Mr. John H. Mueller
Chief Nuclear Officer
Niagara Mohawk Power Corporation
Nine Mile Point Nuclear Station
Operations Building, Second Floor
P.O. Box 63
Lycoming, NY 13093

March 31, 1[illegible]

SUBJECT: ISSUANCE OF AMENDMENT FOR NINE MILE POINT NUCLEAR STATION, UNIT NO. 2 (TAC NO. MA0150)

Dear Mr. Mueller:

The Commission has issued the enclosed Amendment No. 80 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 transmitted by letter dated October 31, 1997, as supplemented by letter dated February 3, 1998.

This amendment changes TS to support design changes to upgrade the analog-based average power range monitor (APRM) system with General Electric's Nuclear Measurement Analysis and Control Power Range Neutron Monitor System (NUMAC-PRNMS), including an Oscillation Power Range Monitor (OPRM) function.

The amendment and revised TSs are to be effective following installation of the NUMAC-PRNMS. As discussed in your application and the enclosed Safety Evaluation, the OPRM functions will be operated in the "indicate only" mode for one fuel cycle. During this test period, existing interim corrective actions for determining and mitigating power oscillations will remain in effect. Application for further license amendment for OPRM-specific TS changes will be submitted. Following NRC staff review and approval of the operating data and license amendment, the OPRM trip function will be connected to the reactor protection system.

A copy of the related Safety Evaluation is enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register Notice.

Sincerely,

ORIGINAL SIGNED BY:

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

Docket No. 50-410

Enclosures: 1. Amendment No. 80 to NPF-69
2. Safety Evaluation

cc w/encls: See next page

DFol

DOCUMENT NAME: G:\NMP2\NM2A0150.AMD

To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

OFFICE	PM:PDI-1	E	LA:PDI-1		D:PDI-1		OGC GS		
NAME	DHood/rsl DSH		SLittle		SBajwa		RBachmann		
DATE	03/17/98		03/17/98		03/31/98		03/18/98		

Official Record Copy

DF-1

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

March 31, 1998

Mr. John H. Mueller
Chief Nuclear Officer
Niagara Mohawk Power Corporation
Nine Mile Point Nuclear Station
Operations Building, Second Floor
P.O. Box 63
Lycoming, NY 13093

SUBJECT: ISSUANCE OF AMENDMENT FOR NINE MILE POINT NUCLEAR STATION, UNIT NO. 2 (TAC NO. MA0150)

Dear Mr. Mueller:

The Commission has issued the enclosed Amendment No. 80 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 transmitted by letter dated October 31, 1997, as supplemented by letter dated February 3, 1998.

This amendment changes TS to support design changes to upgrade the analog-based average power range monitor (APRM) system with General Electric's Nuclear Measurement Analysis and Control Power Range Neutron Monitor System (NUMAC-PRNMS), including an Oscillation Power Range Monitor (OPRM) function.

The amendment and revised TSs are to be effective following installation of the NUMAC-PRNMS. As discussed in your application and the enclosed Safety Evaluation, the OPRM functions will be operated in the "indicate only" mode for one fuel cycle. During this test period, existing interim corrective actions for determining and mitigating power oscillations will remain in effect. Application for further license amendment for OPRM-specific TS changes will be submitted. Following NRC staff review and approval of the operating data and license amendment, the OPRM trip function will be connected to the reactor protection system.

A copy of the related Safety Evaluation is enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register Notice.

Sincerely,

Darl S. Hood

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

Docket No. 50-410

Enclosures: 1. Amendment No. 80 to NPF-69
2. Safety Evaluation

cc w/encls: See next page

John H. Mueller
Niagara Mohawk Power Corporation

Nine Mile Point Nuclear Station
Unit No. 2

cc:

Regional Administrator, Region I
U. S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Resident Inspector
Nine Mile Point Nuclear Station
P.O. Box 126
Lycoming, NY 13093

Mr. Jim Rettberg
NY State Electric & Gas Corporation
Corporate Drive
Kirkwood Industsrial Park
P.O. Box 5224
Binghamton, NY 13902-5224

Mr. John V. Vinquist, MATS Inc.
P.O. Box 63
Lycoming, NY 13093

Supervisor
Town of Scriba
Route 8, Box 382
Oswego, NY 13126

Mr. Richard Goldsmith
Syracuse University
College of Law
E.I. White Hall Campus
Syracuse, NY 12223

Charles Donaldson, Esquire
Assistant Attorney General
New York Department of Law
120 Broadway
New York, NY 10271

Mr. Timothy S. Carey
Chair and Executive Director
State Consumer Protection Board
5 Empire State Plaza, Suite 2101
Albany, NY 12223

Mark J. Wetterhahn, Esquire
Winston & Strawn
1400 L Street, NW.
Washington, DC 20005-3502

Gary D. Wilson, Esquire
Niagara Mohawk Power Corporation
300 Erie Boulevard West
Syracuse, NY 13202

Mr. F. William Valentino, President
New York State Energy, Research,
and Development Authority
Corporate Plaza West
286 Washington Avenue Extension
Albany, NY 12203-6399

DATED: March 31, 1998

AMENDMENT NO. 80 TO FACILITY OPERATING LICENSE NO. NPF-69 NINE MILE POINT NUCLEAR POWER STATION UNIT NO. 2

Docket File
PUBLIC
PDI-1 R/F
J. Zwolinski
S. Bajwa
S. Little
D. Hood
OGC
G. Hill (2), T-5 C3
W. Beckner
M. Waterman
ACRS
C. Hehl, Region I
T. Harris (e-mail only TLH3)

cc: Plant Service list

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

NIAGARA MOHAWK POWER CORPORATION

DOCKET NO. 50-410

NINE MILE POINT NUCLEAR STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 80
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 October 31, 1997, as supplemented by letter dated February 3, 1998, 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. 80 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 to be implemented upon completion and acceptance of design modifications currently scheduled for the spring of 1998.

FOR THE NUCLEAR REGULATORY COMMISSION

S. Singh Bajwa, Director
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: March 31, 1998

ATTACHMENT TO LICENSE AMENDMENT NO. 80

TO FACILITY OPERATING LICENSE NO. NPF-69

DOCKET NO. 50-410

Replace the following page of the Appendix A Technical Specifications with the attached page. The revised page is identified by Amendment number and contains vertical lines indicating the areas of change.

