

FROM: Northern States Power Co. Minneapolis, Minn. 55401 L.O. Mayer		DATE OF DOC: 7-28-72	DATE REC'D 8-3-72	LTR X	MEMO	RPT	OTHER
TO: Mr. A. Giambusso		ORIG 1 signed	CC 39	OTHER	SENT AEC PDR ✓ SENT LOCAL PDR ✓		
CLASS: (11) PROP INFO		INPUT	NO. CYS REC'D 40	DOCKET NO: 50-263			

DESCRIPTION: Ltr rpt condition that occurred on 7-21-72 re malfunction of the "D" Steamline Safety/Relief Valve & a condition occurred on 7-25-72 involving the inoperability of bellows leakage monitoring systems.....W/attchmt entitled Bellows Leakage Alarm Test.....

ENCLOSURES:

**DO NOT REMOVE
ACKNOWLEDGED**

PLANT NAMES: Monticello Plant

Moss

FOR ACTION/INFORMATION **DL 8-4-72**

BUTLER(L) W/ Copies	KNIEL(L) W/ Copies	VASSALLO(L) W/ Copies	ZIEMANN(L) W/ 6 Copies	KNIGHTON(ENVIRO) W/ Copies
CLARK(L) W/ Copies	SCHWENCER(L) W/ Copies	H. DENTON W/ Copies	CHITWOOD(FM) W/ Copies	W/ Copies
GOLLER(L) W/ Copies	STOLZ(L) W/ Copies	SCHEMEL(L) W/ Copies	DICKER(ENVIRO) W/ Copies	W/ Copies

INTERNAL DISTRIBUTION

✓ REG FILE	TECH REVIEW	✓ VOLLMER	HARLESS	WADE
✓ AEC PDR	✓ HENDRIE	✓ DENTON (1)	F & M	SHAFAER
✓ OGC, ROOM P-506A	✓ SCHROEDER	GRIMES	SMILEY	BROWN
✓ MUNTZING/STAFF	✓ MACCARY	GAMMILL	NUSSBAUMER	A/T IND
✓ CASE	LANGE	KASTNER	LIC ASST.	BRITTMAN
GIAMBUSSO	PAWLICKI	BALLARD	SERVICE	SALTZMAN
✓ BOYD-L(BWR)	SHAO	FINE	MASON	PLANS
DEYOUNG-L(PWR)	✓ KNUTH	ENVIRO	WILSON	MCDONALD
✓ SKOVHOLT-L	✓ STELLO	MULLER	KARI	DUBE
P. COLLINS	✓ MOORE	DICKER	SMITH	
REG OPR	✓ THOMPSON	KNIGHTON	GEARIN	C. MILES
✓ FILE & REGION (2)	✓ TEDESCO	YOUNGBLOOD	DIGGS	
✓ MORRIS	✓ LONG	PROJECT LEADER	TEETS	
✓ STEELE	✓ LAINAS			
	BENAROYA			

EXTERNAL DISTRIBUTION

- | | | |
|---------------------------------|--------------------------|------------------------|
| ✓ -LOCAL PDR Minneapolis, Minn. | (1)(5)(9)-NATIONAL LAB'S | 1-PDR-SAN/LA/NY |
| ✓ -DRIE(LAUGHLIN) | ANL/ORN/PNL | 1. GERALD LELLUCHE |
| ✓ 1-NSIC(BUCHANAN) | 1-R. CARROLL-OC, GT-B327 | BROOKHAVEN NAT. LAB |
| 1-ASLB-YORE/SAYRE | 1-R. CATLIN, A-170-GT | 1-BOLAND, IDAHO FALLS, |
| WOODWARD/H. ST. | 1-CONSULANT'S | IDAHO(50-331 Only) |
| ✓ 16-CYS ACRS HOLDING | NEWMARK/BLUME/AGABIAN | 1-RD..MULLER..F-309GT |

