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

January 30, 2009

Mr. Timothy J. O'Connor
Site Vice President
Monticello Nuclear Generating Plant
Northern States Power Company
2807 West County Road 75
Monticello, MN 55362-9637

SUBJECT: MONTICELLO NUCLEAR GENERATING PLANT (MNGP) - ISSUANCE OF AMENDMENT REGARDING THE POWER RANGE NEUTRON MONITORING SYSTEM (TAC NO. MD8064)

Dear Mr. O'Connor:

The Commission has issued the enclosed Amendment No. 159 to Renewed Facility Operating License No. DPR-22 for the Monticello Nuclear Generating Plant. The amendment consists of changes to the Technical Specifications in response to your application dated February 6, 2008, as supplemented by letters dated September 16 and November 6, 2008.

The amendment approves the installation and use of the General Electric - Hitachi Nuclear Measurement Analysis and Control Digital Power Range Neutron Monitoring System (PRNMS), and approves changes in the Technical Specifications to reflect use of the PRNMS at MNGP.

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

Sincerely,

Peter S. Tam, Senior Project Manager
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-263

Enclosures:
1. Amendment No. 159 to DPR-22
2. Safety Evaluation

cc w/encls: Distribution via ListServ

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

NORTHERN STATES POWER COMPANY*

DOCKET NO. 50-263

MONTICELLO NUCLEAR GENERATING PLANT

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 159
License No. DPR-22

1. The U. S. Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Nuclear Management Company, LLC* (the licensee), dated February 6, 2008, as supplemented by letters dated September 16 and November 6, 2008, 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 I;

   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 Renewed Facility Operating License No. DPR-22 is hereby amended to read as follows:

*On September 22, 2008, Nuclear Management Company, LLC, transferred its operating authority to its parent, Northern States Power Company, a Minnesota corporation (NSPM). By letter dated September 3, 2008 (Accession No. ML082470648), NSPM stated that it accepts responsibility for all actions before the NRC staff which were previously initiated or addressed by Nuclear Management Company.

Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 159, are hereby incorporated in the license. NSPM shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented before startup from the 2009 Refueling Outage.

FOR THE NUCLEAR REGULATORY COMMISSION

Lois M. James, Chief
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment: Changes to Renewed Facility Operating License
and Technical Specifications

Date of Issuance: January 30, 2009

ATTACHMENT TO LICENSE AMENDMENT NO. 159

RENEWED FACILITY OPERATING LICENSE NO. DPR-22

DOCKET NO. 50-263

Replace the following page of Renewed Facility Operating License DPR-22 with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

REMOVE	INSERT
3	3

Replace the following pages of 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	INSERT
3.3.1.1-1	3.3.1.1-1
3.3.1.1-2	3.3.1.1-2
3.3.1.1-3	3.3.1.1-3
3.3.1.1-4	3.3.1.1-4
3.3.1.1-5	3.3.1.1-5
3.3.1.1-6	3.3.1.1-6
3.3.1.1-7	3.3.1.1-7
--	3.3.1.1-8
--	3.3.1.1-9
3.3.2.1-3	3.3.2.1-3
3.3.2.1-4	3.3.2.1-4
3.3.2.1-5	3.3.2.1-5
3.4.1-1	3.4.1-1
3.4.1-2	3.4.1-2
3.4.1-3	--
5.6-2	5.6-2
--	5.6-3

2. Pursuant to the Act and 10 CFR Part 70, NSPM to receive, possess, and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operations, as described in the Final Safety Analysis Report, as supplemented and amended, and the licensee's filings dated August 16, 1974 (those portions dealing with handling of reactor fuel) and August 17, 1977 (those portions dealing with fuel assembly storage capacity);

3. Pursuant to the Act and 10 CFR Parts 30, 40 and 70, NSPM to receive, possess, and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;

4. Pursuant to the Act and 10 CFR Parts 30, 40 and 70, NSPM to receive, possess, and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and

5. Pursuant to the Act and 10 CFR Parts 30 and 70, NSPM to possess, but not separate, such byproduct and special nuclear material as may be produced by operation of the facility.

C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission, now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

1. Maximum Power Level

   NSPM is authorized to operate the facility at steady state reactor core power levels not in excess of 1775 megawatts (thermal).

2. Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 159, are hereby incorporated in the license. NSPM shall operate the facility in accordance with the Technical Specifications.

3. Physical Protection

   NSPM shall implement and maintain in effect all provisions of the Commission-approved physical security, guard training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search

3.3 INSTRUMENTATION

3.3.1.1 Reactor Protection System (RPS) Instrumentation

LCO 3.3.1.1 The RPS instrumentation for each Function in Table 3.3.1.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1.1-1.

ACTIONS

---NOTE---
Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more required channels inoperable.	A.1	Place channel in trip.	12 hours
	OR		
	A.2	---NOTE--- Not applicable for Functions 2.a, 2.b, 2.c, 2.d or 2.f. --- Place associated trip system in trip.	12 hours
B. ---NOTE--- Not applicable for Functions 2.a, 2.b, 2.c, 2.d or 2.f. --- One or more Functions with one or more required channels inoperable in both trip systems.	B.1	Place channel in one trip system in trip.	6 hours
	OR		
	B.2	Place one trip system in trip.	6 hours
C. One or more Functions with RPS trip capability not maintained.	C.1	Restore RPS trip capability.	1 hour

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1	Enter the Condition referenced in Table 3.3.1.1-1 for the channel.	Immediately
E. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	E.1	Reduce THERMAL POWER to ≤ 45% RTP.	4 hours
F. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	F.1 AND F.2	Be in MODE 2. ----------NOTE---------- Only applicable to Function 5. ---------- Reduce reactor pressure to < 600 psig.	6 hours 12 hours
G. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	G.1	Be in MODE 3.	12 hours
H. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	H.1	Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
I. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	I.1	Initiate alternate method to detect and suppress thermal hydraulic instability oscillations.	12 hours
	AND		
	I.2	----------NOTE---------- LCO 3.0.4 is not applicable. ---------- Restore required channels to OPERABLE.	120 days
J. Required Action and associated Completion Time of Condition I not met.	J.1	Reduce THERMAL POWER to < 20% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

----------NOTES----------

1. Refer to Table 3.3.1.1-1 to determine which SRs apply for each RPS Function.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains RPS trip capability.

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.1.1.2	----------NOTE---------- Not required to be performed until 12 hours after THERMAL POWER ≥ 25% RTP. ----------	
	Verify the absolute difference between the average power range monitor (APRM) channels and the calculated power is ≤ 2% RTP while operating at ≥ 25% RTP.	7 days

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.1.1.3	----------NOTE---------- Not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. ---------- Perform CHANNEL FUNCTIONAL TEST.	7 days
SR 3.3.1.1.4	Perform a functional test of each RPS automatic scram contactor.	7 days
SR 3.3.1.1.5	Perform CHANNEL FUNCTIONAL TEST.	31 days
SR 3.3.1.1.6	Calibrate the local power range monitors.	2000 effective full power hours
SR 3.3.1.1.7	Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.1.1.8	Calibrate the trip units.	92 days
SR 3.3.1.1.9	Perform CHANNEL CALIBRATION.	92 days
SR 3.3.1.1.10	Perform CHANNEL FUNCTIONAL TEST.	24 months
SR 3.3.1.1.11	----------NOTES---------- 1. Neutron detectors are excluded. 2. For Function 1, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. 3. For Functions 2.b and 2.f, the recirculation flow transmitters that feed the APRMs are included. ---------- Perform CHANNEL CALIBRATION.	24 months

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.1.1.12	Perform LOGIC SYSTEM FUNCTIONAL TEST.	24 months
SR 3.3.1.1.13	Verify Turbine Stop Valve - Closure and Turbine Control Valve Fast Closure, Acceleration Relay Oil Pressure - Low Functions are not bypassed when THERMAL POWER is > 45% RTP.	24 months
SR 3.3.1.1.14	----------NOTES---------- 1. For Function 2.e, "n" equals 8 channels for the purpose of determining the STAGGERED TEST BASIS Frequency. Testing of APRM and OPRM outputs shall alternate. 2. For Function 5, "n" equals 4 channels for the purpose of determining the STAGGERED TEST BASIS Frequency. ---------- Verify the RPS RESPONSE TIME is within limits.	24 months on a STAGGERED TEST BASIS
SR 3.3.1.1.15	----------NOTES---------- 1. For Function 2.a, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. 2. For Functions 2.b and 2.f, the CHANNEL FUNCTIONAL TEST includes the recirculation flow input processing, excluding the flow transmitters. ---------- Perform CHANNEL FUNCTIONAL TEST.	184 days
SR 3.3.1.1.16	Verify the oscillation power range monitor (OPRM) function is not bypassed when APRM Simulated Thermal Power is ≥ 25% and recirculation drive flow is ≤ 60% of rated recirculation drive flow.	24 months