Remove	Insert
2-3	2-3
3/4 3-1	3/4 3-1
3/4 3-1a	3/4 3/1a
3/4 3-2	3/4 3-2
3/4 3-4	3/4 3-4
3/4 3-7	3/4 3-7
3/4 3-9	3/4 3-9
3/4 3-64	3/4 3-64
3/4 3-65	3/4 3-65
B3/4 3-1	B3/4 3-1
B3/4 3-2	B3/4 3-2

TABLE 2.2.1-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUE
1. Intermediate Range Monitor, - Neutron Flux - High	≤120/125 divisions of full scale	≤122/125 divisions of full scale
2. Average Power Range Monitor:		
a. Neutron Flux - Upscale, Setdown	≤15% of RATED THERMAL POWER	≤20% of RATED THERMAL POWER
b. Flow-Biased Simulated Thermal Power - Upscale		
1) Flow-Biased 2) High-Flow-Clamped	≤0.58 (W-ΔW)[(a)] + 59%, with a maximum of ≤113.5% of RATED THERMAL POWER	≤0.58 (W-ΔW)[(a)] + 62%, with a maximum of ≤115.5% of RATED THERMAL POWER
c. Fixed Neutron Flux - Upscale	≤118% of RATED THERMAL POWER	≤120% of RATED THERMAL POWER
d. Inoperative	NA	NA
e. 2-Out-Of-4 Voter	NA	NA
3. Reactor Vessel Steam Dome Pressure - High	≤1052 psig	≤1072 psig
4. Reactor Vessel Water Level - Low, Level 3	≥159.3 in. above instrument zero*	≥157.8 in. above instrument zero
5. Main Steam Line Isolation Valve - Closure	≤8% closed	≤12% closed
6. Main Steam Line Radiation [(b)] - High	≤3.0 x full-power background	≤3.6 x full-power background
7. Drywell Pressure - High	≤1.68 psig	≤1.88 psig

* See Bases Figure B3/4 3-1.

(a) The Average Power Range Monitor Scram Function varies as a function of recirculation loop drive flow (W). ΔW is defined as the difference in indicated drive flow (in percent of drive flow which produces rated core flow) between two loop and single loop operation at the same core flow. ΔW = 0 for two loop operation. ΔW = 5% for single loop operation.

(b) See footnote (**) to Table 3.3.2-2 for trip setpoint during hydrogen addition test.

3/4.3.1 REACTOR PROTECTION SYSTEM INSTRUMENTATION

LIMITING CONDITIONS FOR OPERATION

3.3.1 As a minimum, the reactor protection system instrumentation channels shown in Table 3.3.1-1 shall be OPERABLE.

APPLICABILITY: As shown in Table 3.3.1-1.

ACTION:

a. With one channel required by Table 3.3.1-1 inoperable in one or more Functional Units, place the inoperable channel and/or that trip system in the tripped condition* within 12 hours. The provisions of Specification 3.0.4 are not applicable.

b. With two or more channels required by Table 3.3.1-1 inoperable in one or more Functional Units:

1. Within one hour, verify sufficient channels remain OPERABLE or tripped* to maintain trip capability in the Functional Unit, and

2. Within 6 hours, place the inoperable channel(s) in one trip system and/or that trip system** in the tripped condition*, and

3. Within 12 hours, restore the inoperable channels in the other trip system to an OPERABLE status or tripped*.

Otherwise, take the ACTION required by Table 3.3.1-1 for the Functional Unit.

---

* An inoperable channel or trip system need not be placed in the tripped condition where this would cause the Trip Function to occur. In these cases, if the inoperable channel is not restored to OPERABLE status within the required time, the ACTION required by Table 3.3.1-1 for the Functional Unit shall be taken.

For Functional Units 2.a, 2.b, 2.c, and 2.d, inoperable channels shall be placed in the tripped condition to comply with Action a. Because these Functional Units provide trip inputs to both trip systems, placing either trip system in trip is not applicable. For Functional Units 2.a, 2.b, 2.c, and 2.d, Action b.3 applies without regard to "in the other trip systems."

** This ACTION applies to that trip system with the most inoperable channels; if both trip systems have the same number of inoperable channels, the ACTION can be applied to either trip system. Action b.2 is not applicable for Functional Units 2.a, 2.b, 2.c, and 2.d.

SURVEILLANCE REQUIREMENTS

4.3.1.1 Each reactor protection system instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL FUNCTIONAL TEST, and CHANNEL CALIBRATION operations for the OPERATIONAL CONDITIONS and at the frequencies shown in Table 4.3.1.1-1.

4.3.1.2 LOGIC SYSTEM FUNCTIONAL TESTS and simulated automatic operation of all channels shall be performed at least once per 18 months, except Table 4.3.1.1-1, Functions 2.a, 2.b, 2.c, 2.d, and 2.e. Functions 2.a, 2.b, 2.c, and 2.d do not require LOGIC SYSTEM FUNCTIONAL TESTS. For Function 2.e, tests shall be performed at least once per 24 months. LOGIC SYSTEM FUNCTIONAL TEST for Function 2.e includes simulating APRM trip conditions at the APRM channel inputs to the voter channel to check all combinations of two tripped inputs to the 2-out-of-4 voter logic in the voter channels.

4.3.1.3 The REACTOR PROTECTION SYSTEM RESPONSE TIME of each required reactor trip functional unit shall be demonstrated to be within its limit at least once per 18 months. Neutron detectors, Functions 2.a, 2.b, 2.c, 2.d, and Function 2.e digital electronics are exempt from response time testing. Each test shall include at least one channel per Trip System so that all channels are tested at least once per N times 18 months, where N is the total number of redundant channels in a specific reactor Trip System.

TABLE 3.3.1-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION

	FUNCTIONAL UNIT	APPLICABLE OPERATIONAL CONDITIONS	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM (a)	ACTION
1.	Intermediate Range Monitors:			
	a. Neutron Flux - High	2	3	1
		3, 4	3	2
		5(b)	3	3
	b. Inoperative	2	3	1
		3, 4	3	2
		5	3	3
2.	Average Power Range Monitor(c):			
	a. Neutron Flux - Upscale, Setdown	2	3(l)	1
		5(k)	3(l)	3
	b. Flow Biased Simulated Thermal Power - Upscale	1	3(l)	4
	c. Fixed Neutron Flux - Upscale	1	3(l)	4
	d. Inoperative	1, 2	3(l)	1
		5(k)	3(l)	3
	e. 2-Out-Of-4 Voter	1, 2	2	1
		5(k)	2	3
3.	Reactor Vessel Steam Dome Pressure - High	1, 2(d)	2	1
4.	Reactor Vessel Water Level - Low, Level 3	1, 2	2	1

TABLE NOTATIONS

(a) A channel may be placed in an inoperable status for up to 6 hours for required surveillance without placing the Trip System in the tripped condition provided at least one OPERABLE channel in the same Trip System is monitoring that parameter.

