UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

March 24, 1993

Docket No. 50-220

Mr. B. Ralph Sylvia
Executive Vice President, Nuclear
Niagara Mohawk Power Corporation
301 Plainfield Road
Syracuse, New York 13212

Dear Mr. Sylvia:

SUBJECT: RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING SUPPLEMENT 1 TO GENERIC LETTER (GL) 87-02 - NINE MILE POINT NUCLEAR STATION UNIT NO. 1 (TAC NO. M69461)

By letter dated September 18, 1992, Niagara Mohawk Power Corporation (NMPC) submitted its response to Supplement 1 to GL 87-02, "Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors, Unresolved Safety Issue (USI) A-46," for Nine Mile Point Nuclear Station Unit No. 1 (NMP-1). The NRC staff provided its safety evaluation (SE) regarding this submittal in an enclosure to a letter dated November 17, 1992. The NRC staff's SE concluded in part that the NMPC submittal of September 18, 1992, did not provide sufficient information regarding the development of the ground response spectrum (GRS) and the in-structure response spectra (IRS). Therefore, NMPC was requested to provide certain additional information that was identified in the SE. NMPC responded to this request for additional information (RAI) by letter dated January 22, 1993.

The NRC staff has reviewed NMPC's January 22, 1993, response to the RAI. We have determined the following as a result of this review:

1. NMPC developed a new seismic GRS for NMP-1 in 1984. The new GRS was based on a NUREG/CR-0098, "Development of Criteria for Seismic Review of Selected Nuclear Power Plants," 50th percentile spectrum anchored at a peak ground acceleration of 0.13g. NMPC stated that the new GRS enveloped the original licensing basis five percent damped GRS. The GRS was increased by a factor of 1.5 to serve as an in-structure response spectrum for equipment located less that 40 feet above grade.

2. For equipment located above 40 feet, NMPC generated new IRS for the NMP-1 reactor building and turbine building. The new IRS were developed using four sets of artificial time histories. Each set consisted of three statistically independent components (two horizontal and one vertical). The average of the calculated ground response spectra from the four sets of time histories enveloped the original licensing basis GRS.

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3. Three-dimensional lumped mass stick models were used to generate the IRS. The motions in the three directions were applied simultaneously. Four IRS were generated for each of the four sets of time histories. At each frequency, the four individual IRS were averaged to produce a single averaged spectrum. The single in-structure response spectrum was peak broadened by plus/minus 15 percent to produce a design in-structure response spectrum. A seven percent structural damping value was used in the analysis.

4. No soil-structure interaction was considered since the reactor and turbine buildings are founded on bedrock.

5. No torsional effects in the dynamic analysis were considered.

Based on our review of the NMPC response of January 22, 1993, and the NRC staff positions delineated in Supplemental Safety Evaluation Report No. 2 that was transmitted by GL 87-02, we have concluded that the procedure used to generate the IRS is adequate and acceptable. However, we note that the IRS presented in the NMPC submittal should be treated as median-centered response spectra primarily due to the use of a NUREG/CR-0098 50th percentile spectrum as a basis for the development of the new GRS.

The NRC staff may elect to audit the procedures used in generation of the floor response spectra to verify they correctly reflect the licensing basis. Therefore, please maintain this information in a readily accessible status.

Sincerely,

Donald S. Brinkman

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

cc: See next page

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Sincerely,
Original signed by:
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cc: See next page

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