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CONTROL NO: 3435

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Northern States Power Company Minneapolis, Minnesota 55401 L. O. Mayer	5-25-73	3-29-73	X			

TO:	ORIG	CC	OTHER	
Mr. O' Leary	1 signed			SENT AEC PDR X SENT LOCAL PDR X

CLASS:	INPUT	NO CYS REC'D	DOCKET NO:
(U) PROP INFO		1	50-263

DESCRIPTION:
Ltr reporting abnormal occurrence on 5-18-73, in which the High Pressure Coolant Injection System(HPCI) isolated on high steam flow during a "quick start" full flow surveillance test.....

ENCLOSURES:

Do Not Remove
ACKNOWLEDGED

PLANT NAMES: Monticello

FOR ACTION/INFORMATION 5-29-73 AB

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1- RD...MULLER...F-309GT

Regulatory Cy.

NSP

NORTHERN STATES POWER COMPANY

MINNEAPOLIS, MINNESOTA 55401

May 25, 1973

Mr. J F O'Leary, Director
Directorate of Licensing
United States Atomic Energy Commission
Washington, D C 20545

Dear Mr. O'Leary:

MONTICELLO NUCLEAR GENERATING PLANT
Docket No. 50-263 License No. DPR-22

High Pressure Coolant Injection System Inoperability

A condition occurred at the Monticello Nuclear Generating Plant which we are reporting to your office in accordance with Section 6.7.B.1, Abnormal Occurrence Reports, of the Technical Specifications, of Provision Operating License DPR-22.

On May 18, 1973, the High Pressure Coolant Injection System (HPCI) isolated on high steam flow during a "quick start" full flow surveillance test. The RCIC system, LPCI system, and both Core Spray systems were immediately demonstrated to be operable in accordance with the requirements of the Technical Specifications.

Recording instruments were used to monitor HPCI system control signals and performance parameters. Test results indicated intermittent instability in the electrical control circuitry, slow response of the electro-hydraulic actuator, and a malfunction of the turbine speed feedback signal. These problems all contributed to excessive opening of the HPCI turbine control valves, resulting in steam flows to the HPCI turbine which exceeded the isolation trip set point. Inspection and further testing disclosed a number of specific problems which were corrected as follows:

1. An intermittent circuit was discovered on the bias speed setting potentiometer which caused control system instability. The bias speed setting potentiometer was replaced with a fixed resistance of equal value.

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2. The electro-hydraulic actuator drive gears were found to be worn to the extent that they were not engaging. The excessive wear resulted from insufficient lubrication due to an improperly located oil supply passage. The gears were replaced, the lubricating and control oil system was thoroughly cleaned and flushed to remove metal fragments, and the oil passage was extended to apply an ample supply of oil directly to the gear teeth.

3. The spur gear which provides a turbine speed signal to the control system was found loose on the drive shaft. The drive shaft was countersunk at the location of the set screws and the spur gear was reinstalled with self-locking set screws.

4. The drive soupling for the electro-hydraulic actuator was also found loose on the drive shaft. Self-locking set screws were installed.

The corrective actions described under items 2, 3 and 4 above, were performed under the direction of the turbine manufacturers representative.

After completion of repair, the HPCI system was tested, control settings were adjusted to optimize performance, and satisfactory operation was demonstrated.

During the time the HPCI system was inoperable, redundant safeguards equipment was operable and capable of providing emergency core cooling. The system was returned to operable status within the allowable out of service time permitted by the Technical Specifications. Therefore, the HPCI system inoperability did not affect safe operation of the plant.

The only system containing components similar to the HPCI system is the RCIC system. The actuator drive and speed pickup gear for the RCIC are mechanically different from those of the HPCI system.

Although some difficulties have been experienced with the HPCI control system in the past, the causes of this occurrence are unrelated to any previous malfunctions. The RCIC system has always operated very reliably. Nevertheless, a preventive maintenance inspection of both HPCI and RCIC turbine control systems will be conducted during the next refueling outage.

Very truly yours,

L. O. Mayer

L O Mayer, P.E.
Director of Nuclear Support Services

LOM/br

cc: B H Grier
G Charnoff
Minnesota Pollution Control Agency
Attn. Ken Dzugan