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October 5, 2001  
NMP2L 2034

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: *Post-LOCA Containment Hydrogen Monitoring (TAC No. MB3040)***

Gentlemen:

Niagara Mohawk Power Corporation (NMPC) hereby requests an amendment to the Nine Mile Point Unit 2 (NMP2) Operating License (OL) No. NPF-69 regarding containment hydrogen monitoring. This request changes the licensing basis requirement for establishing containment hydrogen monitoring "within 30 minutes" to "within 3 hours" of initiating emergency core cooling (safety injection) following a loss of coolant accident (LOCA). A similar request (involving a shorter extension) made by the Southern Nuclear Operating Company for the Vogtle Electric Generating Plant, Units 1 and 2, was approved and issued by the NRC as a license condition on December 8, 1999. The Vogtle request was based on a similar request by Entergy Operations for Arkansas Nuclear One, Units 1 and 2, which was approved by the NRC in a confirmatory order dated September 28, 1998.

Consistent with the Vogtle request, this request is being made pursuant to 10CFR50.90 provisions. Attachment A to this letter provides the retyped page from the NMP2 OL, with marginal marking to indicate the area of proposed change (proposed license condition). Attachment B provides supporting information and analyses demonstrating that the proposed change involves no significant hazard considerations pursuant to 10CFR50.92. Attachment C is a "marked up" copy of the affected OL page. Attachment D documents NMPC's determination that the proposed change meets the criteria of 10CFR51.22 for categorical exclusion from performing an environmental assessment.

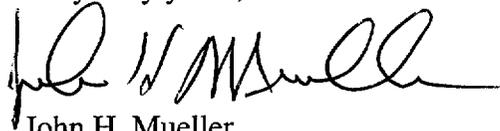
NMPC plans to replace the existing hydrogen analyzers with analyzers that have improved reliability during the next NMP2 refueling outage (RFO8), which begins in March 2002.

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The operational characteristics of the new analyzers and NMPC's current assessment of post-LOCA operator response time make it necessary to extend the 30-minute hydrogen monitoring requirement. NMPC requests that the NRC approve the enclosed request for extension by February 1, 2002, so that the analyzer replacement may be implemented in RFO8.

In the event that NRC approval of this amendment application occurs after the approval of other pending amendments to the NMP2 OL, NMPC will submit revised OL pages as necessary to reconcile this amendment with the previously approved amendments.

Very truly yours,



John H. Mueller  
Senior Vice President and  
Chief Nuclear Officer

JHM/IAA/cld  
Attachments

cc: Mr. H. J. Miller, NRC Regional Administrator, Region I  
Mr. G. K. Hunegs, NRC Senior Resident Inspector  
Mr. P. S. Tam, Senior Project Manager, NRR (2 copies)  
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UNITED STATES NUCLEAR REGULATORY COMMISSION

In the Matter of )
Niagara Mohawk Power Corporation ) Docket No. 50-410
Nine Mile Point Unit 2 )

APPLICATION FOR AMENDMENT TO OPERATING LICENSE

Pursuant to Section 50.90 of the Regulations of the Nuclear Regulatory Commission, Niagara Mohawk Power Corporation, holder of Facility Operating License No. NPF-69, hereby requests an amendment to the License. The proposed changes create a license condition titled "Additional Condition 3" in Section 2C of the License, in the manner set forth in Attachment A to this application. This new condition specifies the time requirement for establishing containment hydrogen monitoring capability following a loss of coolant accident.

The proposed changes will not authorize any change in the types of effluents or in the authorized power level of the facility. Supporting information and analyses which demonstrate that the proposed changes involve no significant hazards considerations pursuant to 10CFR50.92 are included as Attachment B.

WHEREFORE, Applicant respectfully requests that Facility Operating License No. NPF-69 be amended in the form attached hereto as Attachment A.

NIAGARA MOHAWK POWER CORPORATION

By [Signature]
John H. Mueller
Senior Vice President and
Chief Nuclear Officer

Subscribed and Sworn to before me
on this 5th day of October 2001.