NSP**NORTHERN STATES POWER COMPANY**

Minneapolis, Minnesota 55401

July 28, 1972

Mr. A. Giambusso
Deputy Director for Reactor Projects
Directorate of Licensing
United States Atomic Energy Commission
Washington, D. C. 20545

Dear Mr. Giambusso:

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

Malfunction of the "D" Steamline Safety/Relief Valve
and
Inoperability of Bellows Leakage Monitoring Systems

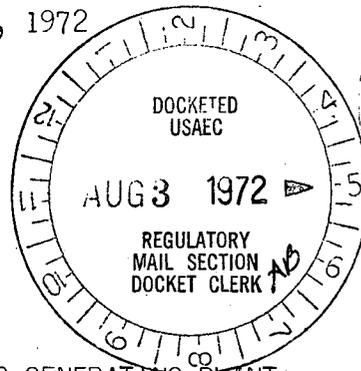
Conditions occurred at the Monticello Nuclear Generating Plant which we are reporting to your office in accordance with the provisions of Section 6.6.B.2 of Appendix A, Technical Specifications, of the Provisional Operating License DPR-22. The Region III Compliance Office has been notified.

On July 21, 1972, while the reactor was operating at 100% power, the main transformer fire deluge system was initiated by a short in the manual initiation circuit. The generator lockout relay was consequently tripped by the primary protection system for the main transformer's secondary circuit. This trip was initiated by A phase arcing to ground and causing the A phase bushing to fail. A reactor scram was received at 1529 hours by control valve fast closure, as determined from the sequence of events log. A peak reactor pressure of 1118 psig was reached. Lack of response from the thermocouple and the discharge pressure switch on the D safety/relief valve indicated that it did not open. Safety/relief valves A, B and C opened and closed automatically. As on two previous occasions, control rod drive 22-31 stopped at notch "02" and was manually inserted to the full in position, after the scram. The scram insertion time was well within Technical Specification requirements. Plant conditions were stabilized following scram recovery procedures.

Analysis and Corrective Action

After plant conditions had stabilized, the plant was placed in a cold shutdown condition and the drywell was de-inerted to permit an investigation into the malfunction of the "D" safety/relief valve.

The recently installed safety/relief valve discharge pressure switch on the D valve was tested and verified to operate properly. This confirmed that the valve had not operated. The D valve was removed and subjected to a nitrogen test. The setpoint of the valve was found to be 1086 psig. The entire valve was disassembled and inspected in an effort to determine the cause(s) of the high setpoint and the failure of the valve to actuate. All valve internals were found in satisfactory condition with no dimensional abnormality and no sign of galling or wear. Since



4259

RW

no cause could be identified to explain the valve malfunction a replacement valve was procured and installed.

An investigation of the pilot bellows leak detection system was initiated to determine if a back pressure could be created which would affect the valve setpoint. This system consists of a pressure switch which initiates an alarm on high pressure in the chamber outside of the pilot bellows; and air piping, solenoid valves and control switches which permit testing of the pressure switch and alarm from outside the drywell. (Refer to the attached figure for an explanation of the system).

On July 25, 1972, it was found that a small bellows leak could not be detected due to a system design error. It was the original design intent that solenoid valves SV2-32 and SV2-33 should provide redundant isolation to prevent pressurizing of the bellows chamber in the event of a failure of SV2-34 and to assure that pressurization would occur in the event of a bellows leak. It was found that the valves which were used for SV2-32 and SV2-33 are designed for tight shutoff only when pressure is applied to the "inlet" side (side away from the bellows chamber). Tests were conducted to determine the backpressure which could be applied at the bellows chambers before leakage occurs. Tests were also conducted to determine the setpoint of the non-adjustable type bellows alarm pressure switches. The results of these tests are shown below:

<u>Relief Valve</u>	<u>Press Switch Setpoint, psig.</u>	<u>Backpressure (psig) vs. leakage</u>	
		<u>Threshold</u>	<u>4.5 SCFH</u>
A	74	26-45	65
B	61	72-82	86
C	64	70-77	83
D	78	68-70	74

These results indicate that the A & D leak detection systems would not have detected a small leak.