Table 3.3.1.1-1 (page 1 of 4)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Intermediate Range Monitors					
a. Neutron Flux – High	2	3	G	SR 3.3.1.1.1 SR 3.3.1.1.3 SR 3.3.1.1.4 SR 3.3.1.1.11 SR 3.3.1.1.12 SR 3.3.1.1.14	≤ 122/125 divisions of full scale
	5[(a)]	3	H	SR 3.3.1.1.1 SR 3.3.1.1.3 SR 3.3.1.1.4 SR 3.3.1.1.11 SR 3.3.1.1.12 SR 3.3.1.1.14	≤ 122/125 divisions of full scale
b. Inop.	2	3	G	SR 3.3.1.1.3 SR 3.3.1.1.4 SR 3.3.1.1.12	NA
	5[(a)]	3	H	SR 3.3.1.1.3 SR 3.3.1.1.4 SR 3.3.1.1.12	NA
2. Average Power Range Monitors					
a. Neutron Flux – High, (Setdown)	2	3[(c)]	G	SR 3.3.1.1.1 SR 3.3.1.1.4 SR 3.3.1.1.6 SR 3.3.1.1.11 SR 3.3.1.1.15	≤ 20% RTP
b. Simulated Thermal Power – High	1	3[c)]	F	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.4 SR 3.3.1.1.6 SR 3.3.1.1.11 SR 3.3.1.1.15	≤ 0.66 W +61.6% RTP[(b)] and ≤ 116% RTP

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

(b) ≤ 0.66 (W – Delta W) +61.6% RTP when reset for single loop operation per LCO 3.4.1, "Recirculation Loops Operating." The cycle-specific value for Delta W is specified in the COLR.

(c) Each APRM / OPRM channel provides inputs to both trip systems.

Table 3.3.1.1-1 (page 2 of 4)
Reactor Protection System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
c.	Neutron Flux – High	1	3[(c)]	F	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.4 SR 3.3.1.1.6 SR 3.3.1.1.11[(f)(g)] SR 3.3.1.1.15	≤ 122% RTP
d.	Inop.	1, 2	3[(c)]	G	SR 3.3.1.1.4 SR 3.3.1.1.15	NA
e.	2-Out-Of-4 Voter	1, 2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.4 SR 3.3.1.1.12 SR 3.3.1.1.14 SR 3.3.1.1.15	NA
f.	OPRM Upscale[(e)]	≥ 20% RTP	3[(c)]	I	SR 3.3.1.1.1 SR 3.3.1.1.4 SR 3.3.1.1.6 SR 3.3.1.1.11 SR 3.3.1.1.15 SR 3.3.1.1.16	As specified in COLR
3.	Reactor Vessel Steam Dome Pressure – High	1, 2	2	G	SR 3.3.1.1.4 SR 3.3.1.1.7 SR 3.3.1.1.9 SR 3.3.1.1.12 SR 3.3.1.1.14	≤ 1075 psig
4.	Reactor Vessel Water Level – Low	1, 2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.4 SR 3.3.1.1.7 SR 3.3.1.1.8 SR 3.3.1.1.11 SR 3.3.1.1.12 SR 3.3.1.1.14	≥ 7 inches

(c) Each APRM / OPRM channel provides inputs to both trip systems.

(e) During the OPRM Monitoring Period the OPRM Upscale function is inoperable.

(f) If the as-found channel setpoint is not the Nominal Trip Setpoint but is conservative with respect to the Allowable Value, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(g) The instrument channel setpoint shall be reset to the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. The NTSP and the methodology used to determine the NTSP are specified in the Technical Requirements Manual.

Table 3.3.1.1-1 (page 3 of 4)
Reactor Protection System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
5.	Main Steam Isolation Valve – Closure	1, 2[(d)]	8	F	SR 3.3.1.1.4 SR 3.3.1.1.7 SR 3.3.1.1.11 SR 3.3.1.1.12 SR 3.3.1.1.14	≤ 10% closed
6.	Drywell Pressure – High	1, 2	2	G	SR 3.3.1.1.4 SR 3.3.1.1.7 SR 3.3.1.1.9 SR 3.3.1.1.12	≤ 2.0 psig
7.	Scram Discharge Volume Water Level – High					
	a. Resistance Temperature Detector	1, 2	2	G	SR 3.3.1.1.4 SR 3.3.1.1.7 SR 3.3.1.1.9 SR 3.3.1.1.12	≤ 56.0 gallons
		5[(a)]	2	H	SR 3.3.1.1.4 SR 3.3.1.1.7 SR 3.3.1.1.9 SR 3.3.1.1.12	≤ 56.0 gallons
	b. Float Switch	1, 2	2	G	SR 3.3.1.1.4 SR 3.3.1.1.7 SR 3.3.1.1.9 SR 3.3.1.1.12	≤ 56.0 gallons
		5[(a)]	2	H	SR 3.3.1.1.4 SR 3.3.1.1.7 SR 3.3.1.1.9 SR 3.3.1.1.12	≤ 56.0 gallons
8.	Turbine Stop Valve – Closure	> 45% RTP	4	E	SR 3.3.1.1.4 SR 3.3.1.1.7 SR 3.3.1.1.11 SR 3.3.1.1.12 SR 3.3.1.1.13 SR 3.3.1.1.14	≤ 10% closed

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

(d) With reactor pressure ≥ 600 psig.

Table 3.3.1.1-1 (page 4 of 4)
Reactor Protection System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
9.	Turbine Control Valve Fast Closure, Acceleration Relay Oil Pressure – Low	> 45% RTP	2	E	SR 3.3.1.1.4 SR 3.3.1.1.7 SR 3.3.1.1.9 SR 3.3.1.1.12 SR 3.3.1.1.13 SR 3.3.1.1.14	≥ 167.8 psig
10.	Reactor Mode Switch – Shutdown Position	1, 2	1	G	SR 3.3.1.1.10 SR 3.3.1.1.12	NA
		5[(a)]	1	H	SR 3.3.1.1.10 SR 3.3.1.1.12	NA
11.	Manual Scram	1, 2	1	G	SR 3.3.1.1.5 SR 3.3.1.1.12	NA
		5[(a)]	1	H	SR 3.3.1.1.5 SR 3.3.1.1.12	NA

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

SURVEILLANCE REQUIREMENTS

----------NOTES----------

1. Refer to Table 3.3.2.1-1 to determine which SRs apply for each Control Rod Block Function.

2. When an RBM channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains control rod block capability.

	SURVEILLANCE	FREQUENCY
SR 3.3.2.1.1	Perform CHANNEL FUNCTIONAL TEST.	184 days
SR 3.3.2.1.2	----------NOTE---------- Not required to be performed until 1 hour after any control rod is withdrawn at ≤ 10% RTP in MODE 2. ---------- Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.2.1.3	----------NOTE---------- Not required to be performed until 1 hour after THERMAL POWER is ≤ 10% RTP in MODE 1. ---------- Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.2.1.4	----------NOTE---------- Neutron detectors are excluded. ---------- Perform CHANNEL CALIBRATION.	24 months

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.2.1.5	----------NOTE---------- Neutron detectors are excluded. ---------- Verify the RBM: a. Low Power Range - Upscale Function is not bypassed when THERMAL POWER is ≥ 30% and < 65% RTP; b. Intermediate Power Range - Upscale Function is not bypassed when THERMAL POWER is ≥ 65% and < 85% RTP; and c. High Power Range - Upscale Function is not bypassed when THERMAL POWER is ≥ 85% RTP.	24 months
SR 3.3.2.1.6	Verify the RWM is not bypassed when THERMAL POWER is ≤ 10% RTP.	24 months
SR 3.3.2.1.7	----------NOTE---------- Not required to be performed until 1 hour after reactor mode switch is in the shutdown position. ---------- Perform CHANNEL FUNCTIONAL TEST.	24 months
SR 3.3.2.1.8	Verify control rod sequences input to the RWM are in conformance with BPWS.	Prior to declaring RWM OPERABLE following loading of sequence into RWM

Table 3.3.2.1-1 (page 1 of 1)
Control Rod Block Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1.	Rod Block Monitor				
	a. Low Power Range - Upscale	(a)	2	SR 3.3.2.1.1 SR 3.3.2.1.4[(h)(i)] SR 3.3.2.1.5	As specified in COLR
	b. Intermediate Power Range - Upscale	(b)	2	SR 3.3.2.1.1 SR 3.3.2.1.4[(h)(i)] SR 3.3.2.1.5	As specified in COLR
	c. High Power Range - Upscale	(c), (d)	2	SR 3.3.2.1.1 SR 3.3.2.1.4[(h)(i)] SR 3.3.2.1.5	As specified in COLR
	d. Inop	(d), (e)	2	SR 3.3.2.1.1	NA
2.	Rod Worth Minimizer	1[(f)], 2[(f)]	1	SR 3.3.2.1.2 SR 3.3.2.1.3 SR 3.3.2.1.6 SR 3.3.2.1.8	NA
3.	Reactor Mode Switch - Shutdown Position	(g)	2	SR 3.3.2.1.7	NA

(a) THERMAL POWER ≥ 30% and < 65% RTP and MCPR is below the limit specified in COLR.

