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Docket Nos 50-282
50-306

AUG 27 1976

Northern States Power Company
ATTN: Mr. L. O. Mayer, Manager
Nuclear Support Services
414 Nicollet Mall - 8th Floor
Minneapolis, Minnesota 55401

Gentlemen:

Enclosed is a signed original of an Order for Modification of Licenses issued by the Commission for the Prairie Island Nuclear Generating Plant Unit Nos. 1 and 2. This Order amends Facility Operating Licenses DPR-42 and DPR-60 by requiring submittal of a corrected ECCS analysis as soon as possible.

A copy of the Order is being filed with the Office of the Federal Register for publication.

Sincerely,

Original Signed by:
Dennis L. Ziemann

Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Operating Reactors

Enclosure:
Order for Modification
of Licenses

cc: See next page

From OR Secretary Pool 8/27/76

OR:ORB #2
RMDiggs
MFletcher
8/27/76

NRR:D/DIR
EGCase
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NRR:DIR
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SURNAME ➔	MGrotenhuis	DLZiemann		KRGoller	DEisenhut	VStello
DATE ➔	8/27/76	8/27/76	8/ /76	8/27/76	8/27/76	8/27/76

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University Campus
Minneapolis, Minnesota 55440

Chairman, Public Service Commission
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Hill Farms State Office Building
Madison, Wisconsin 82001

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
NORTHERN STATES POWER COMPANY	)	Docket Nos. 50-282 and 50-306
	)	
(Prairie Island Nuclear Generating Plant Unit Nos. 1 and 2)	)	

ORDER FOR MODIFICATION OF LICENSES

I.

The Northern States Power Company (the Licensee) is the holder of Facility Operating License Nos. DPR-42 and DPR-60 which authorize the operation of nuclear power reactors known as Prairie Island Nuclear Generating Plant Unit Nos. 1 and 2 (the facilities) at steady state power levels not in excess of 1650 thermal megawatts (rated power per Unit). The facilities are pressurized water reactors (PWR) located at the Licensee's site near Redwing, Minnesota.

II.

In conformance with evaluations of the performance of the Emergency Core Cooling System (ECCS) of the facilities submitted by the Licensee on April 14, 1975, April 17, 1975, July 9, 1975, October 21, 1975, January 7, 1976 and March 1, 1976, the proposed Technical Specifications submitted by the Licensee on February 2, 1976 for the facilities limit the reactors total nuclear peaking factor (F_Q) to 2.15. The ECCS performance evaluation submitted by the Licensee was based upon previously approved ECCS evaluation model

developed by the Westinghouse Electric Corporation (Westinghouse), the designer of the facilities, to conform with the requirements of the Commission's ECCS Acceptance Criteria, 10 CFR Part 50, §50.46 and Appendix K. The evaluation indicated that with a total nuclear peaking factor limited as set forth above, and with the other limits set forth in the facilities' Technical Specifications, the ECCS cooling performance for the facilities would conform with the criteria contained in 10 CFR §50.46(b) which govern calculated peak clad temperature, maximum cladding oxidation, maximum hydrogen generation, coolable geometry and long term cooling.

Due to the configuration of the Westinghouse reactor vessel design, a small portion of reactor inlet water which is cooler than outlet water is directed through several nozzles located on the periphery of the vessel to cool the upper portion of the vessel head. Accordingly, upper head temperatures used in evaluating ECCS performance were assumed to be equal to the reactor inlet water temperature. However, recent operating data gathered at the Connecticut Yankee facility has indicated that, contrary to this expectation, the temperature of the water in the upper head is higher than the reactor inlet water temperature, by about 60% of the difference between reactor inlet and reactor outlet temperature. This higher upper head water temperature would have the effect of increasing the calculated peak clad temperature in the event of a loss of coolant accident.

In a meeting with the staff on August 9, 1976, Westinghouse presented generic evaluations of the effect on calculated peak clad temperature for the worst break identified in previous calculations for each type of Westinghouse reactor and fuel design using an upper head water temperature exceeding reactor inlet water temperature by an amount equal to 75% of the reactor inlet - reactor outlet differential. On August 12, 1976, the staff instructed the licensee to submit an analysis similar to the Westinghouse evaluation with the clearly conservative assumption of upper head water temperature equal to reactor outlet temperature (100% of the reactor outlet - reactor inlet differential) and to operate the facilities in accordance with the results of this analysis. The results of the evaluation submitted for the Prairie Island reactors indicated that with this modification of the upper head water temperature the calculated peak clad temperature for the worst case break would not exceed the Commission's ECCS performance criteria.

The staff expects that, when revised calculations for the facilities are submitted using an approved evaluation model with correct input for upper head water temperature, or assuming that the upper head water temperature equals reactor vessel outlet water temperature, such calculations will demonstrate that operation with this total nuclear peaking factor would conform to the criteria of 10 CFR §50.46(b). Such revised calculations fully conforming to the requirements of 10 CFR §50.46 are to be provided for the facilities as soon as possible. The limitations presently incorporated in the Technical Specifications for the facilities continue to provide reasonable assurance that the public health and safety will not be endangered.

Copies of the following documents are available for public inspection in the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C., 20555 and at The Environmental Conservation Library, Minneapolis Public Library, 300 Nicollet Mall, Minneapolis, Minnesota 55401: (1) the application for amendments dated February 2, 1976 and earlier filings dated April 14, 1975, April 17, 1975, July 9, 1975, October 21, 1975, January 1, 1976 and March 1, 1976, (2) letter from Northern States Power Company dated August 17, 1976, and (3) This Order for Modification of License, In the Matter of the Northern States Power Company, Prairie Island Nuclear Generating Plant Unit Nos. 1 and 2, Docket Nos. 50-282 and 50-306.

III.

Accordingly, pursuant to the Atomic Energy Act of 1954, as amended, and the Commission's Rules and Regulations in 10 CFR Parts 2 and 50, IT IS ORDERED THAT Facility Operating License Nos. DPR-42 and DPR-60 are hereby amended by adding the following new provision:

As soon as possible, the Licensee shall submit a re-evaluation of ECCS cooling performance calculated in accordance with an approved Westinghouse Evaluation Model, with appropriate correction for upper head water temperature.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by
Ben C. Rusche

Ben C. Rusche, Director
Office of Nuclear Reactor Regulation

Dated in Bethesda, Maryland
this AUG 27 1976