(b) Unless adequate shutdown margin has been demonstrated per Specification 3.1.1, and the Refuel position one-rod-out interlock is OPERABLE per Specification 3.9.1, the shorting links shall be removed from the RPS circuitry prior to and during the time any control rod is withdrawn.*

(c) An APRM channel is inoperable if there are less than 3 LPRM inputs per level or less than 20 LPRM inputs to an APRM channel.

(d) This function is not required to be OPERABLE when the reactor pressure vessel head is removed per Specification 3.10.1.

(e) This function shall be automatically bypassed when the reactor mode switch is not in the Run position.

(f) This function is not required to be OPERABLE when PRIMARY CONTAINMENT INTEGRITY is not required.

(g) Also actuates the standby gas treatment system.

(h) With any control rod withdrawn. Not applicable to control rods removed per Specification 3.9.10.1 or 3.9.10.2.

(i) This function shall be automatically bypassed when turbine first stage pressure is less than or equal to 136.4** psig, equivalent to THERMAL POWER less than 30% of RATED THERMAL POWER.

(j) Also actuates the EOC-RPT system.

(k) Required to be OPERABLE only during shutdown margin demonstrations performed per Specification 3.10.3.

(l) Since each APRM provides inputs to both trip systems, the minimum operable channels specified in Table 3.3.1-1 are the total APRM channels required (i.e., it is not on a trip system basis). The 6 hour allowed test time to complete a channel surveillance test (Note (a) above) is applicable provided at least two OPERABLE channels are monitoring that parameter.

---

* Not required for control rods removed per Specification 3.9.10.1 or 3.9.10.2.

** To allow for instrument accuracy, calibration and drift, a setpoint of less than or equal to 125.8 psig turbine first stage pressure shall be used.

TABLE 4.3.1.1-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION(a)	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
1. Intermediate Range Monitors:				
a. Neutron Flux - High	S/U, S,(b) S	S/U(c), W, R(d) W	R R	2 3, 4, 5
b. Inoperative	NA	W	NA	2, 3, 4, 5
2. Average Power Range Monitor(e):				
a. Neutron Flux - Upscale, Setdown	D, (b) D	SA(i) SA	R R	2 5(n)
b. Flow-Biased Simulated Thermal Power - Upscale	D	SA(h)	W(g), R(f)	1
c. Fixed Neutron Flux - Upscale	D	SA	W(g), R	1
d. Inoperative	NA	SA	NA	1, 2, 5(n)
e. 2-Out-Of-4 Voter	D	SA	NA	1, 2, 5(n)
3. Reactor Vessel Steam Dome Pressure - High	S	Q	R(k)	1, 2
4. Reactor Vessel Water Level - Low, Level 3	S	Q	R(k)	1, 2
5. Main Steam Line Isolation Valve - Closure	NA	Q	R	1
6. Main Steam Line Radiation - High	S	Q	R	1, 2(j)
7. Drywell Pressure - High	S	Q	R(k)	1, 2(l)

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TABLE NOTATIONS

(a) Neutron detectors may be excluded from CHANNEL CALIBRATION.

(b) The IRM and SRM channels shall be determined to overlap for at least 1/2 decade during each startup after entering OPERATIONAL CONDITION 2, and the IRM and APRM channels shall be determined to overlap for at least 1/2 decade during each controlled shutdown, if not performed within the previous 7 days.

(c) Within 24 hours before startup, if not performed within the previous 7 days.

(d) Perform a CHANNEL FUNCTIONAL TEST with the mode switch in Startup/Hot Standby and the plant in the COLD SHUTDOWN or REFUEL Condition.

(e) The LPRMs shall be calibrated at least once per 1000 effective full-power hours (EFPH) using the TIP system.

(f) Calibration includes the flow input function.

(g) This calibration shall consist of the adjustment of the APRM channel to conform to the power values calculated by a heat balance during OPERATIONAL CONDITION 1 when THERMAL POWER $\geq$25% of RATED THERMAL POWER. Adjust the APRM channel if the absolute difference is greater than 2% of RATED THERMAL POWER. Any APRM channel gain adjustment made in compliance with Specification 3.2.2 shall not be included in determining the absolute difference.

(h) CHANNEL FUNCTIONAL TEST shall include the flow input function, excluding the flow transmitter.

(i) Not required to be performed when entering Mode 2 from Mode 1 until 12 hours after entering Mode 2.

(j) This function is not required to be OPERABLE when the reactor pressure vessel head is removed per Specification 3.10.1.

(k) Perform the calibration procedure for the trip unit setpoint at least once per 92 days.

(l) This function is not required to be OPERABLE when PRIMARY CONTAINMENT INTEGRITY is not required to be OPERABLE per Special Test Exception 3.10.1.

(m) With any control rod withdrawn. Not applicable to control rods removed per Specification 3.9.10.1 or 3.9.10.2.

(n) Required to be OPERABLE only during shutdown margin demonstrations performed per Specification 3.10.3.