[Signature]
NOTARY PUBLIC

SANDRA A. OSWALD
Notary Public, State of New York
No. 01OS6032276
Qualified in Oswego County
Commission Expires 10/25/01

**ATTACHMENT A**  
**NINE MILE POINT UNIT 2**  
**LICENSE NO. NPF-69**  
**DOCKET NO. 50-410**

**Proposed Changes to the Operating License**

Replace the Operating License page listed below with the attached revised page. The revised page has been retyped in its entirety with marginal marking to indicate changes to the text.

<u>Remove</u>	<u>Insert</u>
6	6

(11) Additional Condition 2

The schedule for performing Surveillance Requirements (SRs) that are new or revised in Amendment No. 91 shall be as follows:

For SRs that are new in this amendment, the first performance is due at the end of the first surveillance interval that begins on the date of implementation of this amendment.

For SRs that existed prior to this amendment whose intervals of performance are being reduced, the first reduced surveillance interval begins upon completion of the first surveillance performed after implementation of this amendment.

For SRs that existed prior to this amendment that have modified acceptance criteria, the first performance is due at the end of the first surveillance interval that began on the date the surveillance was last performed prior to the implementation of this amendment.

For SRs that existed prior to this amendment whose intervals of performance are being extended, the first extended surveillance interval begins upon completion of the last surveillance performed prior to the implementation of this amendment.

(12) Additional Condition 3

The operating licensee shall be capable of establishing containment hydrogen monitoring within 3 hours of initiating emergency core cooling (safety injection) following a loss of coolant accident.

- D. The facility requires exemptions from certain requirements of 10 CFR Part 50 and 10 CFR Part 70.
- i) An exemption from the criticality alarm requirements of 10 CFR Part 70.24 was granted in the Special Nuclear Materials License No. SNM-1895 dated November 27, 1985. This exemption is described in Section 9.1 of Supplement 4 to the SER. This previously granted exemption is continued in this operating license.
  - ii) Exemptions to certain requirements of Appendix J to 10 CFR Part 50 are described in Supplements 3, 4, and 5 to the SER. These include (a) (this item left intentionally blank); (b) an exemption from requirement of Option B of Appendix J, exempting main steam isolation valve measured leakage from the combined leakage rate limit of 0.6 La. (Section 6.2.6 of SSER 5)\*; (c) an exemption from Option B of Appendix J, exempting the hydraulic control system for the reactor recirculation flow control valves from Type A and Type C leak testing (Section 6.2.6 of SSER 3); (d) an exemption from Option B of Appendix J, exempting Type C testing on traversing incore probe system shear valves. (Section 6.2.6 SSER 4)

\* The parenthetical notation following the discussion of each exemption denotes the section of the Safety Evaluation Report (SER) and/or its supplementals wherein the safety evaluation of the exemption is discussed.

**ATTACHMENT B**  
**NINE MILE POINT UNIT 2**  
**LICENSE NO. NPF-69**  
**DOCKET NO. 50-410**

**Supporting Information and No Significant Hazards Consideration Analysis**

**INTRODUCTION**

The Hydrogen/Oxygen analyzer units currently installed in the Nine Mile Point Unit 2 (NMP2) containment monitoring system (CMS) have a history of chronic failure and require excessive maintenance. It is intended to replace the analyzer equipment with an improved design provided by Meggitt Safety Systems, Inc. It is planned to implement this modification during refueling outage number 8 (RFO8), which begins in March 2002.

**EXISTING LICENSING BASIS**

Table 1.9 of the NMP2 Updated Safety Analysis Report (USAR), commits NMP2 to comply with the acceptance criteria of NUREG-0800 (Standard Review Plan), Section 6.2.5. SRP Section 6.2.5 states:

“The containment hydrogen monitor shall meet the requirements of item II.F.1 of NUREG-0737 and NUREG-0718, and the Appendix of Regulatory Guide 1.97.”

Section II.F.1, Attachment 6, of NUREG-0737, “Clarification of TMI Action Plan Requirements,” dated November 1980, states “A continuous indication of hydrogen concentration in the containment atmosphere shall be provided in the control room.” It also contains a note (2) that reads:

“(2) The continuous indication of hydrogen concentration is not required during normal operation.

If an indication is not available at all times, continuous indication and recording shall be functioning within 30 minutes of the initiation of safety injection.”

Thus, based on SRP 6.2.5 and NUREG-0737 commitments, the current NMP2 licensing basis requires hydrogen monitoring to begin within 30 minutes after initiation of emergency core cooling (safety injection).

