Nebraska Public Power District

COOPER NUCLEAR STATION
P.O. BOX 98, BROWNVILLE, NEBRASKA 68321
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CNSS810747

December 3, 1981

Mr. K. V. Seyfrit, Director
U.S. Nuclear Regulatory Commission
Office of Inspection and Enforcement
Region IV
611 Ryan Plaza Drive
Suite 1000
Arlington, Texas 76011

Dear Sir:

This report is submitted in accordance with Section 6.7.2.B.2 of the Technical Specifications for Cooper Nuclear Station and discusses a reportable occurrence that was discovered on November 6, 1981. A licensee event report form is also enclosed.

Report No.: 50-298-81-24
Report Date: December 3, 1981
Occurrence Date: November 6, 1981
Facility: Cooper Nuclear Station
Brownville, Nebraska 68321

Identification of Occurrence:
A condition which led to operation in a degraded mode permitted by a limiting condition for operation established in Paragraph 3.6.D.1 of the Technical Specifications.

Conditions Prior to Occurrence:
The reactor was operating at approximately 3% of rated thermal power during a startup. Reactor pressure was approximately 150 psig.

Description of Occurrence:
While performing Surveillance Procedure 6.3.2.1, (SRV Manual Actuation) Safety Relief Valve (SRV) 71-D failed to close after the 150 psig test.

Designation of Apparent Cause of Occurrence:
The apparent cause of this occurrence was a shift of drop-out pressure of the solenoid valve.

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Analysis of Occurrence:

SRV 71-D is one of eight (8) Target Rock pressue relief valves on the reactor vessel. These particular Target Rock valves are pilot operated valves each with an auxiliary air operator solenoid valve. Six (6) of the eight SRV's are also part of the Automatic Depressurization System (ADS). SRV 71-D, however, is not one of the ADS valves.

While performing a surveillance procedure on the SRV's during reactor startup, SRV 71-D failed to close. At the time of the failure, reactor pressure was at approximately 150 psig and instrument air pressure was approximately 115 psig. Several attempts were made to close SRV 71-D by cycling the control switch on control room panel 9-3; however, the valve did not close. After the control switch was cycled with unsuccessful results, the Shift Supervisor removed the solenoid control fuse, de-energizing the solenoid. SRV 71-D still would not close.

After the above attempts to close SRV 71-D failed, a reactor shutdown was initiated so that the problem could be further investigated and corrected. Subsequent to the reactor shutdown, a review of the SRV temperature recorder indicated that SRV 71-D closed at a reactor pressure of approximately 15-20 psig. The reactor vessel cooldown rate due to the SRV not closing was within Technical Specification vessel cooldown limits. During the drywell entry following shutdown, it was discovered that with the control switch in the close position and the solenoid control fuse removed, instrument air was continuously venting from the control solenoid. This indicated that the solenoid had not dropped out when de-energized.

The solenoid removed from SRV 71-D was subsequently disassembled and inspected visually by CNS personnel. With the exception of a damaged O-ring, the inspection revealed no apparent cause of the malfunction.

Following the CNS inspection, the SRV solenoid was returned to the manufacturer, Target Rock Corp., for inspection and investigation into the malfunction of the subject solenoid. The results of the investigation revealed that the minimum drop-out pressure of the solenoid had shifted from 135 psig minimum to a drop-out pressure of approximately 118 psig. No other conclusive evidence as to the failure of the solenoid could be ascertained by the vendor.

During the Spring 1981 Refueling Outage, each of the eight (8) SRV solenoids and air operators were removed, disassembled, inspected, and subsequently tested with satisfactory results. This evaluation was in response to NRC IE Bulletin No. 80-25. The O-rings which were installed during reassembly were lubricated with Neo-lube per the vendor's recommendations.

SRV 71-D was inoperable less than one day following reactor start-up. During the period of inoperability, the pressure relief feature of SRV 71-D was still operable. Additionally, the other seven (7) SRV's were operational if needed and the low pressure emergency core cooling systems were available if needed. This occurrence presented no adverse consequences from the standpoint of public health and safety.

Corrective Action:

The safety/relief valve solenoid was immediately removed and replaced with a spare solenoid. Surveillance Procedure 6.3.2.1 (SRV Manual Actuation) was again performed on the subject valve with satisfactory results. We have discussed this problem with our valve supplier and the valve manufacturer. It is our understanding that our supplier is pursuing a generic fix.

Sincerely,

L C Lessor

L. C. Lessor
Station Superintendent
Cooper Nuclear Station

LCL:cg
Attach.