TABLE 4.3.6-1

CONTROL ROD BLOCK INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION (a)	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
1. Rod Block Monitor				
a. Upscale	NA	SA(c)	R	1*
b. Inoperative	NA	SA(c)	NA	1*
c. Downscale	NA	SA(c)	R	1*
2. Source Range Monitors				
a. Detector Not Full In	NA	S/U(b), W	NA	2, 5
b. Upscale	NA	S/U(b), W	Q	2, 5
c. Inoperative	NA	S/U(b), W	NA	2, 5
d. Downscale	NA	S/U(b), W	Q	2, 5
3. Intermediate Range Monitors				
a. Detector Not Full In	NA	S/U(b), W	NA	2, 5
b. Upscale	NA	S/U(b), W	Q	2, 5
c. Inoperative	NA	S/U(b), W	NA	2, 5
d. Downscale	NA	S/U(b), W	Q	2, 5
4. Scram Discharge Volume				
Water Level - High, Float Switch	NA	Q	R	1, 2, 5**

TABLE 4.3.6-1 (Continued)

CONTROL ROD BLOCK INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION (a)	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
5. Reactor Coolant System Recirculation Flow				
a. Upscale	NA	SA	R	1
b. Inoperative	NA	SA	NA	1
c. Comparator	NA	SA	R	1
6. Reactor Mode Switch				
a. Shutdown Mode	NA	R	NA	3, 4
b. Refuel Mode	NA	R	NA	5

BASES

3/4.3.1 REACTOR PROTECTION SYSTEM INSTRUMENTATION

The reactor protection system (RPS) automatically initiates a reactor scram to:

a. Preserve the integrity of the fuel cladding.

b. Preserve the integrity of the reactor coolant system.

c. Minimize the energy which must be adsorbed following a loss-of-coolant accident, and

d. Prevent inadvertent criticality.

This specification provides the Limiting Conditions for Operation necessary to preserve the ability of the system to perform its intended function even during periods when instrument channels may be out of service because maintenance is being performed. When necessary, one channel may be made inoperable for brief intervals to conduct required surveillance.

The reactor protection system is made up of two independent trip systems. There are usually four channels to monitor each parameter, and there are two channels in each trip system. The outputs of the channels in a trip system are combined in a logic so that either channel will trip that trip system. The tripping of both trip systems will produce a reactor scram. The APRM system is divided into four APRM channels and four 2-out-of-4 voter channels. Each APRM channel provides inputs to each of the four voter channels. The four voter channels are divided into two groups of two each, with each group of two providing inputs to one RPS trip system. The system is designed to allow one APRM channel, but no voter channels, to be bypassed. Note (l) to Table 3.3.1-1 states that the Minimum Operable Channels in Table 3.3.1-1 for the APRM Functional Units (except the 2-out-of-4 voter Functional Unit) are the total number of APRM channels required and are not on a trip system basis. Therefore, when only one required APRM is inoperable, Action a is the only Action required to be entered. This Action requires the APRM to be restored to operable status or placed in the tripped condition within 12 hours. As stated in Action a, footnote *, placing either trip system in trip is not applicable since the APRM channels are not on a trip system basis. When two or more required APRMs are inoperable, Action b is entered. Action b.1 requires verification of trip capability in the affected functional unit within one hour (i.e., one APRM operable and one APRM in the tripped condition). Action b.2, as stated in footnote **, is not applicable since the APRM channels are not on a trip system basis. Action b.3 requires that the remaining required inoperable APRM be restored to operable status within 12 hours.

The system meets the intent of IEEE-279 for nuclear power plant protection systems. Specified surveillance intervals and surveillance and maintenance outage times have been determined in accordance with NEDC-30851P-A, "Technical Specification Improvement Analyses for BWR Reactor Protection System," and NEDC-32410P-A, "Nuclear Measurement Analysis and Control Power Range Neutron Monitor (NUMAC-PRNM) Retrofit Plus Option III Stability Trip Function." The bases for the trip settings of the RPS are discussed in the bases for Specification 2.2.1. When a channel is placed in an inoperable status solely for performance of required surveillances, entry into LCO and required ACTIONS may be delayed, provided the associated function maintains RPS trip capability.

The measurement of response time at the specified frequencies provides assurance that the protective functions associated with each channel are completed within the time limit assumed in the safety analyses. Response time may be demonstrated by any series of sequential, overlapping or total channel test measurement, provided such tests demonstrate the total channel response time as defined. Sensor response time verification may be demonstrated by either (1) inplace, onsite, or offsite test measurements, or (2) utilizing replacement sensors with certified response times.

3/4.3.2 ISOLATION ACTUATION INSTRUMENTATION

This specification ensures the effectiveness of the instrumentation used to mitigate the consequences of accidents by prescribing the OPERABILITY trip setpoints for isolation of the reactor systems. When necessary, one channel may be inoperable for brief intervals to conduct required surveillance. Specified surveillance intervals and surveillance and maintenance outage times have been determined in accordance with NEDC-30851P-A, Supplement 2, "Technical Specification Improvement Analyses for BWR Isolation Instrumentation Common to RPS and ECCS Instrumentation," and with NEDC-31677P-A, "Technical Specification Improvement Analyses for BWR Isolation Actuation Instrumentation." When a channel is placed in an inoperable status solely for performance of required surveillances, entry into LCO and required ACTIONS may be delayed, provided the associated function maintains primary containment isolation capability. Some of the trip settings may have tolerances explicitly stated where both the high and low values are critical and may have a substantial effect on safety. The setpoints of other instrumentation, where only the high or low end of the setting has a direct bearing on safety, are established at a level away from the normal operating range to prevent inadvertent actuation of the systems involved.

Except for the MSIVs, the FSAR Chapter 15 safety analysis does not address individual sensor response times or the response times of the logic systems to which the sensors are connected. For AC-operated valves, it is assumed that the AC power supply is lost and is restored by startup of the emergency diesel generators. In this event, a time of 13 seconds is assumed before the valve starts to move. In addition to the pipe break, the failure of the DC-operated valve is assumed; thus the signal delay (sensor response) is concurrent with the 13-second diesel startup. The safety analysis considers an allowable inventory loss in each case which in turn determines the valve speed in conjunction with the 13-second delay. It follows that checking the valve speeds and the 13-second time for establishing emergency power will establish the response time for the isolation functions.

Operation with a trip set less conservative than its Trip Setpoint but within its specified Allowable Value is acceptable on the basis that the difference between each Trip Setpoint and the Allowable Value is an allowance for instrument drift specifically allocated for each trip in the safety analysis. The Trip Setpoint and Allowable Value also contain additional margin for instrument accuracy and calibration capability.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO80 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 October 31, 1997, as supplemented by letter dated February 3, 1998, Niagara Mohawk Power Corporation (the licensee), proposed license amendments to change the Technical Specifications (TSs) for Nine Mile Point Nuclear Station, Unit No. 2 (NMP2). The proposed amendments reflect design changes that upgrade the analog-based average power range monitor (APRM) system at NMP2 with a General Electric (GE) Company Nuclear Measurement Analysis and Control Power Range Neutron Monitor (NUMAC-PRNM) system, including an Oscillation Power Range Monitor (OPRM) function.