(b) THERMAL POWER ≥ 65% and < 85% RTP and MCPR is below the limit specified in COLR.

(c) THERMAL POWER ≥ 85% and < 90% RTP and MCPR is below the limit specified in COLR.

(d) THERMAL POWER ≥ 90% RTP and MCPR is below the limit specified in COLR.

(e) THERMAL POWER ≥ 30% and < 90% RTP and MCPR is below the limit specified in COLR.

(f) With THERMAL POWER ≤ 10% RTP.

(g) Reactor mode switch in the shutdown position.

(h) If the as-found channel setpoint is not the Nominal Trip Setpoint (NTSP) but is conservative with respect to the Allowable Value, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(i) The instrument channel setpoint shall be reset to the Nominal Trip Setpoint at the completion of the surveillance; otherwise, the channel shall be declared inoperable. The NTSP shall be specified in the COLR. The methodology used to determine the NTSP is specified in the Technical Requirements Manual.

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.1 Recirculation Loops Operating

LCO 3.4.1 Two recirculation loops with matched flows shall be in operation.

OR

One recirculation loop shall be in operation provided the following limits are applied when the associated LCO is applicable:

a. LCO 3.2.1, "AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR)," single loop operation limits specified in the COLR;

b. LCO 3.2.2, "MINIMUM CRITICAL POWER RATIO (MCPR)," single loop operation limits specified in the COLR; and

c. LCO 3.3.1.1, "Reactor Protection System (RPS) Instrumentation," Function 2.b (Average Power Range Monitor Simulated Thermal Power - High), Allowable Value of Table 3.3.1.1-1 is reset for single loop operation.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of the LCO not met.	A.1 Satisfy the requirements of the LCO.	24 hours
B. Required Action and associated Completion Time of Condition A not met. OR No recirculation loops in operation.	B.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.4.1.1	----------NOTE---------- Not required to be performed until 24 hours after both recirculation loops are in operation. ---------- Verify jet pump loop flow mismatch with both recirculation loops in operation is: a. ≤ 10% of rated core flow when operating at < 70% of rated core flow; and b. ≤ 5% of rated core flow when operating at ≥ 70% of rated core flow.	24 hours

5.6 Reporting Requirements

5.6.3 CORE OPERATING LIMITS REPORT (COLR) (continued)

4. Control Rod Block Instrumentation Allowable Value for the Table 3.3.2.1-1 Rod Block Monitor Functions 1.a, 1.b, and 1.c and associated Applicability RTP levels;

5. Reactor Protection System Instrumentation Delta W Allowable Value for Table 3.3.1.1-1, Function 2.b, APRM Simulated Thermal Power – High, Note b; and

6. Reactor Protection System Instrumentation Period Based Detection Algorithm trip setpoints associated with Table 3.3.1.1-1, Function 2.f, OPRM Upscale.

b. The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents:

1. NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel";

2. NSPNAD-8608-A, "Reload Safety Evaluation Methods for Application to the Monticello Nuclear Generating Plant";

3. NSPNAD-8609-A, "Qualification of Reactor Physics Methods for Application to Monticello";

4. NEDO-31960, "BWR Owners' Group Long-Term Stability Solutions Licensing Methodology"; and

5. NEDO-32465-A, "Reactor Stability Detect and Suppress Solutions Licensing Basis Methodology and Reload Applications," August 1996.

The COLR will contain the complete identification for each of the Technical Specification referenced topical reports used to prepare the COLR (i.e., report number, title, revision, date, and any supplements).

c. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, Emergency Core Cooling Systems (ECCS) limits, nuclear limits such as SDM, transient analysis limits, and accident analysis limits) of the safety analysis are met.

d. The COLR, including any midcycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC.

5.6 Reporting Requirements

5.6.4 Post Accident Monitoring Report

When a report is required by Condition B or F of LCO 3.3.3.1, "Post Accident Monitoring (PAM) Instrumentation," a report shall be submitted within the following 14 days. The report shall outline the preplanned alternate method of monitoring, the cause of the inoperability, and the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 159 TO

RENEWED FACILITY OPERATING LICENSE NO. DPR-22

NORTHERN STATES POWER COMPANY*

MONTICELLO NUCLEAR GENERATING PLANT

DOCKET NO. 50-263

1.0 INTRODUCTION

By application dated February 6, 2008 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML080430634), as supplemented by letters dated September 16 and November 6, 2008 (Accession Nos. ML082620582 and ML083150022), Nuclear Management Company, LLC (NMC*, the licensee), proposed changes to the Technical Specifications (TS) of the Monticello Nuclear Generating Plant (MNGP). The proposed amendment would revise the MNGP TSs in conjunction with installation of a General Electric - Hitachi (GEH) nuclear measurement analysis and control (NUMAC) digital power range neutron monitoring system (PRNMS). The PRNMS is scheduled to be replaced during the upcoming spring 2009 Refueling Outage. This modification will replace the existing analog system with a more reliable digital upgrade, thus simplifying the management and maintenance of the system. The PRNMS design retrofit also includes an oscillation power range monitor (OPRM) capability which implements a GEH version of the Boiling-Water Reactor Owners Group (BWROG) Option III, detect and suppress long-term stability solution methodology. The OPRM portion of the NUMAC PRNMS provides automatic detection and suppression of reactor thermal-hydraulic instabilities. OPRM functions will be added to the reactor protection system instrumentation specification to implement the Option III reactor stability solution. The MNGP stability licensing basis will then have transitioned from Option I-D to Option III upon the installation and approval of this proposed amendment to add the OPRM upscale function.

The licensee's September 16, and November 6, 2008, supplements, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the Nuclear Regulatory Commission (NRC) staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on March 11, 2008 (73 FR 13025).

*On September 22, 2008, Nuclear Management Company, LLC, transferred its operating authority to its parent, Northern States Power Company, a Minnesota corporation (NSPM). By letter dated September 3, 2008 (Accession No. ML082470648), NSPM stated that it accepts responsibility for all actions before the NRC staff which were previously initiated or addressed by Nuclear Management Company.

1.1 Background

For many years, the NRC has been concerned about the possibility of power oscillations caused by thermal-hydraulic conditions in boiling-water reactors (BWRs) and the consequences of such events. To address these concerns, the BWROG initiated a project to investigate actions to resolve the BWR stability issue. In 1988, in a letter to BWR owners, GE recommended interim corrective actions (ICAs). Subsequently, the NRC staff issued Bulletin 88-07, Supplement 1, "Power Oscillations in Boiling-Water Reactors," dated December 30, 1988, approving the proposed BWROG/GE ICAs to detect and suppress BWR power oscillations. The BWROG later issued the following four licensing topical reports (LTRs):

(1) NEDO 31960-A, "BWR Owners Group Long-Term Stability Solutions Licensing Methodology," June 1991.

(2) NEDO 31960-A, Supplement 1, "BWR Owners Group Long-Term Stability Solutions Licensing Methodology," March 1992.

(3) NEDO 32465-A, "Reactor Stability Detect and Suppress Solutions Licensing Basis Methodology for Reload Applications," August 1996.

The NRC staff reviewed these LTRs and found four of the six long-term solutions recommended by these LTRs to be acceptable for mitigating thermal-hydraulic instability events. The acceptable solutions are Options I-A and I-D (regional exclusions), Option II (BWR 2 designs), and Option III (detect and suppress functions). In Option III, three diverse algorithms are used to detect and suppress reactor power instabilities.

GE submitted for the NRC's review, LTRs NEDC 32410P, "Nuclear Measurement Analysis and Control Power Range Neutron Monitor (NUMAC PRNM) Retrofit Plus Option III Stability Trip Function," in 1995, and LTR NEDC 32410P, Supplement 1, "Nuclear Measurement Analysis and Control Power Range Neutron Monitor (NUMAC PRNM) Plus Option III Stability Trip Function," in 1997. These two LTRs describe the NUMAC PRNM system with the OPRM upscale trip function, and present the information that licensees would need to modify their plant design and TS to implement the NUMAC PRNM system at their plant. The NUMAC PRNM system consists of digital based average power range monitors (APRMs) and OPRMs. The NRC staff approved the LTRs through safety evaluations dated September 5, 1995, and August 15, 1997, respectively. The NRC staff reviewed the NUMAC PRNM system configuration and its hardware and software requirements in its safety evaluation and approved the NUMAC PRNM system design and the effectiveness of the OPRM upscale trip function as an Option III reactor long-term stability solution for detecting and suppressing conditions that could lead to thermal-hydraulic instability.

