AEC DISTRIBUTION FOR PART 50 DOCKET MATERIAL
(TEMPORARY FORM)

CONTROL NO: 5136

FILE:

FROM:	DATE OF DOC	DATE REC'D	LTR	MEMO	RPT	OTHER
Northern States Power Company Minneapolis, Minn. 55401 L. O. Mayer	6-27-73	7-2-73	X			

TO:	ORIG	CC	OTHER	SENT AEC PDR	SENT LOCAL PDR
Mr/ Skovholt	1 signed			X	X

CLASS	UNCLASS	PROP INFO	INPUT	NO CYS REC'D	DOCKET NO:
	XX			40	50-263

DESCRIPTION:

Ltr re our 4-3-73 ltr.....furnishing detailed description of changes in the Monticello Plant to improve main steam isolation valve(MSIV) reliability & of a planned nitrogen pumpback system.....

PLANT NAME: Monticello

ENCLOSURES:

NOTE: Same Dist as their 1-22-73 submittal re Suppl Rpt on Main Steam Isolation Valve Performance.

Do Not Remove
ACKNOWLEDGED

FOR ACTION/INFORMATION 7-2-73 AB

BUTLER(L)	SCHWENCER(L)	✓ ZIEMANN(L)	REGAN(E)
W/ Copies	W/ Copies	W/ 7 Copies	W/ Copies
CLARK(L)	STOLZ(L)	DICKER(E)	
W/ Copies	W/ Copies	W/ Copies	W/ Copies
GOLLER(L)	VASSALLO(L)	KNIGHTON(E)	
W/ Copies	W/ Copies	W/ Copies	W/ Copies
KNIEL(L)	SCHEMEL(L)	YOUNGBLOOD(E)	
W/ Copies	W/ Copies	W/ Copies	W/ Copies

INTERNAL DISTRIBUTION

✓ REG FILE	TECH REVIEW	DENTON	LIC ASST	A/T IND
✓ AEC PDR	✓ HENDRIE	GRIMES	BROWN (E)	BRAITMAN
✓ OGC, ROOM P-506A	✓ SCHROEDER	GAMMILL	DIGGS (L)	SALTZMAN
✓ MUNTZING/STAFF	✓ MACCARY	KASTNER	GEARIN (L)	
✓ CASE	✓ KNIGHT	BALLARD	GOULBOURNE (L)	PLANS
GIAMBUSSO	✓ PAWLICKI	SPANGLER	LEE (L)	MCDONALD
BOYD	✓ SHAO		MAIGRET (L)	DUBE
MOORE (L)(BWR)	✓ STELLO	ENVIRO	SERVICE (L)	
DEYOUNG(L)(PWR)	✓ HOUSTON	MULLER	SHEPPARD (E)	INFO
✓ SKOVHOLT (L)	✓ NOVAK	DICKER	SMITH (L)	C. MILES
P. COLLINS	✓ ROSS	KNIGHTON	TEETS (L)	
	✓ IPPOLITO	YOUNGBLOOD	WADE (E)	
REG OPR	✓ TEDESCO	REGAN	WILLIAMS (E)	
✓ FILE & REGION(3)	✓ LONG	PROJECT LDR	WILSON (L)	
✓ MORRIS	✓ LAINAS			
✓ STEELE	✓ BENAROYA	HARLESS		
	✓ VOLLMER			

EXTERNAL DISTRIBUTION

✓ 1 - LOCAL PDR Minneapolis, Minn.
✓ 1 - DTIE(ABERNATHY)
✓ 1 - NSIC(BUCHANAN)
1 - ASLB(YORE/SAYRE/ WOODARD/"H" ST.
✓ 16 - CYS ACRS ~~HOLDING~~ SENT TO LIC ASST. R. DIGGS ON 7-2-73

(1)(2)(9)-NATIONAL LAB'S
1-R. CARROLL-OC,GT-B227
1-R. CATLIN, E-256-GT
1-CONSULTANT'S NEWMARK/BLUME/AGBABIAN
1-GERALD ULRIKSON...ORNL