**DESCRIPTION OF CHANGE IN LICENSING BASIS**

It is proposed to add a new license condition in Section 2C of the NMP2 Operating License No. NPF-69. This license condition, titled “Additional Condition 3”, will require NMPC to establish containment hydrogen monitoring capability within 3 hours of initiating emergency core cooling (safety injection) following a loss of coolant accident (LOCA).

## **REASON FOR CHANGE IN LICENSING BASIS**

The existing hydrogen analyzer units are continuously energized during normal operation, but the analyzer pumps trip on a containment isolation signal. The remaining components of the analyzer remain energized and ready to sample. Manual operator action is required to override the containment isolation signal and restart the pump. Restoration of the system following containment isolation is directed by the Emergency Operating Procedures (EOPs). Continuous indication of hydrogen is restored upon initiation of the pumps. The new Meggitt system will normally be in a standby mode and require manual operator action to override the containment isolation signal and switch from "standby" to "analyze." The standby mode of operation will reduce wear on the equipment and contribute to improved reliability. Restoration of the system from "standby" to "analyze" will be directed by the EOPs. This restoration initiates a warm-up and self-calibration sequence prior to monitoring and adds a time delay that is not present in the existing units. It is conservatively assumed that one hour will be needed from the time of CMS activation until the first set of reliable sample readings can be obtained. This conflicts with the 30 minute requirement in the existing NMP2 licensing basis. The proposed extension from 30 minutes to 3 hours allows control room personnel two hours to concentrate on tasks and strategies necessary for accident mitigation and allows one hour for analyzer response time (warm up and self-calibration).

## **TECHNICAL JUSTIFICATION FOR 3-HOUR TIME REQUIREMENT**

The proposed extension in the time requirement for hydrogen monitoring from 30 minutes to 3 hours after initiation of emergency core cooling (safety injection) following a LOCA is justified based on the following considerations:

1. The NMP2 USAR Chapter 15 accident analyses do not require or take credit for hydrogen monitoring to be established shortly after a LOCA. Post-LOCA hydrogen production occurs over a long period of time. As discussed in Section 6.2.5, "Combustible Gas Control in Containment," of the NMP2 USAR, hydrogen and oxygen concentrations in the containment would approach the respective flammability limits of 4 percent by volume and 4.5 percent by volume, if uncontrolled, after 3.75 days of the LOCA. As further discussed in Section 6.2.5, based on the post-accident buildup of hydrogen concentration, the estimated time to place the hydrogen/oxygen recombiner units in operation is approximately 2 days after the LOCA. Thus, the proposed extension from 30 minutes to 3 hours is justified in light of hydrogen control requirements at NMP2.
2. In SECY-2000-198, dated September 14, 2000, the NRC staff noted that for Mark II containments (such as the NMP2 containment), combustible gases are not a significant challenge to containment integrity for approximately 24 hours after the onset of core damage due to the inert atmosphere. The NRC staff also noted that hydrogen monitors have a limited significance in mitigating the threat to the containment in the early stages of a core-melt accident.

3. In the confirmatory order issued to Arkansas Nuclear One on September 28, 1998, regarding containment hydrogen monitoring, the NRC staff acknowledged that, based on recent insights pertaining to plant risks, certain TMI Action Plan items can be revised without reducing, and perhaps enhancing, the ability of licensees to respond to severe accidents. The NRC staff also noted that licensees should have the flexibility to determine the appropriate time limit for indication of hydrogen concentration in the containment, such that control room personnel are not distracted from more important tasks in the early phases of accident mitigation.
4. The guidance for establishing post-LOCA containment hydrogen monitoring at NMP2 is contained in Emergency Operating Procedure N2-EOP-PC, "Primary Containment Control – Flowchart." This step follows those preliminary actions required to monitor and control the LOCA event and verify proper operation of essential safety systems. Considering the safety significance of these preliminary actions to assure that safety systems are functioning properly and critical safety functions are being accomplished, it is appropriate to allow a delay in the operator actions necessary to initiate hydrogen monitoring until the accident mitigation tasks and strategies are complete. At NMP2, these accident mitigation tasks and strategies can safely be accomplished within two hours of emergency core cooling initiation. After that, containment hydrogen monitoring should, and will be, initiated. This will require manual operator action, i.e., switching the hydrogen analyzer units from "standby" to "analyze". The new analyzer units will require one hour for warm-up and self-calibration prior to data collection for long-term core damage assessment purposes.

