless Steel Piping."

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CARL D. TERRY
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May 24, 1995
NMP2L 1548

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

RE: Nine Mile Point Unit 2
Docket No. 50-410
NPF-69

Subject: ***Generic Letter 88-01, "NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping"***

Gentlemen:

Niagara Mohawk's letter dated May 20, 1995, indicated that during the performance of inspections required by Generic Letter 88-01, "NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping," two (2) indications were found on recirculation inlet nozzle, safe end-to-nozzle welds that exceeded the ASME Section XI allowable flaw size. The indications were determined not to be IGSCC. However, in accordance with Section XI, Niagara Mohawk evaluated the indications and determined that they are acceptable for plant start up and continued plant operation. This determination was based on the fracture mechanics evaluation included as Attachment A to our letter. To be conservative, the indications were assumed to be active IGSCC.

By telephone conversations held with Niagara Mohawk on May 22, 1995 and May 23, 1995, the Commission requested additional information concerning our May 20, 1995 letter, and that this information be summarized and submitted formally. The purpose of this letter is to provide to you the requested information concerning the four (4) issues discussed.

Issue 1

The Commission requested that a crack growth evaluation be performed assuming that the flaw was located in the Alloy 182 butter material. The fracture mechanics analysis submitted on May 20, 1995, provided evidence that the flaw was not located in the Alloy 182 material. However, based on the Commission's request, Niagara Mohawk has performed a fracture mechanics evaluation using the Commission's assumption that a crack exists in the Alloy 182 material and the UT report of a wall thickness of 1.44". The allowable crack depth is calculated to be 0.864". Using a crack growth rate of 2×10^{-5} in/hr, the resulting end of cycle depth is calculated to be 0.458" (31.8% of wall) assuming an initial depth of 0.21". A more conservative crack growth rate of 5×10^{-5} in/hr was used, resulting in an end of cycle depth of 0.83" (57.7% of wall). These values are below the allowable flaw depth of 60% of wall thickness and therefore, are acceptable.

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Issue 2

The Commission asked for the value of the thermal loads used in determining stress magnitudes and if they had been included in Table 4-1, Stress Magnitudes for Normal/Upset Conditions, and Table 4-2, Summary of Stress used in Structural Margin Evaluation. Since Niagara Mohawk's UT reports had positioned the flaw in the Alloy 82 material, thermal loads were not required to be included when determining stress magnitudes. Therefore, thermal loads were not included in Table 4-1 and 4-2. However, thermal loads are required in determining stress magnitudes if the flaw is assumed to exist in the Alloy 182 material. Therefore, the thermal stress has been calculated and determined to be 2.16 ksi for calculating crack growth in response to Issue 1.

Issue 3

The Commission asked for the stress ratios for the Alloy 82 material. The stress ratios for the Alloy 82 material are .128 and .518 for P_m/S_m and $(P_m + P_b)/S_m$, respectively. For the Alloy 182 material, the stress ratios are 0.108 for P_m/S_m and 0.51 for $(P_m + P_b)/S_m$.

Issue 4

The Commission identified an inconsistency between text in the fracture mechanics evaluation which indicated the replacement safe end material to be Type 316NG material and Figures 2-1A and 2-1B which showed the material to be Type 316L. The material was purchased as Type 316L. The Type 316NG designation was indicated because the more stringent carbon content requirements of Type 316NG material (<.02%) are met.

Very truly yours,

C. D. Terry
Vice President - Nuclear Engineering

CDT/JMT/lmc

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