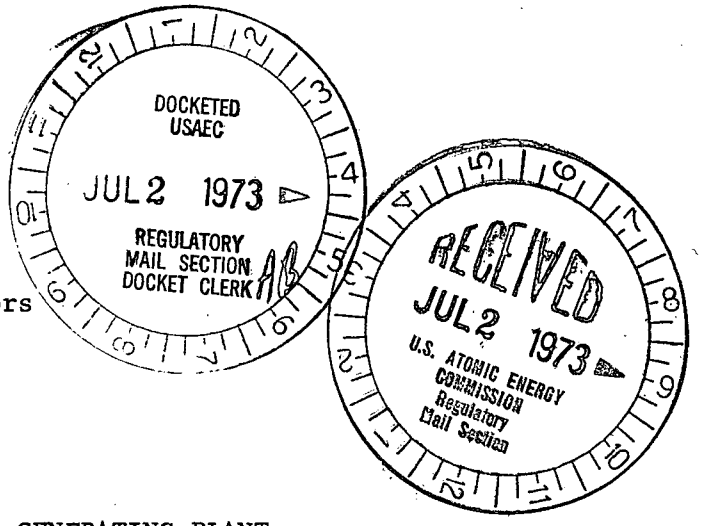
1-PDR-SAN/LA/NY
1-GERALD LELLOUCHE BROOKHAVEN NAT. LAB
1-AGMED(WALTER KOESTER RM-C-427-GT
1-RD..MULLER..F-309 GT

Regulatory File

NSP

NORTHERN STATES POWER COMPANY

MINNEAPOLIS, MINNESOTA 55401



June 27, 1973

Mr. D J Skovholt
Assistant Director for Operating Reactors
Directorate of Licensing
United States Atomic Energy Commission
Washington, D C 20545

Dear Mr. Skovholt:

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

Corrective Actions to Assure
Main Steam Isolation Valve Reliability

Your letter of April 3, 1973 requested a description of changes planned at the Monticello Nuclear Generating Plant to improve main steam isolation valve (MSIV) reliability. Our January 23, 1973 Supplementary Report on Main Steam Isolation Valve Performance (letter from Mr. L O Mayer, NSP, to Mr. A Giambusso, Deputy Director for Reactor Projects) summarized MSIV air operator problems experienced at Monticello and indicated that modifications to improve their reliability were being investigated. These investigations have resulted in the replacement of the original MSIV spool valve operators with improved poppet valve operators and the replacement of the carbon steel MSIV air accumulators with stainless steel accumulators. All installation work was completed during the 1973 Monticello spring outage. A detailed description of these changes and of a planned nitrogen pumpback system is given below.

Replacement of MSIV Air Operators

The original MSIV air operators consisted of two 4-way air-and-spring operated spool valves (Pneumatics Inc. No. D91745U) and three 3-way solenoid valves (Automatic Switch Co. No. 8300-B). Practically all problems experienced with these operators have been traced to sticking of the 4-way spool valves. The small clearances in these valves have made spool-sleeve binding possible when small quantities of foreign material are present in the control air supply or when the valve is subjected to rapid changes in ambient temperature.

5136

MSIV's in the current General Electric product line are now being supplied with operators manufactured by the Automatic Valve Company (AVC). All eight of the original MSIV air operators at Monticello were replaced with AVC operators of this type. The new AVC air operator was designed as a direct replacement for the original operator. Cylinder port locations, bolt mounting centers and air supply requirements are identical to the original air operators.

The replacement AVC operator consists of the following valves mounted on an AVC Type C-5157-1 manifold block:

AVC No.	Description
C-4988-14	4-way poppet valve assembly
C-4988-8	3-way poppet valve assembly
B-4988-15	3-way triple solenoid valve assembly
B-2305-V	3-way normally open poppet valve assembly
A-5157-2	3/4-inch relief valve
A-5157-3	1-inch relief valve
4988-16	1/2-inch restrictor
4988-17	3/4-inch restrictor

All valves are similar to standard AVC catalog items which have seen wide application in industry. Viton seals are used throughout to insure long life in high temperature environments.

