LICENSEE: Niagara Mohawk Power Corporation

October 28, 1998

FACILITY: Nine Mile Point Nuclear Station Unit No. 1

SUBJECT: SUMMARY OF TELEPHONE CONVERSATION OF OCTOBER 28, 1998, ON CORE SHROUD NEUTRON TRANSPORT AND UNCERTAINTY ANALYSIS REPORT MPM-108679 (TAC NO. M99720)

On October 28, 1998, Mr. Lambros Lois of the NRC staff participated in a telephone conference call with Niagara Mohawk Power Corporation (NMPC) and an NMPC contractor, Dr. Manahan, to discuss a sentence in Report Number MPM-108679, "Nine Mile Point Unit 1 Shroud Neutron Transport and Uncertainty Analysis," forwarded to the NRC under NMPC's cover letter dated October 22, 1998. Participants for NMPC were Messrs. G. Inch and A. Abbasi. The enclosure, which shows the clarification provided during this conversation, was faxed to the NRC by NMPC at the conclusion of the call.

Mr. Lois requested clarification of the sentence on page 7 of MPM-108679 that reads: "The highest fluence at the shroud ID surface for this ligament is 4.18E+20 n/cm^2." Dr. Manahan responded that "this ligament" refers to the ligament in vertical weld V-10 at the location 33.33 inches below horizontal weld H-4, as also shown in Table 2-3 of the report.

Sincerely,

ORIGINAL SIGNED BY:

Darl S. Hood, Senior Project Manager
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket No. 50-220

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WASHINGTON, D.C. 20555-0001

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NIAGARA MOHAWK

NINE MILE POINT NUCLEAR STATION
P.O. BOX 63, LYCOMING, NEW YORK 13093

FAX COVER LETTER

NINE MILE POINT UNIT 2

FROM: FAX TELEPHONE NUMBER: **(315) 349-1400**

NAME: Steve Leonard

DEPARTMENT: **LICENSING/ENVIRONMENTAL**

TELEPHONE NUMBER:

TO: Clark Hood FAX # 301-415-2102

TOTAL NUMBER OF PAGES FAXED (INCLUDING COVER LETTER): 2

DATE: 10/28/98 TIME: _____

MESSAGE: _____

Enclosure

As a point of clarification the ligament referred to is the V10 ligament located 33.33" below H4, (see table 2-3).
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midplane). The plots indicate clearly the peak fluence point at about 19°. The data for welds H4 and H5 are tabulated in Appendix A.

Of particular interest is the maximum fluence to the shroud welds. The exposure to 8 horizontal welds and two vertical welds is given in Table 2-2. The radial location, height, and azimuth for each weld maximum exposure is given. The fluence is evaluated for the end of Cycle 12 and the projected end of Cycle 13 (14500 hours after the end of Cycle 12). For the weld locations above and below the core region (*H1*, *H6A*, *H6B*, and *H7*), the calculational model did not include geometrical details or extend far enough to determine the fluence to these points directly from the transport model. The values given are estimates based on extrapolation of the flux through additional water. For the H1 weld, this extrapolation is very uncertain due to water mixing in this region and a resultant uncertain void fraction. A conservative void fraction of 0.7 was used to extrapolate the fluence.

Two other points of interest are welds V9 and V10 at points 6 inches above weld H5 and 6 inches below weld H4 (locations of ligaments credited in the structural analysis). The fluence at those points is calculated to be 2.677E+20 and 3.617E+20 n/cm² (E > 1 MeV), respectively, at the end of Cycle 12. At the end of Cycle 13 these values increase to 2.941E+20 n/cm² and 3.974E+20 n/cm².

Application of the transport calculation results to the Cycle 13 structural assessment shows that the peak fluence to the V9 and V10 remaining ligaments will not exceed 5.0 E+20 n/cm² at 14,500 EFPH past the end of cycle 12. Table 2-3 summarizes the V9/V10 axial fluence data for the remaining ligaments which are being analyzed in the structural integrity analysis. As shown in the table, analysis of the ligaments adjacent to H4 shows that weld V9 is limiting in terms of fluence because it extends further down from H4 than does the weld V10 ligament. The V10 remaining ligament which spans the fuel midplane is the ligament which receives the highest fluence of all of the V9 and V10 ligaments. The highest fluence at the shroud ID surface for this ligament is 4.18E+20 n/cm². Even if the estimated one sigma of 15.6 % is added to this mean best estimate fluence, the resulting peak fluence of 4.83 +20 n/cm² is below 5.0 E+20 n/cm² through the end of Cycle 13.

2.4 Chapter 2 References

[2-1] RSICC Computer Code Collection, CCC-543, TORT-DORT-PC, Two- and Three-Dimensional Discrete Ordinates Transport Version 2.7.3, available from the Radiation Safety Information Computational Center, Oak Ridge National Laboratory, Oak Ridge, TN, June 1996.

[2-2] RSICC Data Library Collection, DLC-185, *BUGLE-96*, Coupled 47 Neutron, 20 Gamma Ray Group Cross Section Library Derived from ENDF/B-VI for LWR Shielding and Pressure Vessel Dosimetry Applications, available from the Radiation Safety Information Computational Center, Oak Ridge National Laboratory, Oak Ridge, TN, March 1996.