

October 17, 2001

Mr. John H. Mueller
Chief Nuclear Officer
Niagara Mohawk Power Corporation
Nine Mile Point Nuclear Station
Operations Building, Second Floor
Lycoming, NY 13093

SUBJECT: NINE MILE POINT NUCLEAR STATION, UNIT NO. 2 - AMENDMENT OF
TECHNICAL SPECIFICATIONS REGARDING REACTOR PROTECTION
SYSTEM ELECTRIC POWER MONITORING (TAC NO. MB1163)

Dear Mr. Mueller:

The Commission has issued the enclosed Amendment No. 99 to Facility Operating License No. NPF-69 for the Nine Mile Point Nuclear Station, Unit No. 2 (NMP2). The amendment consists of changes to the Technical Specifications (TSs) in response to your application dated February 27, 2001, as supplemented by letter dated September 6, 2001.

The amendment revises surveillance requirements associated with Section 3.3.8.2, "Reactor Protection System (RPS) Electric Power Monitoring - Logic," and 3.3.8.3, "Reactor Protection System (RPS) Electric Power Monitoring - Scram Solenoids." Specifically, the overvoltage allowable values and associated channel calibration frequency interval are changed.

A copy of the related safety evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

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. 50-410

Enclosures: 1. Amendment No. 99 to NPF-69
2. Safety Evaluation

cc w/encls: See next page

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NIAGARA MOHAWK POWER CORPORATION

DOCKET NO. 50-410

NINE MILE POINT NUCLEAR STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 99
License No. NPF-69

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Niagara Mohawk Power Corporation (the licensee) dated February 27, 2001, as supplemented September 6, 2001, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter 1;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-69 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, as revised through Amendment No. 99 are hereby incorporated into this license. Niagara Mohawk Power Corporation shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of its issuance and shall be implemented on or before March 15, 2002.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

L. Raghavan, Acting Chief, Section I
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: October 17, 2001

ATTACHMENT TO LICENSE AMENDMENT NO. 99

TO FACILITY OPERATING LICENSE NO. NPF-69

DOCKET NO. 50-410

Replace the following pages of the Appendix A, Technical Specifications, with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove Page

3.3.8.2-4

3.3.8.3-3

Insert Page

3.3.8.2-4

3.3.8.3-3

The Technical Specification Bases document is controlled by the licensee under Technical Specifications Section 5.5.10, "Technical Specification (TS) Bases Control Program." The NRC staff recognizes that the licensee will issue retyped pages to reflect the changes indicated in the licensee's February 27, 2001, application for amendment. These pages are:

B 3.3.8.2-3

B 3.3.8.2-7

B 3.3.8.3-3

B 3.3.8.3-6

SURVEILLANCE REQUIREMENTS

NOTE

When an RPS electric power monitoring assembly is placed in an inoperable status solely for performance of required Surveillances, entry into the associated Conditions and Required Actions may be delayed for up to 6 hours provided the other RPS electric power monitoring assembly for the associated RPS logic bus maintains trip capability.

SURVEILLANCE		FREQUENCY
SR 3.3.8.2.1	Perform CHANNEL FUNCTIONAL TEST.	184 days
SR 3.3.8.2.2	Perform CHANNEL CALIBRATION. The Allowable Values shall be: <ul style="list-style-type: none"> a. Overvoltage (with time delay set to ≤ 2.5 seconds) <ul style="list-style-type: none"> Bus A ≤ 130.2 V Bus B ≤ 129.8 V b. Undervoltage (with time delay set to ≤ 2.5 seconds) <ul style="list-style-type: none"> Bus A ≥ 115.5 V Bus B ≥ 114.2 V c. Underfrequency (with time delay set to ≤ 2.5 seconds) <ul style="list-style-type: none"> Bus A ≥ 57.5 Hz Bus B ≥ 57.5 Hz 	184 days
SR 3.3.8.2.3	Perform a system functional test.	24 months

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.8.3.2	<p>Perform CHANNEL CALIBRATION. The Allowable Values shall be:</p> <p>a. Overvoltage (with time delay set to ≤ 2.5 seconds)</p> <p>Bus A ≤ 127.6 V Bus B ≤ 127.6 V</p> <p>b. Undervoltage (with time delay set to ≤ 2.5 seconds)</p> <p>Bus A ≥ 113.0 V Bus B ≥ 113.6 V</p> <p>c. Underfrequency (with time delay set to ≤ 2.5 seconds)</p> <p>Bus A ≥ 57.5 Hz Bus B ≥ 57.5 Hz</p>	184 days
SR 3.3.8.3.3	Perform a system functional test.	24 months

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 99 TO FACILITY OPERATING LICENSE NO. NPF-69
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT NUCLEAR STATION, UNIT NO. 2
DOCKET NO. 50-410

1.0 INTRODUCTION

By letter dated February 27, 2001, Niagara Mohawk Power Corporation (NMPC, the licensee) requested an amendment to the Nine Mile Point Nuclear Station, Unit No. 2 (NMP2) Technical Specifications (TSs) regarding surveillance requirements for reactor protection system (RPS) electric protective assemblies (EPAs). Specifically, the amendment would revise overvoltage Allowable Values and associated Channel Calibration Frequency interval for the RPS EPAs. EPAs provide protection to the RPS from abnormal overvoltage, undervoltage, and underfrequency conditions that could occur in its power supply. The licensee determined that TS overvoltage Allowable Values were non-conservative, in that the RPS may not be protected from abnormal voltages that could be sufficiently high to cause degradation.