In 1996, in response to NRC Generic Letter 94-02, "Long-Term Solutions and Upgrade of Interim Operating Recommendations for Thermal-Hydraulic Instabilities in BWRs," dated July 11, 1994, the licensee implemented BWROG Option I-D as a solution to the reactor long-term stability concern. The Option I-D solution places operating restrictions on the permitted regions of the power and flow map. The licensee has determined that, after the planned power uprate at

Monticello (this action is currently under review by the NRC staff as TAC MD9990) is implemented, the operating restrictions of the Option I-D solution would hinder the efficient operation of the plant. Also, the current Option I-D solution provides no alternate method that the licensee can use to continue operation with a generic solution, whereas the Option III solution would allow the licensee to apply alternate monitoring with ICAs. Therefore, the licensee decided to replace the current Option I-D solution with the BWROG Option III solution by implementing the NUMAC PRNM system with the OPRM upscale trip function before the planned power uprate.

2.0 REGULATORY EVALUATION

The NRC staff considered the following regulatory requirements and guidance in its review of the licensee's application:

- Title 10, Part 50, "Domestic Licensing of Production and Utilization Facilities," of the *Code of Federal Regulations* (10 CFR Part 50), establishes the fundamental regulatory requirements with respect to the domestic licensing of nuclear production and utilization facilities. Specifically, Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50 provides, in part, the necessary design, fabrication, construction, testing, and performance requirements for structures, systems, and components important to safety.

- General Design Criterion (GDC) 10, "Reactor Design," requires that the reactor core and associated coolant, control, and protection systems be designed with the appropriate margin to ensure that they do not exceed specified acceptable fuel design limits during any conditions of operation, including the effects of anticipated operational occurrences (AOOs).

- GDC 12, "Suppression of Reactor Power Oscillations," requires that the reactor core and associated coolant, control, and protection systems be designed to ensure that power oscillations which can cause conditions that exceed specified acceptable fuel design limits, are not possible or can be reliably and readily detected and suppressed.

- GDC 13, "Instrumentation and Control," requires that instrumentation be provided to monitor variables and systems over their anticipated ranges for normal operation, for AOOs, and for accident conditions as appropriate to ensure adequate safety, including those variables and systems that can affect the fission process, the integrity of the reactor core, the reactor coolant pressure boundary, and the containment and its associated systems. Appropriate controls shall be provided to maintain these variables and systems within prescribed operating ranges.

- GDC 20, "Protective System Functions," requires that the protection system be designed (1) to initiate automatically the operation of appropriate systems including the reactivity control systems, to ensure that AOOs do not cause specified acceptable fuel design limits to be exceeded, and (2) to sense accident conditions and to initiate the operation of systems and components important to safety.

- In 10 CFR 50.36, "Technical Specifications," the NRC states, in part that, "each applicant for a license authorizing operation of a production or utilization facility shall include in his application proposed technical specifications in accordance with the requirements of this section."

- Section 36(c)(2)(ii)(A) of Title 10 of the *Code of Federal Regulations*, (10 CFR) Part 50 requires that a TS limiting condition for operation (LCO) must be established for "Instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary." In addition, 10 CFR 50.36(c)(3), "Surveillance Requirements," specifies that TSs are to include surveillance requirements for testing, calibrating, or inspecting to assure that the necessary quality of systems and components is maintained, the facility operation will be within safety limits, and that LCOs will be met. The licensee provided its regulatory analysis in Section 6.0 of the application.

- In 10 CFR 50.36(d)(1)(ii)(A), the NRC states, in part, that "where a limiting safety system setting [LSSS] is specified for a variable on which a safety limit has been placed, the setting must be so chosen that automatic protective action will correct the abnormal situation before a safety limit is exceeded."

- In 10 CFR 50.36(d)(3), the NRC states, "Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation would be within safety limits, and that the limiting conditions for operation would be met."

- Regulatory Guide (RG) 1.105, "Setpoints for Safety-Related Instrumentation," describes a method that the NRC staff finds acceptable for use in complying with the NRC's regulations for ensuring that setpoints for safety-related instrumentation are initially within, and will remain within the TS limits.

- Regulatory Issue Summary (RIS) 2006-17, "NRC Staff Position on the Requirements of 10 CFR 50.36, 'Technical Specifications,' Regarding Limiting Safety System Settings during Periodic Testing and Calibration of Instrument Channels," dated August 24, 2006, discusses issues that could occur during the testing of LSSS and that may, therefore, have an adverse effect on equipment operability.

3.0 TECHNICAL EVALUATION

3.1 Proposed Design Changes

The licensee's proposed changes are associated with the installation of the NUMAC PRNM system, and the replacement of the current Option I-D solution with the Option III solution. The licensee proposed to replace the existing power range monitor system, including the APRM system, the rod block monitor (RBM) system, and the local power range monitor (LPRM) system with the NUMAC PRNM system. The licensee would retain the current LPRM detectors and signal cables. The licensee would integrate the Option III stability solution into the NUMAC PRNM system electronics as the OPRM upscale trip function, which would provide automatic detection and suppression of reactor instabilities. The proposed changes include the revision of setpoints and deletion of existing features of the current Option I-D solution. The OPRM upscale trip function would operate during the first startup following its installation with the related TSs in place. However, for a 90-day period, referred to as the "OPRM Monitoring Period," the licensee would deactivate the OPRM trip capabilities but keep the OPRM alarms and indicators operational. Upon completing of the OPRM monitoring period, the licensee would enable the OPRM trip capabilities.

The LTRs describe the design of the generic NUMAC PRNM system with the OPRM upscale trip function, provide associated TS changes, and present the information required to implement this system at any BWR plant. In its Safety Evaluation Reports for the LTRs, the staff evaluated the generic design of the NUMAC PRNM system with the OPRM upscale trip function and the suggested TS changes to ensure that the design-configuration of the system, its hardware and software requirements, and the related TS changes are acceptable. The staff's evaluation concluded that the design of the NUMAC PRNM system is acceptable and that the OPRM upscale trip function meets the GDC 10 and GDC 12 requirements because it automatically detects and suppresses design-basis thermal-hydraulic oscillations before they exceed the minimum critical power ratio (MCPR) safety limit of the fuel. In its submittals, the licensee stated that the design of the proposed NUMAC PRNM system is similar to the one described in the LTRs, and that the staff had previously reviewed and approved it. The staff finds the proposed design changes acceptable.

3.2 Proposed Changes to TS 3.3.1.1, "Reactor Protection System Instrumentation"

3.2.1 Functions

(1) A new "APRM Neutron Flux - High Setdown" scram function would be added as Function 2.a to generate a trip signal to prevent fuel damage resulting from abnormal operating transients at low power.

(2) A new "APRM Simulated Thermal Power - High," scram function would be added as Function 2.b to monitor neutron flux to approximate the Thermal Power being transferred to the reactor coolant.

(3) The clamp portion of the current Function 2.a, "APRM Flow Referenced Neutron Flux - High High," would be relocated to Function 2.c and renamed "APRM Neutron Flux - High."

(4) The current Function 2.b, "APRM Inop" would be relocated to Function 2.d.

(5) A new pseudo function called "APRM 2-out-of-4 Voter" would be added as Function 2.e to facilitate the minimum operable channel definition and associated actions.

(6) A new "OPRM Upscale" scram function would be added as Function 2.f to detect and suppress thermal-hydraulic instability.

3.2.2 Minimum Number of Operable APRM and OPRM Channels

(1) The required minimum number of operable APRM channels would change from four to three channels.

(2) The required minimum number of operable OPRM channels would be three channels.

(3) The required minimum number of operable APRM 2-out-of-4 voter channels would be two per reactor protection system (RPS) trip system.

(4) The required minimum number of operable OPRM channels for initial startup and restart during the OPRM monitoring period is zero. This LCO exception to Section 3.0.4 was not included in the NUMAC PRNM LTR, but was approved for activation of the OPRM upscale trip function at Peach Bottom Atomic Power Station, Units 2 and 3.

(5) The required minimum number of operable LPRMs per OPRM cell would be 2 and the required minimum number of operable OPRM cells would be 17 OPRM cells per OPRM channel.

3.2.3 Applicable Modes of Operation

(1) The new Function 2.a, "APRM Neutron Flux – High (Setdown)," would be required to be operable in Mode 2 (i.e., Startup) in accordance with Section 8.3.3.2 of the NUMAC PRNM LTR.

