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STANDARD
WATER PUMP

December 23, 1969

Mr. Peter A. Morris, Director
Division of Reactor Licensing
United States Atomic Energy Commission
Washington, D. C. 20545

Subject: Malfunction of Safeguards Valve MOV- 50 B
Ginna Station Unit No. 1
Docket No. 50-244



Dear Sir:

On December 16, 1969, at 0220 hours, a routine test of operability of Safeguard Valve MOV-50 B, a 10" No. SW70DO Darling gate valve, disclosed that it would not fully open. This valve is located in the Auxiliary Building in one of the two ten inch (10") lines between containment sump "B" and the residual heat removal pumps.

The AEC Division of Compliance was notified of this failure and because of the necessity to disassemble the valve, the reactor was taken to hot shutdown at 1400 hours of that day.

The damage observed on this gate valve was that both of the disks of this valve were bowed outward, indicating that there was a build-up of pressure between the disks. The disk on the containment side was bowed approximately 3/32", and on the residual heat removal pump side, approximately 1/16". The bowing of the disk on the containment side limited the opening travel of the valve during the test to about forty per cent (40%) as indicated by the scraping on the outside of the valve disk on the containment side where it came in contact with the underside of the upper segment of the gate valve seat.

Both disks were uniformly concave which would further indicate that a pressure loading was applied uniformly between the disks and was not due to the mechanical action of the valve closing mechanism. Review of the characteristics of the motor and valve intervals indicated that it would not be possible to distort the disks by this means.

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to Mr. Peter A. Morris

The condition which could have resulted in such a pressure build-up between the disks is most likely to have occurred during one of the periods in November when the residual heat removal system was in operation. Valves MOV-850 A and MOV-850 B are closed during such operation. These valves are located approximately eight feet (8') above the suction of the pumps and the lines are not insulated between the sump and the pumps. This elevation difference provides a means for the reactor coolant to circulate by natural convection up to the valve and thereby heat the valve. An increase in temperature of the fluid between the disks could cause a substantial increase in pressure between the disks if the packing and disk seating surfaces are tight. The combination of leak-tight valve disks and packing can occur with this type of valve where the normal action of the disks is to rotate when the valve is stroked. This situation rarely occurs and was not evidenced by previous surveillance strokings on these valves subsequent to earlier plant heat removal operations.

The valve manufacturer representative was called to the site and a complete inspection was made by all interested parties. The damage was limited to the stainless disks and these were replaced. After reassembly, the ten inch (10") lines from the containment sump "B" including valve MOV-850 B was tested at 80 psi using nitrogen gas with no indicated leakage. The valve was stroked and the time and torque readings were normal when compared to initial pre-plant operation readings.

The Plant Operations Review Committee recommended that those double disk valves associated with the operation of the residual heat removal system be tested immediately following the conclusion of any operation of this system. This procedure will be followed until a permanent preventative measure can be completed. This procedure is intended to supplement and not supersede the normal monthly testing.

Further, separate investigations by Westinghouse and Rochester Gas and Electric are being made of conditions of all other similar type valves for recommendations to prevent malfunctioning of this type of valve. The proposed changes will be presented to the AEC Division of Compliance for their evaluation and concurrence.

These recommendations were discussed with the office of Mr. D. J. Shovellet of the AEC Division of Reactor Licenses and, following their approval, the reactor was returned to criticality at 0333 hours on December 18, 1969.

Very truly yours,

Edward J. Nelson
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