UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY

THE OFFICE OF NUCLEAR REACTOR REGULATION

CONTAINMENT INTEGRATED LEAK RATE TEST

BROWNS FERRY NUCLEAR PLANT, UNIT 2

DOCKET NO. 50-260

1.0 Introduction

During the primary containment intergrated leak rate (CILRT) (Type A) test at Browns Ferry Unit 2 on February 15 - 19, 1983, a leakage of 3 wt. % per day was observed. This exceeded the acceptance limit of 1.5 wt. % per day. The leakage path was identified as a valve flange which is not locally (Type B) testable. After torquing the valve flange bolts the integrated test was completed with a measured leakage of 0.5 wt. % per day. Inspection report 50-259/260/296-83-06 documents details of the test as witnessed by an NRC inspector from Region II. The licensee, the Tennesse Valley Authority (TVA) described the results in reportable occurrence report BFRO-50-260/8305 transmitted by letter dated March 16, 1983. A detailed report of the test was transmitted by TVA's letter of May 16, 1983.

The licensee was unable to identify the cause of the loose flange bolts and further indicated that this flange and similar flanges are not locally leak testable. The isolation valve is locally leak tested by pressurizing the volume between it and an additional out-board flapper valve. The flange is located between the isolation valve and the torus; consequently, there is no way to locally pressurize the volume adjacent to the flange for Type B testing. The licensee identified 14 containment isolation valve flanges having a similar design in each of the Browns Ferry Units that are not currently Type B tested.

As indicated in the inspection report the integrated leak rate test is considered a failed test in accordance with the requirements of Paragraph II.A.1 of Appendix J to 10 CFR 50. This is the first failed test for Browns Ferry Unit 2. Technical Specification 4.7.2 and Paragraph III.A.6 of Appendix J require that if any periodic Type A test fails to meet the applicable acceptance criteria, the test schedule for subsequent Type A tests will be reviewed and approved by the Commission. In the report of the test, TVA stated that the next CILRT for the Unit 2 containment is scheduled for July 1986, followed by another in May 1989.

2.0 Evaluation

Since the cause of the excessive leakage from the bolted flange could not be determined, (i.e., there was no apparent explanation for the loosening of the flange bolts), we have concluded that the flange seals represent a significant potential leak path through the containment and should, therefore, be Type B tested at every refueling outage at each of the three

Browns Ferry Units. In the supplemental report of December 22, 1983, TVA stated that a modification to the flange on this valve (2-FCV-64-20) and similar valves will be made to allow testing the flange gaskets for leakage. TVA also stated the modifications were made to valves in Unit 1 during the recent outage (April 16 - December 29, 1983), that the modifications are scheduled to be completed to the valves in Unit 3 during the current outage (Sept 6, 1983 - Aug 1, 1984) and the modifications will be completed in Unit 2 during the outage scheduled to start August 24, 1984.

An integrated (Type A) leak rate test has been performed on each Browns Ferry Unit at the last refueling outage. Therefore, local leak testing of the flange seals need not be implemented until the next scheduled refueling outage for each reactor unit. The licensee's corrective action program is acceptable. Based on the licensee's reported and proposed corrective actions, no change in the Type A test schedule for any of the Browns Ferry Units is required at this time.

The Region II inspector's report revealed that certain instrument lines that would be exposed to post-accident containment pressure were isolated from the CILRT and had not been included in the leak test program at Browns Ferry. Twenty-seven instrumentation valves and their associated piping forming part of the Reactor Protection System at Browns Ferry, Unit 2, were subsequently locally leak tested at accident pressure and exhibited leakage within acceptable limits.

The staff position on this issue is that these instrument lines are considered to be an extension of the primary containment boundary and should be included in the integrated leak rate tests conducted at each of the Browns Ferry Units. In the May 16, 1983 submittal, TVA stated that in future CILRTs, the twenty-seven instrumentation valves and their associated tubing will be included in the Type A tests by aligning the valves to directly see the CILRT test pressure. This resolution is acceptable.

To clarify the outstanding items identified in the inspector's report, the licensee should provide the following information:

1. The status of modifications involving the installation of the double "o" ring seals in the identified flanges for Units 1, 2, and 3.

2. The subsequent Type B test schedule for the modified flanges in each unit.

3. The revised leak testing methods and schedule for the identified instrument lines in each unit.

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