(2) The new Function 2.b, "APRM Simulated Thermal Power – High," would be required to be operable in Mode 1 (i.e., Power Operation) in accordance with Section 8.3.3.2 of the NUMAC PRNM LTR.

(3) Function 2.c, "APRM Neutron Flux – High," would be required to be operable in Mode 1 instead of Mode 2 in accordance with Section 8.3.3.2 of the NUMAC PRNM LTR.

(4) Function 2.d, "APRM Inop," would be required to be operable in Modes 1 and 2, instead of only in Mode 1 in accordance with Section 8.4.3.2 of the NUMAC PRNM LTR.

(5) The new Function 2.e, "APRM 2-out-of-4 Voter," would be required to be operable in Modes 1 and 2 in accordance with Section 8.4.3.2 of the NUMAC PRNM LTR.

(6) The new Function 2.f, "OPRM Upscale," would be required to be operable only in Mode 1 with the reactor power greater than or equal to 20-percent rated thermal power (RTP) in accordance with Section 8.4.3.2 of the NUMAC PRNM LTR. The OPRM upscale function provides the capability to detect and suppress reactor thermal-hydraulic instabilities. The required minimum number of operable OPRM channels will be 3 channels per trip system. Each OPRM channel provides input to both trip systems.

3.2.4 Channel Check Surveillance Requirements

For the new Function 2.a, "APRM Neutron Flux – High (Setdown)," new Function 2.b, "APRM Simulated Thermal Power – High," new Function 2.e, "APRM 2-out-of-4 Voter," and new Function 2.f, "OPRM Upscale," the channel check requirement, of Surveillance Requirement (SR) 3.3.1.1.1, would be added with a frequency of every 12 hours in accordance with Sections 8.3.4.1.2 and 8.4.4.1.4 of the NUMAC PRNM LTR.

3.2.5 APRM and Calculated Power Comparison SRs

For new Function 2.b, "APRM Simulated Thermal Power – High," and Function 2.c, "APRM Neutron Flux – High," the channel functional test requirement of SR 3.3.1.1.2 would be added with a frequency of every 7 days in accordance with Section 8.3.4.3.2 of the NUMAC PRNM LTR.

3.2.6 RPS Automatic Scram Contactor SRs

For new Function 2.a, "APRM Neutron Flux –High (Setdown)," new Function 2.b, "APRM Simulated Thermal Power – High," new Function 2.e, "APRM 2-out-of-4 Voter," and new Function 2.f, "OPRM Upscale," the functional test of each RPS automatic scram contactor requirement, of SR 3.3.1.1.4, would be added with a frequency of every 7 days in accordance with Section 8.3.4.2.4 of the NUMAC PRNM LTR.

3.2.7 Channel Functional Test SRs

(1) For new Function 2.a, "APRM Neutron Flux –High (Setdown)," new Function 2.b, "APRM Simulated Thermal Power – High," new Function 2.e, "APRM 2-out-of-4 Voter," and new Function 2.f, "OPRM Upscale," the channel functional test requirement of SR 3.3.1.1.15 would be added with a frequency of every 184 days in accordance with Section 8.3.4.2.4 of the NUMAC PRNM LTR.

(2) For Function 2.c, "APRM Neutron Flux – High," and Function 2.d, "APRM Inop," the channel functional test requirement would be increased from every 7 days (SR 3.3.1.1.3) to every 184 days (SR 3.3.1.1.15) in accordance with Section 8.3.4.2.4 of the NUMAC PRNM LTR.

3.2.8 Channel Calibration SRs

(1) For the new Function 2.a, "APRM Neutron Flux –High (Setdown)," new Function 2.b, "APRM Simulated Thermal Power – High," Function 2.c, "APRM Neutron Flux – High," and new Function 2.f, "OPRM Upscale," the channel calibration requirement of SR 3.3.1.1.11 would be added with a frequency of every 24 months in accordance with Section 8.3.4.3.4 of the NUMAC PRNM LTR.

(2) Since channel calibrations for new Function 2.b, "APRM Simulated Thermal Power – High," and new Function 2.f, "OPRM Upscale," would be performed on a 24-month basis under SR 3.3.1.1.11, the SR 3.3.1.1.9 note excluding neutron detectors would be unnecessary and, therefore, deleted.

(3) For new Function 2.a," "APRM Neutron Flux – High (Setdown)," new Function 2.b, "APRM Simulated Thermal Power – High," and new Function 2.f, "OPRM Upscale," the calibrate LPRM requirement of SR 3.3.1.1.6 would be added at a 2000 effective full power hours frequency in accordance with Section 8.3.4.3.4 of the NUMAC PRNM LTR.

3.2.9 Response Time Testing Requirements

(1) For Function 2.c, "APRM Neutron Flux – High," the response time testing requirement of SR 3.3.1.1.14 would be deleted in accordance with Section 8.3.4.4.4 of the NUMAC PRNM LTR.

(2) For new Function 2.e, "APRM 2-out-of-4 Voter," the response time testing requirement, of SR 3.3.1.1.14, would be added with a frequency of every 24 months on a staggered test basis in accordance with Section 8.3.4.4.4 of the NUMAC PRNM LTR.

3.2.10 Logic System Functional Test Requirements

For Function 2.c, "APRM Neutron Flux – High," and Function 2.d, "APRM Inop," the logic system functional test (LSFT) requirement of SR 3.3.1.1.12 would be deleted. For new Function 2.e, "APRM 2-out-of-4 Voter," the LSFT requirement of SR 3.3.1.1.12 would be added with a frequency of 24 months in accordance with Sections 8.3.5.4 and 8.4.5.4 of the NUMAC PRNM LTR.

3.2.11 Bypass Surveillance

For new Function 2.f, "OPRM Upscale," the verification that the OPRM function is not bypassed, requirement of SR 3.3.1.1.16 would be added with a frequency of every 24 months in accordance with Section 8.4.4.2.4 of the NUMAC PRNM LTR.

3.2.12 LCO Conditions and Actions

(1) LCO 3.3.1.1 Condition A, "One or more required channels inoperable," and the associated Required Action A.1, "Place channel in trip," would apply to new Function 2.a, "APRM Neutron Flux – High (Setdown)," new Function 2.b, "APRM Simulated Thermal Power – High," new Function 2.e, "APRM 2-out-of-4 Voter," and new Function 2.f, "OPRM Upscale." The requirements would apply in the same way as they would for Function 2.c, "APRM Neutron Flux – High," and Function 2.d, "APRM Inop." However, Required Action A.2, "Place associated trip system in trip," would apply only to new Function 2.e, "APRM 2-out-of-4 Voter."

(2) LCO 3.3.1.1 Condition B, "One or more Functions with one or more required channels inoperable in both trip systems," and the associated Required Action B.1, "Place channel in one trip system in trip," and Required Action B.2, "Place one trip system in trip," would apply only to new Function 2.e, "APRM 2-out-of-4 Voter."

(3) LCO 3.3.1.1 Condition F and the associated required actions would apply to new Function 2.b, "APRM Simulated Thermal Power – High."

(4) LCO 3.3.1.1 Condition G, "As required by Required Action D.1 and referenced in Table 3.3.1.1-1," and the associated Required Action G.1, "Be in MODE 3," would be applied to Function 2.d, "APRM Inop," instead of Condition F, "As required by Required Action D.1 and referenced in Table 3.3.1.1-1," and the associated Required Actions F.1, "Be in MODE 2," and Required Action F.2, "Reduce reactor pressure to < 600 psig."

(5) LCO 3.3.1.1 Condition G and the associated required actions would apply to new Function 2.a, "APRM Neutron Flux – High (Setdown)," and new Function 2.e, "APRM 2-out-of-4 Voter."

(6) New LCO 3.3.1.1 Conditions I and J would be added with the associated required actions and completion times (CT). These new conditions would apply when the OPRM channel Required Action D.1 and its associated CT is not met; when Function 2.f, "OPRM Upscale," is not available because there are less than two operable OPRM channels; or when Function 2.f, "OPRM Upscale," is not available because of a design problem that renders all OPRM channels inoperable. Required Action I.1 would allow the licensee a 12-hour CT to initiate alternate methods of detecting and suppressing thermal-hydraulic instability oscillations. Required Action I.2 would allow the licensee a 120-day CT to restore the required channels to operable status. Condition I would address

situations where the licensee cannot maintain its OPRM trip capability. An exception to LCO 3.0.4 would be allowed for Required Action I.2 which would allow the plant to restart in the event of a shutdown during the 120-day CT. This exception would be consistent with the intent of the NUMAC PRNM LTR to allow normal plant operations to continue during the recovery time from a hypothesized design problem with the Option III algorithms.