The licensee's proposed TS changes applicable to the APRM portion of the NMP2 TS are to be implemented following installation of the NUMAC-PRNMS. The OPRM functions will be operated in the "indicate only" test mode for one fuel cycle. During this test period, the existing interim corrective actions for determining and mitigating power oscillations will remain in effect. A separate, subsequent amendment will be requested to obtain OPRM-specific TS. Following NRC staff review and approval of the operating data and license amendment, the OPRM trip function will be connected to the reactor protection system (RPS). The following safety evaluation addresses the APRM TS changes for NMP2.

By letter dated September 5, 1995, the staff approved GE licensing topical report (LTR) NEDC-32410P, "Nuclear Measurement Analysis and Control Power Range Neutron Monitor (NUMAC-PRNM) Retrofit Plus Option III Stability Trip Function." The NRC staff review of this topical report determined that NEDC-32410P contains acceptable guidance for replacing the existing power range monitors in a boiling-water reactor (BWR) with a digital NUMAC-PRNMS. NEDC-32410P also contains guidance to ensure digital upgrade issues, relevant standards and guidelines, and TS are adequately addressed.

The licensee's supplemental submittal of February 3, 1998, provided additional information in support of the initial application for amendment. It does not affect the Commission's finding of no significant hazards consideration that was published in the Federal Register (62 FR 68310, December 31, 1997).

2.0 SYSTEM DESCRIPTION

Using the existing local power range monitors (LPRMs) and the recirculation coolant loop flows, the NUMAC-PRNMS provides APRM and OPRM trip signals to the RPS. The APRM system averages LPRM signals, processes flow signals from the reactor core recirculation flow instrumentation, and then compares the results to RPS trip setpoints. The OPRM detects and suppresses reactor core power instabilities using the Option III approach described in LTR NEDO-31960, "BWR Owners' Group Long-Term Stability Solutions Licensing Methodology," dated June 1991, which was approved by the staff.

The GE NUMAC-PRNMS consists of four APRM channels and four voter channels. Trip signals from each of the four APRM channels are sent to all four voter channels. One voter module is dedicated to each RPS trip relay. A trip from any one unbypassed APRM will result in a "half-trip" in all four of the voter channels, but no trip inputs to either RPS trip system. A reactor trip occurs when two or more of the four APRM functions or two or more of the four OPRM functions calculate a trip condition. The voters perform a vote of the OPRM channel trip outputs separate from the APRM trip outputs (i.e., an OPRM trip in one channel and an APRM trip in another channel will not result in a reactor trip from two of four voters in a trip state).

The NUMAC-PRNM system provides LPRM, APRM, recirculation flow values, APRM upscale, downscale, bypass, and inoperative; rod block monitor (RBM) upscale, downscale, bypass, and inoperative; flow reference; and flow compare signals in digital form. This information is input to the plant computer through a multiplexed fiber-optic data link, except for the sequence of events monitoring, for which existing interfaces are being retained. To allow connection to existing interfaces in the plant computer system, an intermediate Multi-Vendor Data Acquisition System (MVDAS) will be added to transform the digital information on the multiplexed fiber-optic data link to a form that can be accepted by the plant computer system.

The MVDAS is a microprocessor controlled VersaModule Eurocard (VME) bus-based assembly that uses commercial components. Software to control the unit and databases to identify points, assign analog outputs, and assign position in data streams are downloaded into the MVDAS as part of the setup process. The MVDAS unit logic includes health checks to ensure correct operation. All multiplexed messages include error checking codes to detect message errors during transmission. Critical messages from the NUMAC-PRNM system to the MVDAS include diagnostic assessments that can detect loss of incoming signals. Internal checks in the MVDAS include hardware checks to ensure that the MVDAS is functioning and assessing hardware performance. These checks include clock monitors, memory monitors, and remote device response monitors.

The MVDAS receives the digital information and produces analog outputs via analog-to-digital output cards and bistable digital outputs via digital output cards to connect to the existing computer system. The MVDAS also provides bidirectional communications between the NUMAC-PRNM system and the 3D Monicore computer through an Ethernet connection. Data available to the 3D Monicore computer includes reactor power stability data, LPRM/APRM gains, and LPRM current to voltage test data. Additionally, the 3D Monicore computer can send percent core thermal power for APRM gain calculations and LPRM gain adjustment factors to the NUMAC-PRNM system. The gain adjustment factors are applied only after manual acceptance of the factors at the NUMAC-PRNM system equipment.

3.0 EVALUATION

As stated in the staff's safety evaluation of NEDC-32410P, to receive NRC approval of a NUMAC-PRNMS installation, a licensee must confirm:

1. The applicability of NEDC-32410P, including clarifications and reconciled differences between the specific plant design and the topical report design descriptions,

2. The applicability of the BWR Owners' Group topical reports that address the NUMAC-PRNMS and associated instability functions, setpoints and margins,

3. Plant-specific revised TSs for the NUMAC-PRNM system functions are consistent with NEDC-32410P, Appendix H, and Supplement 1,

4. Plant-specific environmental conditions are enveloped by the NUMAC-PRNM system equipment environmental qualification values,

5. Administrative controls are provided for manually bypassing APRM/OPRM channels or protective functions, and for controlling access to the APRM/OPRM panel and channel bypass switch, and

6. Any changes to the plant operator's panel have received human factors reviews per plant-specific procedures.

The licensee's actions for NMP2 with regard to the above conditions are discussed in the following sections.

3.1 Applicability of the NUMAC-PRNM System Design to the NMP2 Plant Design

The NRC staff compared the applicable NMP2 design features with the corresponding design features in NEDC-32410P-A. The NMP2 unit is a GE BWR/4; a BWR design addressed in the LTR. Consistent with the LTR system description, the six APRM channels currently used in NMP2 will be combined into four 2-out-of-4 logic channels that will provide inputs through dedicated RPS channel voters to the four RPS channels. These proposed design modifications conform to the NUMAC-PRNM system design description in NEDC-32410P-A, and are compatible with the existing plant neutron monitoring system and RPS. Therefore, the staff finds that the NUMAC-PRNMS design is applicable to the NMP2 unit.

