

April 10, 2002

Mr. Douglas E. Cooper  
Site Vice President  
Palisades Plant  
Nuclear Management Company, LLC  
27780 Blue Star Memorial Highway  
Covert, MI 49043-9530

SUBJECT: PALISADES PLANT - ISSUANCE OF AMENDMENT TO CHANGE TECHNICAL SPECIFICATION MAXIMUM ALLOWABLE VALUE FOR VARIABLE HIGH POWER TRIP (TAC NO. MB3326)

Dear Mr. Cooper:

The Commission has issued the enclosed Amendment No. 208 to Facility Operating License No. DPR-20 for the Palisades Plant. The amendment consists of changes to the Technical Specifications (TSs) in response to your application dated November 2, 2001.

The amendment changes TS Table 3.3.1-1, "Reactor Protective System Instrumentation," Item 1, "Variable High Power Trip [VHPT]," by increasing the maximum allowable value for the VHPT from less than or equal to 106.5 percent rated thermal power (RTP) to less than or equal to 111 percent RTP.

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/*

Darl S. Hood, Senior Project Manager, Section 1  
Project Directorate III  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket No. 50-255

Enclosures: 1. Amendment No. 208 to DPR-20  
2. Safety Evaluation

cc w/encls: See next page

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DISTRIBUTION

PUBLIC	OGC	EMarinos
PDIII-1 Reading	ACRS	KMortensen
LRaghavan	WBeckner	
DHood	GHill(2)	
RBouling	AVegel, RGN-III	

ADAMS Accession No.: ML021000269

\*Previously Concurred

OFFICE	PDIII-1/PM	PDIII-1/LA	EEIB/SC*	OGC*	PDIII-1/SC
NAME	DHood	THarris for RBouling	EMarinos	RHoefling	LRaghavan
DATE	04/10/02	04/12/02	03/18/02	04/04/02	04/10/02

OFFICIAL RECORD COPY

Palisades Plant

cc:

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November 2001

NUCLEAR MANAGEMENT COMPANY, LLC

DOCKET NO. 50-255

PALISADES PLANT

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 208  
License No. DPR-20

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Nuclear Management Company, LLC (the licensee), dated November 2, 2001, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter 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;
  - 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 the license amendment and Paragraph 2.C.(2) of Facility Operating License No. DPR-20 is hereby amended to read as follows:

The Technical Specifications contained in Appendix A, as revised through Amendment No. 208, and the Environmental Protection Plan contained in Appendix B are hereby incorporated in the license. The licensee 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 issuance and shall be implemented within 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

Lakshminaras Raghavan, Chief, Section 1  
Project Directorate III  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: April 10, 2002

ATTACHMENT TO LICENSE AMENDMENT NO. 208

FACILITY OPERATING LICENSE NO. DPR-20

DOCKET NO. 50-255

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

REMOVE

3.3.1-6

INSERT

3.3.1-6

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 208 TO FACILITY OPERATING LICENSE NO. DPR-20

NUCLEAR MANAGEMENT COMPANY, LLC

PALISADES PLANT

DOCKET NO. 50-255

## 1.0 INTRODUCTION

By application dated November 2, 2001, the Nuclear Management Company, LLC (the licensee), requested an amendment to the Technical Specifications (TSs) for the Palisades Plant. The proposed amendment would change TS Table 3.3.1-1, "Reactor Protective System Instrumentation," Item 1, "Variable High Power Trip [VHPT]," by increasing the maximum allowable value for the VHPT from less than or equal to 106.5 percent rated thermal power (RTP) to less than or equal to 111 percent RTP. The proposed increase results from a change in the method used for attributing the instrument uncertainties.

## 2.0 BACKGROUND

The VHPT is part of the reactor protective system (RPS) at Palisades. In the event of an anticipated operational occurrence, the RPS initiates an automatic reactor trip to prevent violating acceptable fuel design limits and breaching the reactor coolant pressure boundary.

At Palisades, thermal margin monitors provide the signal processing necessary to calculate "Q power," which is the higher power level signal of either nuclear instrumentation power or primary calorimetric power. The VHPT uses Q power as its input. The measurement channels associated with the VHPT are the power range excore channels and the primary coolant system's hot and cold leg temperature channels.

During operating periods in which the reactor power decreases, the VHPT setpoint tracks power levels downward in such a manner that it is always within a fixed increment above the current power, subject to a minimum value. Upon power increases, the trip setpoint remains fixed unless it is manually reset. The new setpoint is a fixed increment above the Q power at the time of reset, subject to a maximum value. Thus, during power escalation, the trip setpoint is repeatedly manually reset to avoid tripping the reactor.

Further description of the Palisades RPS, including the VHPT, is given in the Palisades Final Safety Analysis Report (FSAR), Section 7.2, "Reactor Protective System."

The licensee states that the proposed change is needed because spurious activations of the VHP pre-trip alarms have been occurring during normal operation since the licensee adopted a low neutron leakage core design in the early 1990's. The alarms result from localized primary coolant temperature fluctuations caused by the combination of irregular flow and temperature distribution at the core exit and the lack of mixing before the coolant exiting the core reaches the temperature sensors in the hot leg. Because of these flow pattern irregularities, coolant with a higher temperature briefly impacts the hot leg temperature input value to the thermal margin monitor with no actual concurrent increase in reactor power, or other associated system changes. The licensee proposes to change the VHPT setpoint and the maximum allowable value, which would allow an increase in the VHP pre-trip setpoint and thereby reduce the frequency of the spurious activations of the VHP pre-trip alarms. The establishment of the setting for the VHP pre-trip setpoint is not within the scope of the TSs and, therefore, is not addressed by this amendment.

