

September 11, 2002

Mr. John T. Conway
Site Vice President
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P. O. Box 63
Lycoming, NY 13093

SUBJECT: NINE MILE POINT NUCLEAR STATION, UNIT NO. 1 - USE OF THE OFFGAS
EFFLUENT STACK MONITORING SYSTEM TO MEET REGULATORY GUIDE
1.97, REVISION 2, AND NUREG-0737 GUIDANCE (TAC NO. MB2443)

Dear Mr. Conway:

By letter dated September 28, 2001, Niagara Mohawk Power Corporation (NMPC, the former licensee) requested approval of deviations from Regulatory Guide (RG) 1.97, Revision 2, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," and NUREG-0737, "Clarification of TMI [Three Mile Island] Action Plan Requirements," for the instrumentation that monitors noble gases and particulates at Nine Mile Point Nuclear Station, Unit No. 1 (NMP1).

On November 7, 2001, NMPC's ownership interest and operating license in NMP1 were transferred to Nine Mile Point Nuclear Station, LLC (NMPNS), thus allowing NMPNS to possess, use and operate NMP1. By letter dated November 20, 2001, NMPNS requested that the Nuclear Regulatory Commission (NRC) continue to review and act on all requests previously submitted by NMPC before the transfer, and to consider such requests as if they had been originally submitted by NMPNS. Accordingly, the NRC staff continued its review of the subject submittal.

The NRC staff completed its review and finds NMPC's proposed use of the Offgas Effluent Stack Monitoring System to replace the Radioactive Gaseous Effluent Monitoring System an acceptable deviation from the guidance of RG 1.97 and NUREG-0737. Details of the NRC staff's review are set forth in the enclosed second supplemental safety evaluation.

Sincerely,

/RA/

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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SECOND SUPPLEMENTAL SAFETY EVALUATION
BY THE OFFICE OF NUCLEAR REACTOR REGULATION
CONFORMANCE WITH REGULATORY GUIDE 1.97 AND NUREG-0737
NINE MILE POINT NUCLEAR POWER STATION, UNIT NO. 1
DOCKET NO. 50-220

1.0 INTRODUCTION

The Nuclear Regulatory Commission (NRC) staff issued NUREG-0737, "Clarification of TMI [Three Mile Island] Action Plan Requirements" in November 1980, providing requirements for TMI action items to be implemented by licensees and applicants. On March 14, 1983, the NRC staff issued a Confirmatory Order to Nine Mile Point Nuclear Station, Unit No. 1 (NMP1), requiring Niagara Mohawk Power Corporation (NMPC, the former licensee) to implement and maintain the various NUREG-0737 items, including Items II.F.1(1), regarding noble gas monitoring, and II.F.1(2), regarding effluent monitoring of iodine and particulates. On November 17, 1986, the NRC staff issued a safety evaluation (SE) regarding the licensee's conformance with Regulatory Guide (RG) 1.97, Revision 2, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," for NMP1. On November 14, 1991, the NRC staff issued a supplemental SE on the same subject. The NRC staff accepted the licensee's deviations from the RG 1.97 guidance with the exception of neutron flux monitoring. The neutron flux monitoring issue was resolved by a letter from the NRC staff dated May 23, 1994.

By letter dated September 28, 2001, NMPC requested deviations from NUREG-0737 and the guidance of RG 1.97 for instrumentation that monitors noble gases and particulates. The NRC staff's evaluation follows in the sections below. This document is the second supplemental SE.

On November 7, 2001, NMPC's ownership interest and operating license in NMP1 were transferred to Nine Mile Point Nuclear Station, LLC (NMPNS), thus allowing NMPNS to possess, use and operate NMP1. By letter dated November 20, 2001, NMPNS requested that the NRC continue to review and act on all requests previously submitted by NMPC before the transfer, and to consider such requests as if they had been originally submitted by NMPNS. Accordingly, the NRC staff continued its review of the subject submittals.

2.0 REGULATORY EVALUATION

The NRC staff provided guidance in NUREG-0737, Item II.F.1(1) and (2), regarding monitoring of noble gases, and monitoring of iodines and particulates, respectively. The recommendations in RG 1.97 provide an acceptable method for meeting the guidance of NUREG-0737. In response to the NUREG-0737 guidance and the RG 1.97 recommendations, NMPC previously committed to install and use the radioactive gaseous effluent monitoring system (RAGEMS).

Enclosure

In the September 28, 2001 letter, NMPC proposed to use the offgas effluent stack monitoring system (OGESMS) instead of RAGEMS to meet the guidance of NUREG-0737 and the recommendations of RG 1.97. The OGESMS is currently used for normal effluent monitoring. The use of OGESMS for both normal and accident effluent monitoring would require modifications to the descriptions of equipment used to meet NUREG-0737, Items II.F.1(1) and (2), and the associated commitments to RG 1.97.

