

May 6, 2003

Mr. John T. Conway  
Vice President Nine Mile Point  
Nine Mile Point Nuclear Station, LLC  
P.O. Box 63  
Lycoming, NY 13093

SUBJECT: NINE MILE POINT NUCLEAR STATION, UNIT NO. 1 - REQUEST FOR  
ADDITIONAL INFORMATION - AMENDMENT APPLICATION RE: PRESSURE-  
TEMPERATURE LIMIT CURVES (TAC NO. MB6687)

Dear Mr. Conway:

The U.S. Nuclear Regulatory Commission (NRC) staff is reviewing the subject proposed amendment, requested by your application dated November 15, 2002, as supplemented by letter on January 15, 2003. On April 30, 2003, we held a telephone conference with Messrs. D. Wolniak, C. Mackaman, G. Inch, T. Salvagan, et al. of your staff, and your contractor, on comments we previously e-mailed to your staff (available in the Agencywide Documents Access and Management System under Accession No. ML031140208). Participants agreed that a formal request for additional information (RAI) be issued. Enclosed please find the RAI. Your staff agreed that it can respond before June 30, 2003.

If you have any questions, please call me at 301-415-1451.

Sincerely,

**\RAI\**

Peter S. Tam, Senior Project Manager, Section 1  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket No. 50-220

Enclosure: As stated

cc w/encl: See next page

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## REQUEST FOR ADDITIONAL INFORMATION

### NINE MILE POINT NUCLEAR STATION, UNIT NO. 1 (NMP1)

#### AMENDMENT APPLICATION REGARDING PRESSURE-TEMPERATURE LIMIT CURVES

- References:
- (1) Letter, J. T. Conway to U.S. Nuclear Regulatory Commission (NRC), November 15, 2002.
  - (2) Letter, J. T. Conway to U.S. Nuclear Regulatory Commission, January 15, 2002

The NRC staff has completed its review of the referenced documents. Based on this review, the NRC staff plans to approve your proposed use of the pressure-temperature (P-T) limit curves for 23.38, in lieu of 28, effective-full-power-years (EFPYs) of operation. If you agree, the NRC staff would request that you revise all the curves with a label to limit their usefulness to 23.38 EFPYs. In a telephone conference on April 30, 2003, the NRC staff learned that you would pursue approval of the P-T limit curves for 28 EFPYs. To make the curves acceptable for 28 EFPYs, the following issues need to be addressed in a supplement to your application:

Benchmarking - The licensee derived the neutron sources using the power distribution and the ORIGEN 2.1 code. It is not clear to the NRC staff why this code was used since fuel composition as a function of burnup should be available from reload reports. Please justify the derivation of the source. For example, calculate a cycle for which you know the source would compare with results using ORIGEN 2.1.

Poolside Critical Assembly (PCA) Benchmark - The arrangement analyzed has a 12-cm gap between the core and the thermal shield and a 13-cm gap between the thermal shield and the vessel. However, the core-to-shroud distances in Unit 1 range from 10 to about 40 cm and the shroud-to-vessel distance is about 40 cm. The arrangement chosen is not representative of a boiling-water reactor geometry. In addition, the test excluded the Rh-103 and U-238 detectors. The licensee's justification was that the Rh-103 detector is not commonly used due to its short half-life; therefore, the cross sections are not well known. Based on NUREG/CR-6115 (ORNL/TM-13205), the NRC staff disagrees with that justification. The basis for rejecting the U-238 dosimeter was due to cross section difficulties. The purpose of benchmarking is to demonstrate the ability of the methodology as an integrated tool to calculate the dosimeter activation. Based on this review, the benchmarking appears not successful because it analyzed the wrong geometry and rejected dosimeters without a reasonable justification.

NMP1 Surveillance Capsule at 210-Degree Azimuthal - The NRC staff reviewed the NMP1 210-degree surveillance capsule report (the capsule was removed at the end of cycle 12 at 16.81 EFPYs). This report does not include any information on the methodology of neutronic calculations, and in addition, indicates substantial discrepancies between the copper, iron, and nickel dosimeters. The report recommends the fluence value based on the copper results, yet copper activation represents a small part of the spectrum compared to iron and nickel. Iron and nickel results are also available. Because the neutronic methodology was not presented and

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because of very large discrepancies in the dosimeter response, the NRC staff finds that the NMP1 210-degree surveillance capsule results do not support the benchmarking of the fluence calculational methodology.

Surveillance Capsules Used in the Proposed Benchmarking - The licensee removed, tested, and analyzed a total of five surveillance capsules from both Nine Mile Point units. However, only two capsules were used in the submitted benchmarking analysis. As stated in RG 1.190, one of the objectives of benchmarking is to determine potential bias in the calculation of the best-estimate which requires that all of the existing data be used. The licensee ignored the existence of three Nine Mile Point capsules and made no effort to determine the existence of a bias. The benchmarking effort appears incomplete.

Because you requested approval of a plant-specific methodology, the NRC staff recommends that you concentrate your efforts on the Nine Mile Point surveillance capsules and re-think your effort to calculate the PCA in view of the successful outcome of your NUREG-6115 calculation.

Nine Mile Point Nuclear Station  
Unit No. 1

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