MVDAS health checks, error checking, man-machine interfaces, and software/hardware diagnostics are design features that monitor system integrity and minimize the effects of the new failure modes introduced by the MVDAS. These modes and effects were evaluated in a failure modes and effects analysis of the MVDAS. Integration of the microprocessor-based MVDAS into the operating practices of the NUMAC-PRNM system will include configuration of the MVDAS system integrity functions to minimize the failure effects. Fiber optic connections isolate the MVDAS is isolated from the safety functions of the NUMAC-PRNMS. Additionally, operator actions to operate and maintain the MVDAS will be implemented into applicable plant procedures. These actions provide an acceptable basis for staff approval.

3.2 PRNMS Instability Functions, Setpoints, and Margins

The licensee will test the PRNMS instability function (OPRM), including the adequacy of the setpoint values and margins during the first fuel cycle of OPRM operation. At the end of the fuel cycle, following NRC staff review and approval of the operating data and an associated license amendment to be submitted for OPRM-specific TS changes, the OPRM trip function will be connected to the RPS channels. The NRC staff approved the initial period for OPRM confirmatory testing in the safety evaluation of NEDC-32410P, and, therefore, finds the licensee's approach to be acceptable.

3.3 Plant-Specific Revised Technical Specifications

The following section describes the licensee's proposed TS changes and the NRC staff's evaluation of each change.

3.3.1 Changes to Table 2.2.1-1, RPS Instrumentation Setpoints, Item 2, APRM

As a result of the NUMAC-PRNM system modification, APRM Functional Unit 2.e, 2-out-of-4 voter, will be added to Table 2.2.1-1. This addition is consistent with the 2-out-of-4 voter function being added to Table 3.3.1-1, RPS Instrumentation, to facilitate minimum operable channel definition, associated actions, and applicable operational conditions. The 2-out-of-4 voter function, with associated operability requirements, notes, operating modes, and action statements, was added, in accordance with the NRC staff-approved LTR recommendations, and therefore is acceptable.

The licensee retained the existing names of the APRM functions in Table 2.2.1-1 and Table 3.3.1-1. As stated in NEDC-32410P-A, licensees may retain existing names for the APRM functions or use slightly different names. The staff, therefore, finds the APRM function names selected by the licensee to be acceptable.

3.3.2 Changes to Table 3.3.1-1, RPS Instrumentation, Associated Table Notations, and Footnotes

TS Table 3.3.1-1, RPS Instrumentation, currently requires that a minimum of two APRM channels per reactor trip system are to be operable. Additionally, Table 3.3.1-1 requires that an APRM be declared inoperable if there are less than 2 LPRM inputs per level or less than 14 LPRM inputs to an APRM channel. Limiting Condition for Operation (LCO) 3.3.1, Action a. and b., Footnote * currently indicates that an inoperable channel or trip system need not be placed in the tripped condition where this would cause the trip function to occur. Footnote ** indicates that LCO 3.3.1, Action b.2 applies to that trip system with the most inoperable channels.

The proposed TS changes revise Table 3.3.1-1, associated Table Notations, and Footnotes * and ** as required to implement the NUMAC-PRNM system. Additionally, the 2-out-of-4 voter function is being added to Table 3.3.1-1 as APRM Function 2.e. This function is being added to facilitate minimum operable channel definition, associated actions, and applicable operational conditions.

In the NUMAC-PRNM system APRM configuration, the trip outputs from all four APRM channels provide inputs to each of the four voter channels so that each of the inputs to the RPS is a voted result of all four APRM channels. The four voter channels are divided into two groups of two

each, with each group of two voters providing inputs to one RPS trip system. This retains all existing Power Range Monitor (PRM) electrical connections to the RPS. The NUMAC-PRNM system is designed to allow one APRM channel, but no voter channels, to be bypassed. A trip from one unbypassed APRM will result in a half-trip in all four voter units, but no trip inputs to either RPS trip system. These APRM related half-scrams will appear only as alarm and indication, but are otherwise contained within the four voter channels. A trip from any two unbypassed APRM channels will result in a full trip in each of the four voter channels, which will result in two trip inputs into each RPS trip system, causing a full scram.

Accordingly, any two of the four APRM channels and one 2-out-of-4 voter channel in each RPS trip system are required to function for the APRM safety function to be operable. Consequently, the licensee proposed TS requires three of the four APRM channels and all four voter channels to be operable. The voter functional units are required in Operational Conditions (OCs) 1, 2, and 5, which is consistent with the APRM functions. If the requirements of Table 3.3.1-1 are not met, the required Actions will be taken.

Note "b" to Table 3.3.1-1 requires that the shorting links shall be removed from the RPS circuitry prior to and whenever any control rod is withdrawn unless adequate shutdown margin has been demonstrated per Specification 3.3.1, and the Refuel position one-rod-out interlock is OPERABLE per Specification 3.9.1. The licensee proposes to delete Note "b" from the Applicable Operational Conditions for the APRM Neutron Flux-Upscale, Setdown function. As noted in NEDC-32410P-A, the primary purpose of the non-coincidence mode is to put the Source Range Monitor (SRM) trips into the RPS logic and to put the SRM and Intermediate Range Monitor (IRM) trips in non-coincidence mode to increase coverage during some refueling and test conditions. Although not required by NEDC-32410P-A, the licensee proposes that Table 3.3.1-1 continue to require that the Neutron Flux-Upscale, Setdown function, the inoperative function, and the 2-out-of-4 voter function be required in OC 5 during shutdown margin tests performed per Specification 3.10.3, which requires that the SRMs be operable with the RPS circuitry shorting links removed. This change does not reduce the operability requirements of NEDC-32410P-A, and, therefore, is acceptable.

The existing Note "c" to Table 3.3.1-1 requires 14 LPRM inputs to an APRM channel with a minimum of two LPRM inputs per level for the APRM channel to be operable. The licensee proposes to change Note "c" to require three LPRM inputs per level and 20 LPRM inputs to an APRM channel. This change is consistent with the recommended number of LPRMs per level and APRM channel in NEDC-32410P-A. The licensee proposes Table 3.3.1-1 Note (l) to describe the NUMAC-PRNM system channel configuration and to reference Table 3.3.1-1 Note (a). These changes are consistent with the scope of NEDC-32410P-A and, therefore, are acceptable.

In the existing TS, LCO 3.3.1, Action a and b, Footnote * states

> * An inoperable channel or trip system need not be placed in the tripped condition where this would cause the Trip Function to occur. In these cases, if the inoperable channel is not restored to OPERABLE status within the required time, the ACTION required by Table 3.3.1-1 for the Functional Unit shall be taken.