The AVC operators meet all design standards and operating requirements established for the original operators. Because the AVC poppet type valves are constructed without the close clearances necessary in the original spool type valves, it is expected that the new operators will be much less susceptible to binding.

Replacement of MSIV Air Accumulators

Each MSIV has a 3.2 ft^3 air accumulator floating on its associated operating air supply line. The purpose of the accumulator is to permit rapid valve closure in the event of failure of the normal air supply.

During normal operation of an MSIV, the accumulator contributes to smooth and rapid operation by supplying some of the air ported to the operating cylinder.

The accumulators originally installed at Monticello were constructed of carbon steel. Corrosion of the interior surfaces was found to have introduced fine particles of iron oxide into the MSIV air system. To eliminate this source of contamination, new stainless steel accumulators were installed and the existing copper air lines between the accumulators and air operators were cleaned to remove all residual rust particles.

Planned Nitrogen Supply System

Work is now in progress on a nitrogen pumpback system to supply motive power to all air operated equipment inside the drywell. The primary purpose of this system will be to reduce the need for periodic purging and venting of the drywell. A secondary benefit, however, will be an improvement in the quality of the gas supplied to the inboard MSIV's. Pending completion of this modification, a simplified nitrogen supply system has been placed in service which uses nitrogen from an outdoor storage tank to supply the drywell air header.

There are no plans at this time to supply the outboard MSIV's from a nitrogen gas system.

Information for Current and Future MSIV Performance Evaluation

The following specific information requested in your April 3, letter is supplied for the modified MSIV pneumatic control system.

a. Pilot Valve Clearance Information

Not applicable to poppet type valves.

b. Cleanliness of the MSIV Operating Gases

Motive power for the outboard MSIV's is supplied from the plant's Instrument Air System. Design specifications for the system require the air to be oil-free, filtered and dried to a dew point of -40°F at a discharge pressure of 100 psig.

The system consists of two 290 and one 370 scfm non-lubricated air compressors connected in parallel. Each unit has an intake filter-silencer, after cooler, moisture separator and receiver. Compressed air for instruments and controls passes through a twin bed chemical desiccant dryer and a 0.9 micron pipe line filter. Air leaving the dryer is monitored for excessive humidity with a moisture sensing switch and local alarm.

Air dryer performance is checked at approximately yearly intervals by measuring the dew point of the air leaving the dryer-filter unit. When the dew point rises to -20°F, the desiccant beds are renewed.

As discussed above, motive power for the inboard MSIV's is supplied from the drywell instrument air header which is normally pressurized to 100 psig with pure moisture-free gas from an outdoor liquid nitrogen storage tank. No filters or dryers are required. The drywell instrument air header is automatically supplied from the Instrument Air System when a component failure or excessive nitrogen demand causes pressure to exceed 105 psig or fall below 80 psig.

The nitrogen pumpback system now being installed will have a filtration efficiency of 99.99998% for aerosols, water and particulates larger than 0.3 microns.

c. Temperature Environment of MSIV Operators

Measurements taken in the steam chase at 100% power of temperatures at various points on the outboard MSIV air operators were all less than 150°F. Temperatures of the inboard MSIV air operators have not been measured but can be expected to be comparable to the outboard temperatures.

d. Preventive Maintenance Program for the MSIV Operators

A preventive maintenance program has not yet been developed for the new MSIV air operators. Weekly MSIV exercising and quarterly full closure tests in accordance with the Technical Specifications are being conducted.

Summary

It is believed that the actions described above will contribute to greatly improved MSIV air operator reliability. We will continue to collect operating data and closely follow this problem until experience has established the reliability of the new operators.

Yours very truly,

L. O. Mayer

L O Mayer, PE
Director of Nuclear Support Services

LOM/DMM/br

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