In response to the NRC staff's request for additional information dated June 26, 2001, the licensee provided additional information by a letter dated September 6, 2001. The September 6, 2001, letter provided only clarifying information that did not change the initial proposed no significant hazards consideration determination provided in the February 27, 2001, application and adopted by the NRC staff.

2.0 BACKGROUND

The RPS power supply system, classified non-safety-related at NMP2, provides power to RPS logic and RPS scram solenoid buses and their essential (safety-related) loads. Essential loads powered from the RPS logic buses A and B include the RPS logic circuits, the main steam isolation valve (MSIV) logic circuits and trip solenoids, and various valve isolation logic circuits. Essential loads powered from the RPS scram solenoid buses (A and B) are the RPS scram pilot valve solenoids. The RPS power supply system (described in Section 8.3.1.1.3 of the NMP2 Updated Safety Analysis Report) provides power to these essential loads that operate the RPS in accordance with the requirements of General Design Criteria (GDC) 2, 21, and 23 of 10 CFR Part 50, Appendix A.

To assure that the RPS operates in accordance with the requirements of GDC 2, 21, and 23, EPAs are installed between the RPS and its power supply system. Two EPAs are connected in series to provide redundant protection against the effects of possible sustained abnormal voltage and frequency conditions from the power supplies. Any abnormal voltage or frequency conditions in the outputs of the power supplies would trip one or both of the EPAs, thereby isolating essential loads from their power supply and protecting them from abnormal voltage

and frequency conditions to which they may not be designed and qualified. The capability of the RPS to perform its safety function (trip and scram of the reactor on loss of alternating current power or in response to a reactor trip signal) is thus maintained. In addition, to minimize the potential for inadvertent trip of the EPAs (and thus minimize the potential for inadvertent trip of the reactor), the EPAs are also required to be designed such that they will not trip over the normal expected operating voltage and frequency ranges of the RPS power supply. Operation of the RPS power supplies within their normal operating voltage and frequency ranges should (within margin) not cause trip of the EPAs.

3.0 EVALUATION OF PROPOSED CHANGES

The licensee proposed to make these changes to the TSs: (1) reduce the Allowable Values for overvoltage trip of the EPAs, and (2) reduce the frequency for performing Channel Calibration for the EPA's overvoltage, undervoltage, and underfrequency trip functions. The trip setpoints for overvoltage, undervoltage, and underfrequency (and also allowable values for undervoltage and underfrequency) are not affected by these proposed changes.

3.1 Reduce Allowable Values for Overvoltage Trip (Surveillance Requirement (SR) 3.3.8.2.2 and 3.3.8.3.2)

The licensee stated that these changes are proposed to correct previous non-conservative analysis deficiencies. The proposed changes are:

SR 3.3.8.2.2 - Reduce Bus A overvoltage Allowable Value from 133.8 V to 130.2 V, and Bus B from 133.8 V to 129.8 V.

SR 3.3.8.3.2 - Reduce Bus A overvoltage Allowable Value from 130.5 V to 127.6 V, and Bus B from 131.7 V to 127.6 V.

The EPA's overvoltage trip functions are based on protecting RPS essential loads (the RPS scram pilot valve solenoids and MSIV trip solenoids) from damage due to overheating by disconnecting their associated electrical buses from their power supplies when potentially damaging (abnormal) overvoltage conditions exist. The RPS scram pilot valve solenoids are the only essential loads powered from the RPS scram solenoid buses. The MSIV trip solenoids are the most limiting loads for postulated overvoltage conditions of the essential loads powered from the RPS logic buses. The licensee's proposed overvoltage Allowable Values would provide protection from voltages that could be sufficiently high to cause insulation degradation due to overheating.

The overvoltage analytical limits for the EPAs are based on the highest possible voltages that would not exceed the manufacturer's maximum continuous operating design ratings of the RPS scram pilot valve solenoids and MSIV trip solenoids. The licensee concluded that the proposed changes provide assurance that RPS essential loads will not exceed their maximum continuous operating ratings for postulated overvoltage conditions. As such, the proposed changes provide assurance that the EPAs will be capable of performing their protective safety functions. This, in turn, will assure that the RPS essential loads will remain capable of performing their

respective safety functions. Therefore, the licensee stated that this proposed TS change will not adversely affect the health and safety of the public and will not be inimical to the common defense and security.

Components are required to be replaced before the end of their qualified service life. With this required replacement, the NRC staff agrees that the use of the maximum continuous operating voltage ratings for essential loads in order to establish Allowable Values provides the required protection. The proposed changes, therefore, provide assurance that the RPS will meet the requirements of GDC 2, 21, and 23 and is considered acceptable.