The licensee proposes to modify this footnote by adding the following paragraph:

For Functional Units 2.a, 2.b, 2.c, and 2.d, inoperable channels shall be placed in the tripped condition to comply with Action a. Because these Functional Units provide trip inputs to both trip systems, placing either trip system in trip is not applicable. For Functional Units 2.a, 2.b, 2.c, and 2.d, Action b.3 applies without regard to "in the other trip systems."

In the existing TS, LCO 3.3.1, Action a and b, Footnote ** states

** This ACTION applies to that trip system with the most inoperable channels; if both trip systems have the same number of inoperable channels, the ACTION can be applied to either trip system.

The licensee proposes to modify this footnote by adding the following sentence:

Action b.2 is not applicable for Functional Units 2.a, 2.b, 2.c, and 2.d.

The proposed changes to LCO 3.3.1, Action a and b, Footnotes * and ** are based on the NUMAC-PRNM system configuration. All four APRM channels provide inputs to all four voter units, and therefore both RPS trip systems. Accordingly, when an APRM channel is inoperable, requirements to place that trip system in the tripped condition or to trip that system with the most inoperable channels is not applicable. The NRC staff, therefore, finds these changes acceptable.

3.3.3 Changes to Surveillance Requirement 4.3.1.2, Reactor Protection System Logic System Functional Tests

The existing TS Surveillance Requirement (SR) 4.3.2.1 requires a Logic System Functional Test (LSFT) and simulated automatic operation of RPS channels at least once per 18 months. The licensee proposes to delete the LSFT requirements for APRM Functions 2.a, 2.b, 2.c, and 2.d. The licensee proposes an LSFT for the 2-out-of-4 voter, Function 2.e, once per 24 months. These changes are consistent with NEDC-32410P-A and, therefore, are acceptable.

The proposed change also adds a clarification that the LSFT is only required to include the voting "logic" of the 2-out-of-4 voter channels. This clarification is consistent with NEDC-32410P-A, and therefore is acceptable.

3.3.4 Changes to Table 4.3.1.1-1, Reactor Protection Instrumentation Surveillance Requirements (Channel Check, Channel Functional Test, Channel Calibration) and Associated Table Notations

The existing Table 4.3.1.1-1, RPS Instrumentation Surveillance Requirements, requires channel checks of the RPS APRM functions (except for the Inoperative function) once each shift, a channel check of the Neutron Flux-Upscale, Setdown function prior to each startup and, as required by Note (f), a daily channel check of the Flow-Biased Simulated Thermal Power-Upscale function to verify measured core flow to be in the range of established core flow at the existing loop flow (APRM%). The licensee proposes changes that delete the channel check prior to startup, require a daily channel check on each of the APRM functions except the Inoperative function, and add the 2-out-of-4 voter function as APRM Functional Unit 2.e with a daily channel check requirement. Additionally, the licensee proposes a revision of Note (f).

The existing Note (f) states:

(f) Verify measured core flow (total core flow) to be in the range of established core flow at the existing loop flow (APRM%).

The proposed Note (f) states:

(f) Calibration includes the flow input function.

This change is consistent with NEDC-32410P-A, which states that plants with four channels of flow instrumentation should delete requirements for daily flow signal comparisons and replace this requirement with a Channel Functional Test (CFT) and automatic comparison of all four recirculation flow values.

The licensee proposes to delete the semiannual channel check and channel check prior to startup requirements because NMP2 TS SR 4.0.4 requires a surveillance prior to entry into the applicable operational conditions. Consequently, this change is essentially an administrative change. The NRC staff, therefore, finds this change acceptable.

The existing TS requires a weekly CFT for the Neutron Flux-Upscale, Setdown function and a CFT 24 hours prior to startup (if not performed within the previous 7 days - Note (c)). A quarterly CFT is also required for the Flow-Biased Simulated Thermal Power-Upscale and Fixed Neutron Flux-Upscale functions, and 24 hours prior to startup as described in Note (c).

The licensee proposes APRM function CFTs on a semiannual frequency. This frequency is consistent with NEDC-32410P-A and, therefore, is acceptable.

The licensee proposes adding Note (h) to TS Table 4.3.1.1-1. Note (h) requires the inclusion of the flow input function when performing a CFT of the APRM Flow-Biased Simulated Thermal-Upscale Function. The flow transmitters are excluded from this requirement. This change is consistent with NEDC-32410P-A and, therefore, is acceptable.

The licensee proposes adding Note (I) to TS Table 4.3.1.1-1. Note (I) allows operation for 12 hours without performing functional testing when entering OC 2 (Mode 2 in NEDC-32410P-A) from OC 1 (Mode 1 in NEDC-32410P-A). This change is consistent with NEDC-32410P-A and, therefore, is acceptable.

The existing TS requires a semiannual channel calibration for the Neutron Flux-Upscale, Setdown function. A channel calibration of the Flow-Biased Simulated Thermal Power-Upscale function is required weekly to adjust the APRM flow-biased channel to conform to a calibrated flow signal, and semiannually and during refuel outages to verify the simulated thermal power time constant is 6±0.6 seconds. The Fixed Neutron Flux-Upscale calibration is required weekly and semi-annually. The Inoperative function does not require calibration.

The proposed changes revise the calibration intervals of the Neutron Flux-Upscale, Setdown, Flow-Biased Simulated Thermal Power-Upscale, and Fixed Neutron Flux-Upscale from semi-annual to refuel cycle frequency, and delete the existing Note (h) and Note (I). The Flow-Biased Simulated Thermal Power-Upscale and Fixed Neutron Flux-Upscale refuel cycle calibration interval is clarified by revising Note (f) to require that the calibrations include the flow input function. A channel calibration of the 2-out-of-4 voter function is not required and is indicated as

such. The licensee proposes that surveillances be required for OCs 1, 2, and 5 (while shutdown margin demonstrations are being performed in accordance with TS 3.10.3). These changes are consistent with NEDC-32410P-A and, therefore, are acceptable.