The alternate method for the detection and suppression of thermal-hydraulic (TH) instability oscillations mandated by Required Action I.1 is similar to a temporary re-establishment of the ICAs specified in NRC Bulletin 88-07, Supplement 1, for up to 120 days. Plant procedures, rather than TS, would control the alternate method for detection and suppression of TH instabilities.

Condition J would apply if the CT for Required Action I.2 is not met. Required Action J.1 would allow 4 hours to reduce thermal power to less than 20-percent RTP.

The NRC staff reviewed the proposed addition of Conditions I and J and found them acceptable because the proposed addition of Conditions I and J provide conservative default conditions when the low tier conditions associated with combinations of OPRM channel/function/RPS trip capability cannot be met. The licensee will implement Backup Stability Protection (BSP) (OG 02-0119-260, GE to BWR Owners' Group Detect and Suppress II Committee, "Backup Stability Protection for Inoperable Option III Solution," dated July 2002), as an alternate method for detection and suppression of instabilities when Condition I is entered and during the initial monitoring period when PRNM system is operable, but the OPRM trip is not enabled.

3.2.13 APRM / OPRM Setpoints and Allowable Values

(1) There are no allowable values (AVs) associated with the OPRM upscale function. The OPRM Period Based Detection Algorithm (PBDA) upscale trip setpoints are determined based on the Option III licensing methodology developed by the BWROG, and they are described in LTR NEDO 32465-A with the exception that a plant/cycle specific delta critical power ratio over initial MCPR versus the oscillation magnitude (DIVOM) curve slope would be applied in place of the generic DIVOM curve slope. The BWROG resolution of a 10 CFR Part 21, "Reporting of Defects and Noncompliance," report necessitated the change in the DIVOM curve slope. The PBDA setpoints would be documented in the licensee's Core Operating Limits Report (COLR).

The minimum operable OPRM cells setpoint (17) are defined by GEH analyses based on the selection of the OPRM cell assignments and a requirement for a minimum of two LPRMs per cell. The OPRM PBDA Upscale trip setpoints are determined using the Option III reload licensing methodology (Reference 4), with the exception that a plant/cycle-specific DIVOM curve slope is applied in place of the generic DIVOM curve slope. There are also setpoints for the defense-in-depth algorithms, i.e., the Amplitude Based Algorithm and the Growth Rate Algorithm, which are discussed in the OPRM Upscale function description within the proposed TS Bases markup. The amplitude based and growth rate algorithms are not credited in the safety analysis, and their settings are documented only in the MNGP procedures. The licensee proposed that the Period Based Detection Algorithm setpoint for the OPRM Upscale function is stated, "As specified in COLR" in the AV column of TS Table 3.3.1.1-1.

(2) The PBDA algorithm includes several "tuning" parameters. These parameters are established in accordance with plant procedures as part of the system setup and are not defined in the TS.

(3) There are also TS-related setpoints for defense-in-depth algorithms (i.e., the Amplitude Based Algorithm (ABA) and the Growth Rate Algorithm (GRA)). These algorithms together with the PBDA are treated as nominal setpoints based on studies documented in Appendix A to NEDO-32465-A.

(4) GEH analyses based on the selection of the OPRM cell assignments and on a requirement for a minimum of two LPRMs per cell define the minimum operable OPRM cells setpoint. The setpoint is established to conform to the licensing bases defined in NEDO 31960-A and NEDO 32465-A. This setpoint and the selection of a minimum of two LPRMs per cell, is documented in the TS Bases as part of the operability requirement for Function 2.f, "OPRM Upscale."

(5) The setpoints for the defense-in-depth algorithms discussed in the OPRM upscale function description in the TS Bases markup are documented only in the plant procedures. The AV column in TS Table 3.3.1.1-1 indicates for the OPRM Upscale function that the COLR defines OPRM PBDA setpoint limits.

(6) For Function 2.a, "APRM Neutron Flux – High (Setdown)," the AV would be "≤ 20 percent RTP."

(7) For Function 2.b, "APRM Simulated Thermal Power – High," the AV would be "≤ 0.66 W + 61.6 percent RTP[(b)] and ≤ 116 percent RTP."

(8) For Function 2.c, "APRM Neutron Flux – High," the AV would be "≤ 122 percent RTP."

(9) For Function 2.f, "ORPM Upscale," the set point would be "As specified in COLR."

(10) To provide for single loop operation, Note (b) to TS Table 3.3.1.1-1 would be revised to read, "≤ 0.66 (W – Delta W) + 61.6 percent RTP when reset for single-loop operation per LCO 3.4.1, "Recirculation Loops Operating." The cycle-specific value for Delta W is specified in the COLR."

(11) Existing Note (c) to TS Table 3.3.1.1-1 would be relabeled as Note (d).

(12) A new Note (c) to TS Table 3.3.1.1-1, "Each APRM / OPRM channel provides inputs to both trip systems," would be added for clarity.

(13) A new Note (e) to TS Table 3.3.1.1-1 would be added to clarify the status of the OPRM Upscale function for on-line activation of the OPRM system. Note (e) would read:

"During the OPRM Monitoring Period, the OPRM Upscale function is inoperable."

The NUMAC PRNM LTR recommended a one cycle monitoring period to ensure that the OPRM performs as designed and does not create any unintended consequences. GEH NUMAC PRNM systems with Option III have been installed at numerous plants and have accumulated more than 90 reactor years of fully armed operation.

During the initial OPRM Monitoring Period, Function 2.f, "OPRM Upscale," would not be trip-enabled. The licensee would implement backup stability protection as an alternate method for the detection and suppression of instabilities. The 90-day monitoring period would provide expeditious automatic stability protection while assuring that the chance of inadvertent scrams would be low. The licensee can perform required surveillance testing during the refueling outage before the initial monitoring period and additional partial follow-up surveillance testing associated with the activation of the OPRM upscale function at power.

3.3 Setpoint Methodology

The licensee uses the GEH instrument setpoint methodology (ISM) which is based on Instrument Society of America (ISA) Standard 67.04, Method 2. Although RG 1.105 endorses ISA 67.04, the NRC has not endorsed the individual methods attached to ISA 67.04.

The licensee calculates the setpoints from the analytical limit (AL) and calculates the margin between the AL and the AV and the nominal trip setpoint (NTSP). The calibration uncertainty contains the as-left tolerance (ALT). All random errors are combined using the square-root-of-the-sum-of-the squares method, and non-conservative bias errors are added algebraically. The ISM provides sufficient margin between the AL and AV to ensure at least 95-percent probability that the AL will not be exceeded if the setpoint has drifted to the AV.

The licensee's procedures require an instrument to be declared inoperable if the AV is exceeded; they also require the licensee to take corrective actions any time the as-found tolerance (AFT) is exceeded. The instrument's performance would be evaluated before the channel can be returned to service. All setpoints would be reset to the NTSP within the ALT after calibration. The procedures consider a channel inoperable if the licensee cannot restore or calibrate it within the ALT.

Digital instrumentation is not vulnerable to drift, is not adjustable, and has no AFT or ALT.

The OPRM setpoints are not derived from the GE ISM. The OPRM setpoint methodology is a comprehensive BWROG methodology for stability analysis in NEDO 32465-A, which the NRC staff has approved. The OPRM setpoints are based on nominal setpoints and have no Als or Avs. The NRC has approved this methodology for other BWRs that use Option III.

For safety limit-related (SL-related) LSSS, the licensee proposed the addition of TS notes to address the controls to ensure operability. The proposed notes for TS Table 3.3.1.1-1, Function 2.c, "ARPM Neutron Flux – High," read as follows:

- "If the as-found channel setpoint is not the NTSP, but is conservative with respect to the AV, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service."

- "The instrument channel setpoint shall be reset to the NTSP at the completion of the surveillance; otherwise, the channel shall be declared inoperable. The NTSP and the methodology used to determine the NTSP are specified in the Technical Requirements Manual."

The proposed notes for TS Table 3.3.2.1-1, Function 1.a, "Rod Block Monitor Low Power Range – Upscale," Function 1.b, "Rod Block Monitor Intermediate Power Range – Upscale," and Function 1.c, "Rod Block Monitor High Power Range – Upscale," the proposed notes are as follows:

- "If the as-found channel setpoint is not the Nominal Trip Setpoint, but is conservative with respect to the AV, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service."

- "The instrument channel setpoint shall be reset to the NTSP at the completion of the surveillance; otherwise, the channel shall be declared inoperable. The NTSP shall be specified in the COLR. The methodology used to determine the NTSP is specified in the Technical Requirements Manual."