For the MSIV trip solenoids supplied by GE, the associated voltage calculations credits an increase from the maximum design rating of 125 volts to 128 volts. The licensee indicated that this increased rating was evaluated considering its effect on qualified life. In response to the NRC staff's request for additional information, the licensee further indicated that the solenoids are designed for 40 years of operation if operated continuously at 115 volts (i.e., the solenoids' normal rating is 115 volts). If operated continuously at the maximum continuous rating of 125 volts, the qualified service life would be reduced to somewhat less than 40 years. If operated at 128 volts (a voltage above the maximum design rating), the solenoids are designed for 2.18 years of operation (i.e., the solenoids have a qualified service life of 2.18 years if operated continuously at 128 volts). The maximum normal (steady-state) voltage expected from the RPS power supplies for the scram pilot valve solenoids are as follows:

Motor-Generator Sets 1A/1B (normal source) = 126.48/127.5 volts
Step-down Transformers (alternate source) = 126.6 volts

The maximum normal (steady-state) voltage expected from the RPS power supplies for the MSIV trip solenoids are as follows:

Uninterruptible Power Supplies 3A/3B (normal source) = 126.48 volts
Step-down Transformers (alternate source) = 127.72

Solenoids are replaced before they reach 2.18 years of operation at normal voltages. For normal/abnormal voltages which may occur up to 128 volts, the solenoids will remain capable of performing their safety function based on their qualified service life. At abnormal voltages above 128 volts, the EPA's isolate the solenoids from the abnormal voltage thus assuring that the RPS essential loads will remain capable to perform their respective safety functions if needed. The proposed change, therefore, provides assurance that the RPS will meet the requirements of GDC 2, 21, and 23 and is considered acceptable.

Also, these solenoids (i.e., the MSIV trip solenoids supplied by GE) are in the process of being replaced with solenoids designed for 40 years of operation if operated continuously at the nominal rating of 120 volts. The replacement solenoids have a maximum design continuous rating of 132 volts. Thus, the replacement solenoids have higher nominal and maximum continuous voltage ratings than the GE supplied solenoids. However, if the replacement solenoids were operated continuously at 128 volts, the qualified service life would be less than 40 years. The improved electrical characteristics of the replacement solenoids may allow the qualified service life to be extended beyond the current 2.18 years.

3.2 Reduce Calibration Frequency Interval (SR 3.3.8.2.2)

Due to the limited margin available for instrument drift (i.e., the margin between the upper setpoint limit and the Allowable Value), the licensee indicated it was necessary to reduce the Channel Calibration Frequency interval from 24 months to 184 days. The proposed reduction provides assurance that the Allowable Values will not be exceeded during the interval between Channel Calibrations by appropriately limiting instrument drift. Thus, the licensee concluded that the proposed overvoltage Allowable Values will continue to provide adequate margins to assure that the EPAs will not trip over the normal expected operating voltage and frequency ranges of the RPS power supply.

The reduced Channel Calibration Frequency interval necessitates testing on-line during power operation. The licensee indicated that on-line testing capability is provided by using testing devices to isolate the individual sensing relays and associated breaker trip contacts. As a result, calibration and testing can be performed during plant operation without tripping the EPAs (or loss of power and reactor trip).

The proposed change: (1) reduces overvoltage Allowable Values for EPAs to provide increased assurance that RPS essential loads will be operated within their design/qualified ratings, (2) reduces the margin between the expected normal operating voltage range of the RPS power supply and the voltage range that will be permitted by the proposed reduced TS overvoltage Allowable Values, (3) reduces frequency of Channel Calibration to compensate for reduced margin, and (4) increases the time for plant operation with an EPA bypassed for calibration and/or testing.

In its letter of September 6, 2001, the licensee indicated that the proposed reduced voltage margin (Section 3.1 above), in combination with the reduced surveillance frequency, would assure that the probability for tripping of an EPA will not change. Specifically, the proposed calibration frequency of 184 days was selected based on analysis which provides assurance that there will be no change in the probability for EPA trip (and thus reactor trip) due to setpoint drift.

3.3 Proposed Changes to Associated TS Bases

The licensee also proposed to revise the Technical Specification Bases document, which is controlled by the licensee under TS Section 5.5.10, "Technical Specification (TS) Bases Control Program," to reflect the above technical changes. The NRC staff recognizes that the licensee will issue retyped pages to reflect the changes indicated in the licensee's February 27, 2001, application for amendment.

3.4 Conclusion of Evaluation

The NRC staff found that the proposed reduction of overvoltage Allowable Values, in conjunction with the increased surveillance frequency (i.e., reduced interval), will assure that GDC 2, 21, and 23 are met. The staff finds the proposed TS changes acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, New York State official, Mr. Jack Spath, was notified of the proposed issuance of the amendment. Mr. Spath had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes requirements with respect to use of facility components located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The staff has previously issued a proposed finding that the amendment involves no significant hazards consideration (66 FR 15928), and there has been no public comment on such finding. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: J. Knox

Date: October 17, 2001

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