3.0 TECHNICAL EVALUATION

RG 1.97 recommends noble gas effluent monitoring instrumentation be designed with a range of 10^{-6} $\mu\text{Ci/cc}$ to 10^3 $\mu\text{Ci/cc}$ with a flow rate of 0 to 110% of vent flow design for detection of significant releases, release assessment, and long-term surveillance. The range of the OGESMS is 10^{-5} $\mu\text{Ci/cc}$ to 1 $\mu\text{Ci/cc}$ (Xe-133). The lower limit of the OGESMS meets the NUREG-0737, Item II.F.1, Attachment 1, Position (2) criterion of the instrumentation range beginning at normal conditions (as low as reasonably achievable (ALARA)).

NUREG-0737, Item II.F.1, Attachment 1, Clarification (2) states that the system shall accommodate a design-basis release and then be capable of following decreasing concentrations of noble gases. For NMP1, the site-specific design basis effluent release occurs from a loss-of-coolant accident (LOCA). At NMP1, a containment purge is not utilized to respond to a design-basis accident (DBA). The stack is the only release point for this DBA. The maximum noble gas effluent concentration through the stack for a LOCA is 0.4 $\mu\text{Ci/cc}$. The OGESMS upper range limit of 1 $\mu\text{Ci/cc}$ (Xe-133) provides a safety margin greater than a factor of two for this DBA.

For beyond DBAs, a modified teletector is used to provide high-range noble gas release estimates if the OGESMS monitoring range is exceeded. The teletector has an upper limit of 10^5 $\mu\text{Ci/cc}$ (Xe-133). Remote readout of the teletector is available in an area that is accessible during and after an accident.

RG 1.97 recommends particulates and halogens instrumentation be designed with a range of 10^{-3} $\mu\text{Ci/cc}$ to 10^2 $\mu\text{Ci/cc}$, with a 30-minute sampling time for detection of significant releases, release assessment, and long-term surveillance. With the use of OGESMS, particulate samples would be collected by OGESMS and taken to the onsite analysis facility. The onsite analysis facility has a range of 10^{-3} $\mu\text{Ci/cc}$ to 0.1 $\mu\text{Ci/cc}$ with a 30-minute sampling time. Analysis utilizing the design-basis effluent release from a LOCA yields a maximum concentration of particulates and halogens of 5×10^{-2} $\mu\text{Ci/cc}$. The onsite analysis facility's upper range limit of 0.1 $\mu\text{Ci/cc}$ provides a safety margin with a factor of two for this DBA. This upper range is thus sufficient to meet the intended purpose for measuring particulates and halogens.

NUREG-0737, Item II.F.1, Attachment 2, Clarification (2) states that the sampling system design for particulates and iodines be such that plant personnel could remove samples, replace sampling media and transport samples to the onsite analysis facility with radiation exposures that are not in excess of the criteria of General Design Criteria (GDC) 19 for the duration of the accident. Using NMP1's 5×10^{-2} $\mu\text{Ci/cc}$ design-basis effluent release from a LOCA, in lieu of 10^2 $\mu\text{Ci/cc}$ as specified in NUREG-0737 and RG 1.97, to determine doses for plant personnel working with the sampling media during the accident, results in estimated exposures less than the GDC 19 limits.

The March 14, 1983, Confirmatory Order required NMPC to implement and maintain equipment to comply with Items II.F.1(1) and II.F.1(2) in a manner described in NMPC's submittal referenced in the Confirmatory Order. Therefore, the details of NMPC's compliance with the NRC's positions are incorporated into the Confirmatory Order by reference. One of these referenced submittals, dated April 16, 1982, stated that no deviations from the NRC positions were taken for these items. The use of OGESMS in lieu of RAGEMS for accident monitoring requires a revision to the compliance description in the April 16, 1982, submittal. The following revisions have been provided by the licensee:

1. April 16, 1982, NMPC response:

"Niagara Mohawk will install the radioactive gaseous effluent monitoring system designed and supplied by Science Applications, Inc."

Revision

"NUREG-0737 Items II.F.1(1) and II.F.1(2) will be met in the future by use of OGESMS."

2. April 16, 1982, NMPC response:

"This system will perform on-line isotopic analysis of radioactive effluents including particulates, iodine, and noble gases."

Revision

"NUREG-0737 requires continuous monitoring of noble gases and continuous sampling of particulates and iodines. On-line analysis is not required per NUREG-0737 and OGESMS does not provide this capability. Noble gases will be monitored continuously. Iodine and particulates will be sampled continuously, manually retrieved, and laboratory analyzed."

In summary, the OGESMS meets the objective and purpose of the NUREG-0737 and RG 1.97 guidance. The deviations from NUREG-0737 and RG 1.97, as documented by NMPC, are acceptable as delineated above.

4.0 CONCLUSION

Based on review of NMPC's submittal, the NRC staff finds that NMPC has provided adequate justification for deviations from NUREG-0737 and RG 1.97, Revision 2 recommendations, for the instrumentation that monitors noble gases and particulates at NMP1. Therefore, the NRC staff concludes that the NMPNS's use of OGESMS for accident monitoring of noble gases and particulates is acceptable.

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Date: September 11, 2002

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