The licensee must enter into the corrective action program data found outside of the specified limits during surveillance testing. If the instrument setpoint is within the ALT, the licensee will not need to take further action. If the setpoint is outside the ALT but within the AFT, the licensee must reset the setpoint to within the ALT. If the setpoint is conservative with respect to the AV but outside the AFT, the licensee must reset the setpoint to the low trip setpoint within the ALT, and the maintenance supervisor must evaluate the channel. If the setpoint is non-conservative with respect to the AV, the licensee must declare the channel inoperable, and the maintenance supervisor must evaluate the channel.

In addressing the setpoint methodology issues, the licensee identified TS Table, 3.3.1.1-1, Function 2.a, "APRM Neutron Flux – High (Setdown)," Function 2.b, "APRM Simulated Thermal Power – High," and Function 2.f, "OPRM Upscale," as functions that are not LSSS SL-related. The NRC staff agrees with the licensee's determination that the above functions are not LSSS SL-related.

3.4 Proposed Changes to TS 3.3.2.1 "Control Rod Block Instrumentation"

3.4.1 Rod Block Monitor Downscale Function

Function 1.e, "Rod Block Monitor (RBM) Downscale," would be deleted. The RBM downscale function does not meet the criteria of 10 CFR 50.36 for inclusion in the TS. This change was not in the NUMAC PRNM LTR, but the NRC accepted it for other BWR installations of the NUMAC PRNM system.

3.4.2 Channel Functional Test SR

For Function 1.a, "RBM Low Power Range – Upscale," Function 1.b, "Intermediate Power Range – Upscale," Function 1.c, "RBM High Power Range – Upscale," and Function 1.d, "RBM Inop," the frequency of the channel functional test requirement, of SR 3.3.2.1.1, would be changed from every 92 days to every 184 days in accordance with Section 8.5.4.2.4 of the NUMAC PRNM LTR.

3.4.3 Channel Calibration SR

For Function 1.a, "RBM Low Power Range – Upscale," Function 1.b, "Intermediate Power Range – Upscale," and Function 1.c, "RBM High Power Range – Upscale," the frequency of the channel calibration requirement, of SR 3.3.2.1.4, would be changed from every 92 days to every 24 months in accordance with Section 8.5.4.3.4 of the NUMAC PRNM LTR.

3.4.4 Bypass SR

For Function 1.a, "RBM Low Power Range – Upscale," Function 1.b, "Intermediate Power Range – Upscale," and Function 1.c, "RBM High Power Range – Upscale," the requirement for verification that the function is not bypassed, of SR 3.3.2.1.5, would be changed from 92 days to 24 months in accordance with Section 8.5.4.3 of the NUMAC PRNM LTR.

3.5 Proposed Changes to TS 3.4.1, "Recirculation Loops Operating"

3.5.1 LCO Statements and Notes

The LCO 3.4.1 statements and note relating to two-loop and single-loop operation would be reworded to recognize that the required AV for the single-loop operation adjustment is described in a note to TS Table 3.3.1.1-1.

A power to flow map will continue to be provided within the COLR. The references to the power to flow map (and regions therein) are proposed to be removed from Specification 3.4.1 as they are no longer applicable.

The NRC staff reviewed the proposed removal of the power to flow map from Specification 3.4.1 and found the removal acceptable because Specification 3.3.1.1, "Reactor Protection System Instrumentation," provides automatic detection and suppression of reactor instabilities, and in accordance with the Option III stability solution methodology, stability actions are no longer required within Specification 3.4.1, as was previously the case for Option I-D.

3.5.2 LCO Reference

The LCO 3.4.1 reference to TS Table 3.3.1.1-1, current Function 2.a, "APRM Flow Referenced Neutron Flux High – High," would be replaced with a reference to TS Table 3.3.1.1-1, new Function 2.b, "APRM Simulated Thermal Power – High," to reflect the change in the name of the function.

3.5.3 LCO Conditions and Actions

LCO 3.4.1 Condition A and Required Action A.1, which are related to operation in a stability exclusion region under Option I-D, would be deleted. Conditions B and C and Required Actions B.1 and C.1 would be renumbered accordingly.

3.5.4 Verification of Operation SR

SR 3.4.1.2, the verification of operation SR if operating in the stability buffer region, would be deleted. The NRC staff found this acceptable because the power to flow map is no longer is use.

3.6 Proposed Changes to TS 5.6.3, "COLR"

(1) Revise the COLR to eliminate requirements associated with TS 3.4.1.

(2) Add a new requirement indicating that the AV for single loop Delta W associated with Table 3.3.1.1-1, Function 2.b, "APRM Simulated Thermal Power – High," Note (b), and the PBDA trip setpoints associated with Specification 3.3.1.1-1 will be specified in the COLR. The NRC staff found these changes acceptable because both Delta W and PBDA trip setpoints are cycle-specific parameters and are calculated using approved methodologies.

(3) Add a new requirement indicating that the COLR will specify the OPRM PBDA setpoints associated with TS 3.3.1.1-1, Function 2.f, "OPRM Upscale."

(4) Add a reference to NEDO 32465-A, "Reactor Stability Detect and Suppress Solutions Licensing Basis Methodology and Reload Applications," issued August 1996.

3.7 TS Change Evaluation

The licensee stated that the basis for the above-listed proposed TS changes is documented in the BWROG LTRs, which the NRC staff approved. The proposed TS changes are consistent with the Option III solution and industry practices that established the ICAs as suitable boundaries to preclude instability events. In addition, the changes are based on experience from plants that have implemented the Option III solution.

The licensee stated that the current TS 3.3.1.1, TS 3.4.1, and TS 5.6.5 support implementation of the Option I-D stability solution. With removal of Option I-D and with the implementation of the NUMAC PRNM system with the OPRM upscale trip function, TS 3.3.1.1 and TS 3.4.1 would be revised. TS 5.6.5 would also be revised to reflect the changed requirements associated with removal of the Option I-D solution and with the implementation of the NUMAC PRNM system with the OPRM upscale trip function. The proposed changes are consistent with the NRC-approved LTRs, and are, therefore, acceptable.

3.8 Additional Changes

3.8.1 Deviations from the LTRs

3.8.1.1 OPRM Amplitude and Growth Rate Based Pre-Trip Alarms

Paragraph 3.3.3.1.2 of the NUMAC PRNM LTR states that the OPRM provides an oscillation pre-trip alarm when one of the stability algorithms for an operable OPRM cell has exceeded user-defined setpoints. Although automatic protection would be actuated if any of the three algorithms meets its trip conditions, only the PBDA is credited with protection of the MCPR SL for anticipated reactor instabilities.

For Monticello, the ABA and GRA would be included for defense-in-depth, and would be designed to detect large fast growing oscillations. For these fast growing oscillation events, a trip would occur early in the event with little time for operator action. Therefore, ABA and GRA pre-trip alarms would not be included in the Monticello NUMAC PRNM system.

The proposed MNGP PRNM System design will provide the OPRM pre-trip alarm only when the PBDA for an operable OPRM cell has exceeded user defined setpoints.

The NRC staff reviewed the proposed deviation from the NUMAC PRNM LTR by only crediting the period-based algorithm, not amplitude or growth rate for an oscillation pre-trip alarm, and found it acceptable because the growth rate and amplitude based algorithms are good for defense-in-depth and designed to detect large, fast growing oscillations, for which a trip will occur very early in the event with little time for effective operator action.

3.8.1.2 APRM Upscale / OPRM Upscale / APRM INOP Function Logic

Section 8.4.1.3 of Supplement 1 of the NUMAC PRNM LTR lists the OPRM upscale function as being voted separately from the APRM inop function. With this logic design, an inoperable APRM inop function in one APRM channel, and an inoperable OPRM upscale function in another channel, would result in two half-trips in each of the 2-out-of-4 Voter channels with no RPS trip.

Operating experience with other NUMAC PRNM installations identified a problem when a second APRM/OPRM channel is required to be declared inoperable by TS when a channel is already in bypass (TS require the second channel to be placed in the tripped condition). Placing the keylock switch in the INOP position trips the APRM channel but not the OPRM channel.

To satisfy TS requirements to place a second OPRM channel in the tripped condition and address this situation, the Monticello NUMAC PRNM system would have the OPRM upscale function combined with the APRM inop function so that an inoperable APRM inop function in one APRM channel, and an inoperable OPRM upscale function in another channel, would result in RPS trip outputs from all four 2-out-of-4 voter channels.

3.8.1.3 Option III PBDA

The licensee plans to install the DSS-CD stability solution operating in the traditional Option III configuration as part of this NUMAC PRNM System retrofit. In this Option III configuration, the DSS-CD confirmation density algorithm is not connected to the RPS trip output delays, and the Period Based Detection Algorithm is credited to provide stability protection

NEDC 33075-A describes the Detect and Suppression Solution – Confirmation Density (DSS-CD) stability solution as an extension of Option III to provide protection in the maximum extended load line limit analysis plus operating domain. Some of the features of the DSS-CD stability solution are enhancements from those approved for Option III in NEDO 31960-A.

