

REPORT NUMBER: AO-50-254/74-8d

REPORT DATE: July 18, 1974

OCCURRENCE DATE: April 17, 1974

FACILITY: Quad-Cities Nuclear Power Station  
Cordova, Illinois 61242

IDENTIFICATION OF OCCURRENCE:

RCIC turbine exhaust check valve 1-1301-41, excessive leakage.

CONDITIONS PRIOR TO OCCURRENCE:

Reactor in cold-shutdown condition for refueling outage, RCIC out of service, RCIC turbine exhaust manual valve 1-1301-64 closed.

DESCRIPTION OF OCCURRENCE:

During local leak rate testing of Unit One on April 17, 1974, an inability to pressurize the volume of 8-inch pipe between the RCIC turbine exhaust check valve 1-1301-41 and manual valve 1-1301-64 to 48 psig was experienced, even though the manually operated valve 1-1301-64 had been tightly closed. Assuming no air leakage through manual valve 1-1301-64 to the torus, all leakage would occur through check valve 1-1301-41 proceeding upstream to the RCIC turbine.

The leak rate test was performed by pressurizing the pipe volume located between these valves through a 3/4-inch tee section containing a pressure test point. Excessive leakage through check valve 1-1301-41 resulted in an inability to attain the required 48 psig pressure test value.

Repairs were therefore initiated on check valve 1-1301-41.

DESIGNATION OF APPARENT CAUSE OF OCCURRENCE:

After disassembly of check valve 1-1301-41, the check valve disc was found to be located approximately 6-inches downstream of the check valve in the RCIC turbine exhaust line. During previous RCIC turbine operation, a fracture apparently had occurred at the disc hinge joint. This had not been known since no abnormal RCIC system operation had been observed which would have indicated check valve failure.

ANALYSIS OF OCCURRENCE:

When operating under accident conditions, the RCIC turbine exhaust proceeds through check valve 1-1301-41 eventually exiting the line in the suppression chamber. In the event of an exposure of the suppression chamber atmosphere to this exhaust line, manual valve 1-1301-64 could be closed to prevent backflow to check valve 1-1301-41, and further downstream to the RCIC turbine.

8305190265 740718  
PDR ADOCK 05000254  
S PDR

July 18, 1974

Furthermore, backward leakage through check valve 1-1301-41 does not render the RCIC system inoperable as it would still be able to perform its intended design function. Equipment damage and personnel exposure would not have resulted in the event of backflow through check valve 1-1301-41.

#### CORRECTIVE ACTION:

Crane Company, the supplier of check valve 1-1301-41 was contacted for the necessary valve disc replacement. They were found to have none available, which would have resulted in a nine month delay to system operations. As a result, a modification was initiated to install a valve disc similar to the failed disc, but without a stellited seat as the failed disc had. Since the RCIC turbine exhaust check valve 1-1301-41 is an infrequently operated valve, it was determined by Commonwealth Edison Mechanical and Structural Engineering and Sargent and Lundy Consulting Engineers that the extra hardness provided by the stellite seat was not required for this check valve. With the above approval, this disc modification (M-4-1-74-56) was initiated.

A work request was thereby sent to the Maintenance Department to disassemble the failed check valve, remove the failed disc, and replace it with an identical disc, but without the stellite seat.

Following repair of check valve 1-1301-41, a local leak rate test was conducted on May 9, 1974, on valve combination 1-1301-41 and 1-1301-64 which resulted in a measured leakage rate of 6.4 SCFH. This value is within the Technical Specification limit. Since slight leakage may occur through manual valve 1-1301-64, the actual check valve 1-1301-41 leakage rate would be justifiably lower.

#### FAILURE DATA:

Check valve 1-1301-41 was initially leak tested on October 30, 1970, during pre-operational testing of Unit One. The leakage rate on this date was found to be 0.121 SCFH. This value lies within the Technical Specification leakage limit.

This valve was not tested for leakage at any time between pre-operational testing and the current refueling outage. Therefore, no previous leakage failure data exists for this valve. Thus, the actual failure date cannot be determined. However, no abnormal RCIC system operation had been observed which would have indicated failure of check valve 1-1301-41.