3.3.5 Changes to TS 4.3.1.3, Response Time Testing

In May 1997, following issuance of Licensing Amendment 73 by the NRC, the licensee relocated response time testing requirements from TS 4.3.1.3 (Surveillance Requirements) to Table 7.2-3 (Reactor Protection System Response Times) of the NMP2 Updated Safety Analysis Report (USAR). The licensee committed to add the 2-out-of-4 voter function and response time in the next USAR amendment. Section 8.3.4.4.2 of NEDC-32410P-A recommended deletion of the response time testing requirements for APRM electronics and the 2-out-of-4 logic module portion of the APRM functions (0.05s of the 0.09s response requirement). The topical report further recommended that licensees retain the requirement for response time testing from the 2-out-of-4 logic module output relays through the RPS contactors (0.05s of the 0.09s response requirement). Accordingly, the licensee deleted the digital portion of the APRM function response time testing from the NMP2 TS surveillance requirements. APRM response time testing will be staggered such that all of the 2-out-of-4 voter output relays and associated K12 relays will be tested once per two refueling outages. The APRM function staggered testing frequency is consistent with NEDC-32410P-A and, therefore, is acceptable.

3.3.6 Changes to TS Table 4.3.6-1, Control Rod Block Instrumentation Surveillance Requirements

The existing TS Table 4.3.6-1 requires CFTs of the Rod Block Monitor and Reactor Coolant System Recirculation Flow functions quarterly and 24 hours prior to reactor startup. The licensee proposes semiannual CFTs and deletion of a CFT 24 hours prior to reactor startup. These changes are consistent with NEDC-32410P-A and, therefore, are acceptable.

The existing TS Table 4.3.6-1 requires quarterly channel calibrations of the Rod Block Monitor and Reactor Coolant System Recirculation Flow functions. The licensee proposes calibrations of these function each refueling cycle. These changes are consistent with NEDC-32410P-A and, therefore, are acceptable.

The licensee proposes the addition of a brief description of the NUMAC-PRNM system in Bases Section 3/4.3.1, Reactor Protection System Instrumentation. The licensee also clarified Note(l) of Table 3.3.1-1, regarding the actions to be taken when an APRM channel is inoperable. These Bases discussions are consistent with NEDC-32410P-A and the NUMAC-PRNM system configuration and, therefore, are acceptable.

The NRC staff finds that the proposed NMP2 TS and associated Bases conform to the staff-approved model TS and approved LTR custom TS in NEDO-32410P-A, Appendix H, and Supplement 1. The staff further finds that the proposed amendments to the NMP2 TS are consistent with the design of the NUMAC-PRNM system, and the existing design of the NMP2 units, and, therefore, are acceptable.

3.4 Plant-Specific Environmental Conditions

In Table 1 below, the NMP2 plant-specific environmental conditions for temperature, humidity, pressure, and radiation are compared to the NUMAC-PRNMS environmental qualification values. As shown in Table 1, the NMP2 environmental conditions are enveloped by the NUMAC-PRNM system qualification values, and, therefore, are acceptable.

Table 1. Comparison of NMP2 Environmental Conditions with NUMAC-PRNM System Environment Qualification Values

	NMP2	NUMAC-PRNM SYSTEM
Temperature	24°C to 32°C (70°F nominal to 90°F)	5°C to 50°C (41°F to 122°F)
Humidity	20% to 50% RH	10% to 90% RH (noncondensing)
Pressure	14.7 psia	13 psia to 16 psia
Radiation	<0.002 mGy/hr dose rate 0.7 Gy TID	1E-4 Gy(Carbon)/hr dose rate 1E+2 Gy (Carbon) TID

The licensee compared the seismic qualification of the NUMAC-PRNM system with the NMP2 operating basis earthquake (OBE) and safe shutdown earthquake (SSE) required response spectra. The licensee stated that the NUMAC-PRNMS response spectra envelope the site response spectra. Additionally, the MVDAS will be mounted inside panel 2CEC*PNL608 and will be included in the panel seismic qualification. The NRC staff finds the seismic qualification acceptable.

The approved LTR states that new equipment and plant modifications should not produce unacceptable levels of noise emissions that could adversely affect NUMAC equipment, or the licensee is to take action to prevent these emissions from reaching potentially sensitive equipment. These measures apply for both noise susceptibility and emissions. The NMP2 design procedures require that all digital equipment systems to be installed or used within the plant shall be evaluated for susceptibility and emissions of electromagnetic interference (EMI). The staff finds this approach acceptable for ensuring the EMI environment conforms to the requirements of General Design Criterion (GDC) 4 of Appendix A to 10 CFR Part 50. The NRC staff concludes that the NMP2 electromagnetic environmental conditions are enveloped by the GE equipment qualification parameters established for the NUMAC-PRNMS modification.

As described in the approved LTR, the NUMAC- PRNM system uses the same panel interfaces as the existing power range monitor equipment. High frequency filters are installed on the alternating current power supply, and shielded cables for all signal leads will be used in lieu of testing nonsafety equipment noise effects on the NUMAC- PRNM system.

The NRC staff finds the licensee's evaluation of the EMI environment and the measures taken to reduce adverse EMI affects to be an acceptable approach for ensuring the NUMAC-PRNM system EMI environment conforms to the requirements of GDC 4 for protection against adverse environmental effects.

3.5 Administrative Controls

In the safety evaluation of NEDC-32410P, the NRC staff found acceptable the NUMAC-PRNM system design features that control access to setpoint adjustments, calibrations, and test points. The licensee states that administrative procedures will provide controls for manually bypassing APRM/OPRM channels or protective functions and will control access to the bypass controls. The NRC staff finds these activities acceptable.

3.6 Confirmation of Human Factors Review

The licensee stated that the NMP2 design change process and implementing procedures require completion of a Human Factors Engineering (HFE) Process Checklist and performance of an HFE review of changes to the plant operator's panel. The licensee further stated that an HFE review, per applicable NMP2 procedures, of the proposed changes to the operator's panel will be performed, and documentation of that review will be included in the final design package(s) for the NUMAC-PRNM system. The staff finds these activities acceptable.

3.7 Summary Conclusion

Based on the above review and justifications for TS changes, the NRC staff concludes that the licensee's proposed TS changes for NMP2 are consistent with the staff-approved guidance in Supplement 1 to NEDC-32410P-A. The staff further concludes that the licensee has appropriately addressed the plant-specific conditions described in the NRC staff's safety evaluation for NEDC-32410P. Therefore, the NRC staff finds the NUMAC-PRNM system modification and associated TS changes to be acceptable.

4.0 STATE CONSULTATION

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

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component 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 effluent that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration and there has been no public comment on such finding (62 FR 68310). 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 Contributors: M. Waterman
D. Hood

Date: March 31, 1998