## CONCLUSION

The proposed extension in the time requirement for establishing hydrogen monitoring is justified based on the safety significance of hydrogen monitoring, the immediate actions required of plant operators after a LOCA, and the operational characteristics of the hydrogen analyzers that are planned to be installed in RFO8.

## NO SIGNIFICANT HAZARDS CONSIDERATION ANALYSIS

10CFR50.91 requires a licensee requesting an amendment to provide its analysis concerning the issue of no significant hazards consideration using the standards in 10CFR50.92. Niagara Mohawk Power Corporation (NMPC) has evaluated this proposed amendment against the standards. Each standard is discussed below:

- (1) **The operation of Nine Mile Point Unit 2 in accordance with the proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.**

The Updated Safety Analysis Report (USAR) Chapter 15 accident analyses do not require or take credit for hydrogen monitoring to be established shortly after a loss of coolant accident (LOCA). Post-LOCA hydrogen production occurs over a long period of time, and an extension from 30 minutes to 3 hours for establishing hydrogen monitoring will have a positive impact on the ability of the operators to concentrate on their more immediate actions while having no negative impact on containment integrity or the long-

term assessment efforts. Therefore, the proposed license amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.

- (2) **The operation of Nine Mile Point Unit 2 in accordance with the proposed amendment will not create the possibility of a new or different kind of accident from any accident previously evaluated.**

Control room operators use the containment hydrogen monitors following a LOCA to establish hydrogen control measures should it become necessary. The proposed license amendment would not eliminate the requirement to establish hydrogen monitoring, but would allow it to be delayed until those actions required to mitigate the accident and verify proper operation of essential safety equipment have been completed. The proposed extension maintains the requirement to establish hydrogen monitoring well before calculated conditions inside the containment indicate any need to initiate hydrogen control measures. Therefore, the proposed license amendment will not create a new or different kind of accident from any accident previously evaluated.

- (3) **The operation of Nine Mile Point Unit 2 in accordance with the proposed amendment will not involve a significant reduction in a margin of safety.**

The need to establish hydrogen control measures will not be present within the first 3 hours following a LOCA since there will not be significant hydrogen accumulation. By extending the time allowed to establish containment hydrogen monitoring, the operators can remain focused on the actions necessary to mitigate the accident before directing their attention to hydrogen control measures and other long-term actions. The proposed extension maintains the requirement to establish hydrogen monitoring well before calculated conditions inside the containment indicate any need to initiate hydrogen control measures. Therefore, the proposed license amendment will not involve a significant reduction in a margin of safety.

Based on the above, NMPC concludes that this proposed license amendment does not involve a significant hazards consideration.

**ATTACHMENT C**

**NINE MILE POINT UNIT 2**

**LICENSE NO. NPF-69**

**DOCKET NO. 50-410**

**“Marked-Up” Copy of the Current Operating License with Insert A**

(11) Additional Condition 2

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- D. The facility requires exemptions from certain requirements of 10 CFR Part 50 and 10 CFR Part 70.
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INSERT A

(12) Additional Condition 3

The operating licensee shall be capable of establishing containment hydrogen monitoring within 3 hours of initiating emergency core cooling (safety injection) following a loss of coolant accident.

**ATTACHMENT D**  
**NINE MILE POINT UNIT 2**  
**LICENSE NO. NPF-69**  
**DOCKET NO. 50-410**

**Eligibility for Categorical Exclusion from Performing an Environmental Assessment**

10CFR51.22 provides criteria for, and identification of, licensing and regulatory actions eligible for exclusion from performing an environmental assessment. NMPC has reviewed the proposed amendment and determined that it does not involve a significant hazard consideration, and there will be no significant change in the types or a significant increase in the amounts of any effluents that may be released offsite, nor will there be any significant increase in individual or cumulative occupational radiation exposure. Therefore, the proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10CFR51.22(c)(9) and, pursuant to 10CFR51.22(b), no environmental impact statement or environmental assessment is required to be prepared in connection with this license amendment application.