

August 23, 1984

MEMORANDUM FOR: Karl V. Seyfrit, Chief
Reactor Operations Analysis Branch
Office for Analysis and Evaluation
of Operational Data

AEOD/T420

THRU: Stuart D. Rubin, Lead Engineer
Reactor Systems 4
Reactor Operations Analysis Branch, AEOD

FROM: Peter Lam, Systems Engineer
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SUBJECT: FAILURE OF AN ISOLATION VALVE OF THE REACTOR CORE ISOLATION
COOLING SYSTEM TO OPEN AGAINST OPERATING REACTOR PRESSURE

Enclosed for your consideration is a Technical Review Report for the subject event which occurred at Browns Ferry Unit 1. An inboard containment isolation valve of the reactor core isolation cooling (RCIC) system failed to open against full operating reactor pressure even though it is designed to open for this condition. As a result of the valve failure, the RCIC system was inoperable for 2 days. The precise cause(s) of the valve failure could not be determined with certainty by the licensee. Since the valve is situated inside the containment and the plant is currently operating at power, an inspection of the valve by the licensee is planned for the next scheduled plant outage in March of 1985. The licensee's findings at that time will be monitored. The safety significance of the event was assessed to be relatively minor because the incremental increase in core melt frequency was determined to be a small fraction of the total core melt frequency assessed in the Interim Reliability Evaluation Program for Browns Ferry Unit 1.

However, preliminary investigations were also conducted to assess the design verification basis for RCIC isolation valve closure during a postulated steam supply line break outside containment. The results of these limited investigations indicate that, for some of the newer plants, the valve vendor may demonstrate valve closure capability of such isolation valves by performing an opening test with full design differential pressure across the valve disk. Therefore, the failure of the Browns Ferry RCIC isolation valve to open against a full operating differential pressure may cast doubt on its ability to fully close in the presence of the high steam flow and high differential

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pressure conditions predicted for a postulated RCIC steam line break outside containment. Current surveillance testing of the valve would not detect such a potential inadequacy. Accordingly, it is recommended that these implications and their associated safety significance be considered for further study at the time when the licensee completes the evaluation of the valve failure scheduled to be performed during the next plant outage.

Peter Lam
Reactor Systems 4
Reactor Operations Analysis Branch

Enclosure:
As stated

cc: M. Sinkule, RII
C. Patterson, RII
J. McCormick, RII
E. Brown, ROAB

bcc w/encl ✓
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