The bellows assemblies of all safety relief valves were leak tested with high pressure nitrogen. The installed valves in the A, B and C steam lines were found to be leak tight. After being reassembled the valve which had been installed on the D line was found to have a small leak through an O-ring seal located at the joint between the top of the bellows and the preload spacer. The replacement valve was also found to have a small leak in the same location.

It is probable that the malfunctions of the D relief valve on July 10 and July 25 were due to a small leak in the bellows assembly. Such a leak could have increased the backpressure on the bellows, thereby increasing the effective trip setting.

The non-adjustable leak detection pressure switches have been replaced with switches set to trip at 5 psig. This setpoint was chosen to be well within the backpressure capability of the solenoid valves and to provide reliable trip and reset action.

The bellows assembly leakage of the replacement valve installed on the D steam line was repaired. This valve will be tested during plant startup to verify proper manual operation.

Yours very truly,

A handwritten signature in cursive script that reads "L. O. Mayer".

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

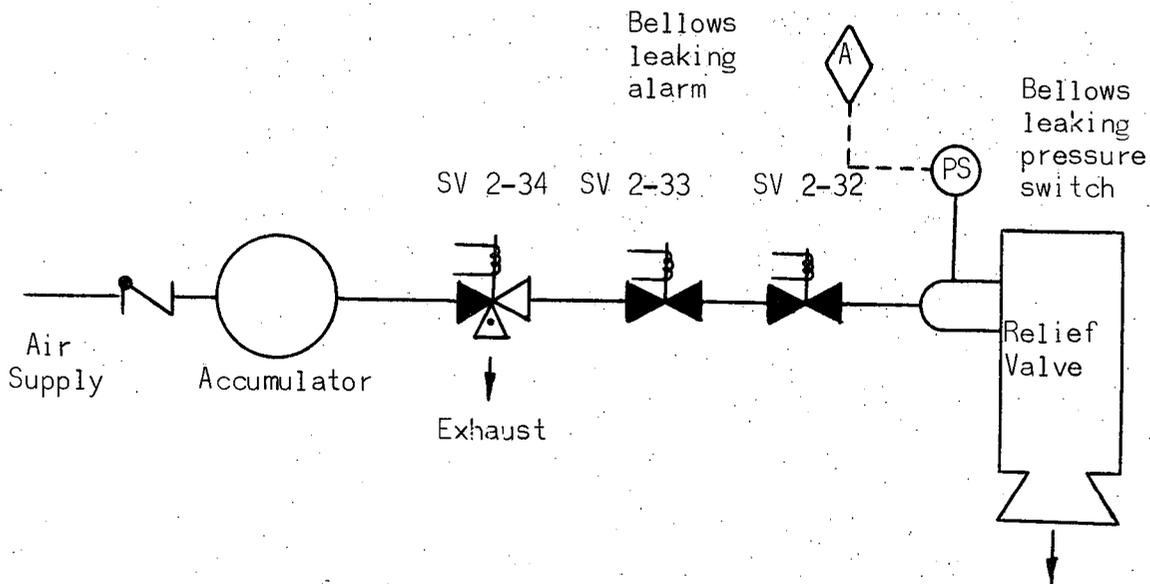
LOM/mmm

Attachment

Bellows Leakage Alarm Test

A three position "TEST/NORMAL/VENT" switch and a test pushbutton are provided in the control room. The test sequence is as follows:

1. Test switch in the "TEST" position energizes SV 2-34, SV 2-32, and SV 2-33, which admits air to the bellows assembly and trips the bellows leaking pressure switch alarm circuit.
2. Test Switch in "VENT" position de-energizes SV 2-34, and energizes SV 2-32 and SV 2-33 which vents air from the bellows assembly and resets the pressure switch circuit.
3. Test switch in "NORMAL" position de-energizes all three solenoids.
4. The TEST pushbutton is used to energize SV 2-34 (with the Test switch in NORMAL) to verify positive seating of SV 2-32 and SV 2-33.



Relief Valve Bellows Leakage Test System