CENTRAL FILES

PDR

JUL 0 3 1978

Docket No. 50-263

Northern States Power Company
ATTN: Mr. Leo Wachter
Vice President
Power Production and
System Operation
414 Nicollet Mall
Minneapolis, MN 55401

Gentlemen:

The enclosed IE Circular No. 78-12, is forwarded to you for information. No written response is required. Should you have any questions related to your understanding of this matter, please contact this office.

Sincerely,

James G. Keppler
Director

Enclosures:
1. IE Circular No. 78-12
2. List of IE Circulars Issued in 1978

cc w/encls:
Mr. L. R. Eliason, Plant Manager
Central Files
Director, NRR/DPM
Director, NRR/DOR
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Local PDR
NSIC
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Anthony Roisman, Esq., Attorney
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OFFICE ▶			RIII	RIII		
SURNAME ▶			for Fiorelli/bk	Keppler		
DATE ▶			7/3/78			

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

July 3, 1978

IE Circular No. 78-12

HPCI TURBINE CONTROL VALVE LIFT ROD BENDING

In March 1977, during routine surveillance testing of the High Pressure Coolant Injection (HPCI) system at Cooper Nuclear Station, it was found that the minimum turbine speed attainable via control valve regulation by the speed governor was 4000 rpm. This indicated that the control valves were remaining partially open even though the control system was sending a shut signal. The HPCI turbine is manufactured by the Terry Steam Turbine Company.

Investigation revealed that the control valve lift rods were bent. The initial cause was thought to be improper linkage length adjustments causing positive overtravel in the closed position. Subsequent review, while not discounting the previous conclusions, determined that the bending may have resulted from binding due to scale or rust buildup on the rods. The control valve lift rods have a series of circumferential reliefs for steam leakage control. Material wedging between the rod relief area and the rod bushing in the steam chest could cause momentary seizure and bending of the lift rods during the rapid closure action associated with a quick start.

Subsequent to this event a review was made to determine the extent of a possible generic problem in the area. It was determined that the problem affects only the HPCI turbine with its multiple control valves; other applications using Terry Turbines, as in the Reactor Core Isolation Cooling System (RCIC) in BWRs and the Auxiliary Feedwater Pump in PWRs, are not affected since they incorporate a different control system.

During the review, GE representatives were consulted and it was learned that bent lift rods had been reported at four operating BWRs. In response, GE issued Service Information Letter (SIL) No. 223, dated July 8, 1977 and associated instruction/drawing sheets to GE nuclear power facilities having HPCI turbines. That SIL together with the instruction/drawing sheets identified the control valve lift rod problem and the recommended corrective action. The recommended action by GE for BWR facilities with a HPCI turbine as set forth in the SIL is quoted as follows:

7910010761

"1. Examine the control valve linkage assembly for any evidence of binding, rust or scale accumulation. Examine the lift rod for evidence of bending. Damaged lift rods should be replaced. Do not attempt to rework or straighten.

"2. Verify proper control valve linkage lengths as defined on the lever diagram contained in Section 9 of your HPCI Terry turbine instruction manual. These measurements should be taken with the turbine in the cold condition.

"3. Exercise the control valve linkage on a weekly basis, either manually or by starting the auxiliary oil pump, and verify total valve travel and freedom of movement.

"Immediately report any abnormal conditions noted in the above checks to your local General Electric service representative.

"In addition, General Electric recommends that BWR operators install a linkage modification which will reduce the bending moment on the lift rods during opening and closing cycles. The hardware and an FDI detailing installation instructions will be made available at no charge in approximately 3 months. Following installation and check out of this modification, the weekly check (item 3 above) may be discontinued."

All holders of boiling water reactor operating licenses or construction permits for facilities with a HPCI Terry Turbine should be aware of the possibility of a scale or corrosion product buildup in the steam chest bushing area and possible lift rod seizure. The information and recommendation provided by General Electric should be referred to for appropriate corrective action.

No written response to this Circular is required. If you require additional information regarding this matter, contact the Director of the appropriate NRC Regional Office.

IE Circular No. 78-12
July 3, 1978

LISTING OF IE CIRCULARS ISSUED IN 1978

Circular No.	Subject	Date of Issue	Issued To
78-01	Loss of Well Logging Source	4/5/78	All Holders of Well Logging Source Licenses
78-02	Proper Lubricating Oil for Terry Turbines	4/20/78	All Holders of Reactor OLs or CPs
78-03	Packaging Greater Than Type A Quantities of Low Specific Activity Radioactive Material for Transport	5/12/78	All Holders of Reactor OLs, CPs, Fuel Cycle, Priority I Material and Waste Disposal Licenses
78-04	Installation Error That Could Prevent Closing of Fire Doors	5/15/78	All Holders of Reactor OLs or CPs
78-05	Inadvertent Safety Injection During Cooldown	5/23/78	All Holders of Reactor OLs or CPs
78-06	Potential Common Mode Flooding of ECCS Equipment Rooms at BWR Facilities	5/23/78	All Holders of Reactor OLs or CPs
78-07	Damaged Components of a Bergen-Paterson Series 25000 Hydraulic Test Stand	5/31/78	All Holders of Reactor OLs or CPs
78-08	Environmental Qualification of Safety Related Equipment at Nuclear Power Plants	5/31/78	All Holders of Reactor OLs or CPs
78-09	Arcing of General Electric Company Size 2 Contactors	6/5/78	All Holders of CPs

LISTING OF IE CIRCULARS ISSUED IN 1978

Circular No.	Subject	Date of Issue	Issued to
78-10	Control of Sealed Sources Used in Radiation Therapy	6/14/78	All Medical Licensees in Categories G and G1
78-11	Recirculation M-G Set Overspeed Stop	6/15/78	All Holders of BWR OLs or CPs