The Option III licensing basis defines the base period as the average of all successively confirmed periods. The Monticello application would define the successive base period as equal to the previous period that is within the PBDA algorithm T_{min} and T_{max} limits. T_{max} is defined as the upper time limit of the oscillation period for the PBDA, and T_{min} is defined as the lower time limit of the oscillation period for PBDA. This change would not significantly increase the frequency of spurious scrams during normal operation and would be conservative relative to the Option III licensing basis.

The period tolerance offset maximizes the ability of the PBDA to recognize the initiation of oscillations following a fast flow reduction event. This change from the Option III licensing basis would not significantly increase the likelihood of a spurious scram or adversely impact the plant's ability to protect the MCPR safety limit. This change would not significantly increase the frequency of spurious scrams during normal operation and would be conservative relative to the Option III licensing basis.

3.8.2 Plant-Specific Exceptions Not Discussed in NRC-Approved LTRs

3.8.2.1 TS 3.3.1.1 – APRM Related RPS Instrumentation Functions.

(1) The LTRs do not discuss the specific assignment of LPRMs per OPRM cell, the minimum number of LPRMs required for OPRM cell operability, or the minimum number of OPRM cells required for OPRM channel operability, but they do provide a selection methodology that can be used for these attributes for a plant-specific application. The NRC staff previously approved the LPRM assignment methodology of the LTRs. Based on the LTR methodology, the licensee has selected an LPRM-to-OPRM cell assignment pattern that includes two LPRMs per OPRM cell and has determined that a minimum of 17 OPRM cells are required for an OPRM channel to be operable. Because the NRC staff has already approved the LPRM assignment methodology of the LTRs, it finds acceptable the selected values for the minimum number of LPRMs required for establishing operability of an OPRM cell and the minimum OPRM cells required for an OPRM channel to be operable.

(2) For the channel calibration requirement of SR 3.3.1.1.11, a note applicable to Function 2.b, "APRM Simulated Thermal Power High," and Function 2.f, "OPRM Upscale," would be added to the SR to state that it includes the recirculation flow transmitters that feed the APRMs. This note was not in LTRs. This modification is proposed to improve clarity, and to recognize that the OPRM upscale function requires recirculation flow calibration to support the auto-enable function. The NRC staff finds this clarification acceptable.

(3) The LTRs delete response time testing (RTT) requirements except for TS Table 3.3.1.1-1, Function 2.e, "APRM 2-out-of-4 Voter." The LTRs also discuss application of staggered testing to the voter function but show no specific changes to the SR or the bases to define the testing requirements. To address this, SR 3.3.1.1.14 for RTT would be revised to add a note to define "n" for Function 2.e. Although the LTRs justified a reduced RTT frequency for this function, no TS markups were included. Therefore, the SR 3.3.1.1.14 note would be modified to define "n = 8" for this function, and would, therefore, require alternate testing of APRM and OPRM outputs. These changes are within, and are slightly more conservative than, the limits justified in the LTRs. Therefore, the NRC staff finds the changes to this note to clarify the total number of voter channels acceptable.

3.8.2.2 TS 3.3.2.1 – APRM Control Rod Block Functions

The RBM downscale trip function would be deleted from the TS. The LTRs do not address deletion of this trip from the TS. In its submittals the licensee stated that this downscale trip function detects substantial reductions in the RBM local flux after a "null" is completed, which occurs after a new rod selection. This function in combination with the RBM inop function was originally intended to detect problems or abnormal conditions in the RBM system. However, no credit is taken for this function in establishing analytical limits or setpoints for the RBM upscale function.

In the original analog RBM system, the inclusion of an RBM downscale function in addition to the RBM inop function had some merit because the analog equipment had some failure modes that could cause a reduced signal but not a total failure. Also, unlike other neutron monitoring system downscale functions (e.g., APRM downscale), there would be no normal operating conditions that the RBM downscale function is intended to detect. Replacing the analog system with the digital system would eliminate the types of failures that the RBM downscale function would detect. Also, the RBM inop function would be enhanced by use of digital automatic self-test and internal logic to increase the detectability of abnormal conditions and to include those conditions directly in the RBM inop function. Therefore, the RBM downscale trip would provide no incremental value or benefit. Also, this trip function does not meet the 10 CFR 50.36 criteria for inclusion in the TS and would be removed. However, the RBM inop Function would be retained. The staff finds acceptable the deletion of the RBM downscale function.

3.8.2.3 TS 3.4.1 - Recirculation Loops Operating

The LTRs did not include discussion of TS 3.4.1, "Recirculation Loops Operating." In its submittals, the licensee stated that the TS 3.4.1 must be revised so that it is consistent with the proposed APRM TS changes for implementing the NUMAC PRNM system. The staff finds acceptable the revision of TS 3.4.1 to make it consistent with other proposed TS changes associated with implementing the NUMAC PRNM system.

3.9 Licensee Actions

The staff-approved LTRs NEDC 32410P-A and NEDC 32410P-A, Supplement 1, require licensees to address all utility actions included in these LTRs and to justify each deviation on a case-by-case basis in their plant-specific TS submittals for implementing the NUMAC PRNM system with the OPRM upscale trip function. In general, the licensee met the required actions discussed in the LTRs and provided justifications for the deviations, which the staff finds acceptable.

3.10 Summary of Technical Evaluation

Based on the above evaluation, the NRC staff concludes that implementing the NUMAC PRNM system with the OPRM upscale trip function would provide timely automatic protection during thermal-hydraulic instability events without operator involvement and would, therefore, reduce operator burden. The NRC staff had previously evaluated and approved the NUMAC PRNM design with OPRM upscale trip option. The licensee provided acceptable responses to all issues that the LTRs specified for the licensee to address in its plant-specific submittals. As set forth above, the NRC staff finds that the proposed NUMAC PRNM modification and the related TS revisions acceptable. The NRC staff concludes that the proposed changes evaluated above meet Monticello's current licensing basis and 10 CFR Part 50 and are, therefore, acceptable.

4.0 STATE CONSULTATION

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

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes requirements with respect to the installation and use of facility components located within the restricted area as defined in 10 CFR Part 20 and change 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 Commission has previously issued a proposed finding that the amendment involves no-significant-hazards considerations, and there has been no public comment on the finding (73 FR 13025). 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 NRC staff has concluded, on the basis of 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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: Tai Huang
Barry Marcus

Dated: January 30, 2009

January 30, 2009

Mr. Timothy J. O'Connor
Site Vice President
Monticello Nuclear Generating Plant
Northern States Power Company
2807 West County Road 75
Monticello, MN 55362-9637

SUBJECT: MONTICELLO NUCLEAR GENERATING PLANT (MNGP) - ISSUANCE OF AMENDMENT REGARDING THE POWER RANGE NEUTRON MONITORING SYSTEM (TAC NO. MD8064)

Dear Mr. O'Connor:

The Commission has issued the enclosed Amendment No. 159 to Renewed Facility Operating License No. DPR-22 for the Monticello Nuclear Generating Plant. The amendment consists of changes to the Technical Specifications in response to your application dated February 6, 2008, as supplemented by letters dated September 16 and November 6, 2008.

The amendment approves the installation and use of the General Electric - Hitachi Nuclear Measurement Analysis and Control Digital Power Range Neutron Monitoring System (PRNMS), and approves changes in the Technical Specifications to reflect use of the PRNMS at MNGP.

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

Sincerely,

/RA/

Peter S. Tam, Senior Project Manager
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-263

Enclosures:
1. Amendment No. 159 to DPR-22
2. Safety Evaluation

cc w/encls: Distribution via ListServ

DISTRIBUTION

PUBLIC	LPL3-1 r/f	RidsNrrDorlLpl3-1 Resource	RidsNrrPMMonticello Resource
RidsNrrLATHarris Resource		RidsOGCRp Resource	RidsAcrsAcnw_MailCTR Resource
RidsNrrDirsSbpb	RidsRgn3MailCenter Resource		C. Schulten, NRR
G. Hill, OIS	RidsNrrDorlDpr	B. Marcus, NRR	T. Huang, NRR

Accession No.: **ML083440681**

OFFICE	LPL3-1/PM	LPL3-1/LA	EICB/BC	SRXB/BC	ITSB/BC	OGC	LPL3-1/BC
NAME	PTam	THarris	WKemper*	GCranston*	RElliott	AJones	LJames
DATE	12/19/08	12/18/08	12/5/08*	11/18/08*	12/22/08	1/7/09	1/30/09

*Safety evaluation input transmitted by memo on date shown.

OFFICIAL RECORD COPY