### 3.0 EVALUATION

Paragraph (c)(1)(ii)(A) of 10 CFR 50.36, "Technical Specifications," requires, in part, that where a limiting safety system setting is specified for a variable on which a safety limit has been placed, the setting shall be so chosen that automatic protective action will correct the abnormal situation before a safety limit is exceeded. Revision 3 to NRC Regulatory Guide 1.105, "Setpoints for Safety-Related Instrumentation," and American Nuclear Standards Institute's Standard ANSI/ISA-S67.04-1994, "Setpoints for Nuclear Safety-Related Instrumentation," provide guidance and methodologies for determining appropriate settings. This methodology defines the "analytical limit," the "allowable value," and the "calculated trip setpoint" for nuclear safety-related setpoints.<sup>1</sup>

The safety function provided by the VHPT would be maintained after the proposed increase in the VHPT maximum allowable value. The proposed maximum allowable value for the VHPT is determined utilizing new methodology (Method 3) of ANSI/ISA-S67.04-1994 and RG 1.105, Revision 3, which changes the method used for attributing the instrument uncertainties. In the existing calculations for the VHPT setpoint, the nuclear instrumentation uncertainty is accounted for twice and none of the random instrumentation uncertainties are combined using the square-root of the sum of the squares method. In its application dated November 2, 2001, the licensee documents and justifies its allocation of selected uncertainties to be included and calculates 111 percent as the appropriate maximum allowable value for the TS amendment. The NRC staff has reviewed the licensee's application for amendment and finds that the licensee has conformed to the guidance in ANSI/ISA-S67.04 and RG 1.105 in the allocation of the uncertainties. On this basis, the NRC staff concludes that the TS maximum allowable value of less than or equal to 111 percent RTP is acceptable.

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<sup>1</sup> The term "analytical limit" refers to the limit of a measured or calculated variable established by the safety analysis to ensure that a safety limit is not exceeded. The analytical limit is not proposed to be changed by this amendment. The term "allowable value" is the limiting value that a trip setpoint may have when tested periodically, beyond which appropriate action shall be taken. This limit is specified in the TSs and is proposed to be changed by this amendment. The term "setpoint" means a predetermined value (or function) at which a device changes state to indicate that the quantity under surveillance has reached the selected value. Using the methodology (Method 3) of ANSI/ISA-S67.04-1994 and RG 1.105, Revision 3, the licensee calculates an increase in the VHPT-calculated setpoint from 105.5-percent RPT to 106.5-percent RPT for Palisades. Because the VHPT-calculated setpoint is not specified in the TSs, it is not explicitly changed by this proposed amendment.



The 1994 release of ANSI/ISA-S67.04 defines a “region of calibration tolerance,” which is also the acceptable “as-left” condition for a setpoint’s periodic calibration. A trip setpoint value found to be outside this region must be adjusted and returned to its acceptable as-left condition. In a telephone discussion with the licensee on March 6, 2002, the NRC staff asked the licensee to clarify its region of calibration tolerance for the VHPT setpoint. The licensee explained that because the setpoint is entered as a digital number, there is no drift in its setting and, therefore, the as-found value does not differ from the as-left value. The small uncertainty in the analog-to-digital converter (i.e., less than 0.05 percent) has been otherwise accounted for in the licensee’s application for amendment. Accordingly, the NRC staff concludes that the application for amendment satisfies the requirements with regard to the region of calibration tolerance defined in ANSI/ISA-S67.04.

In Palisades FSAR, Chapter 14, “Safety Analysis,” an analytical limit is established based upon consideration of overpower events up to 115 percent reactor power. The proposed change to the maximum allowable value for the VHPT function in the TS would not change or remove any considerations of uncertainties from Palisades FSAR, Chapter 14. With the proposed changes to the maximum allowable value and the revised calculated setpoint of the VHPT in place, the reactor would still be protected from reaching the analytical limit of 115-percent reactor power.

Accordingly, on the basis of its review of the calculations and analyses in the licensee’s application for amendment, the NRC staff concludes that the licensee has conformed to ANSI/ISA-S67.04-1994 and RG 1.105, Revision 3, in determining the higher maximum allowable value for the VHPT function in the TS. On this basis, the NRC staff concludes that the value of less than or equal to 111 percent RTP proposed for the maximum allowable value for the VHPT function in TS Table 3.3.1-1 is appropriate. Therefore, the proposed TS change satisfies the applicable requirements of 10 CFR 50.36(c)(1)(ii)(A) and is acceptable.

#### 4.0 STATE CONSULTATION

In accordance with the Commission’s regulations, the Michigan State official, Mary Ann Elzerman, was notified of the proposed issuance of the amendment. The State official agreed with the NRC staff’s proposed issuance of the amendment.

#### 5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. 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 consideration, and there has been no public comment on such finding (66 FR 59510). 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 upon 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: K. Mortensen

Date: April 10, 2002