



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

Report Nos.: 50-259/85-04, 50-260/85-04, and 50-296/85-04

Licensee: Tennessee Valley Authority
500A Chestnut Street
Chattanooga, TN 37401

Docket Nos.: 50-259, 50-260 and 50-296

License Nos.: DPR-33, DPR-52,
and DPR-68

Facility Name: Browns Ferry 1, 2, and 3

Inspection Conducted: January 22-25, 1985

Inspector: Frank Jape 2/11/85
for G. A. Schnebl Date Signed

Accompanying Personnel: F. Jape
K. VanDyne

Approved by: Frank Jape 2/11/85
F. Jape, Section Chief Date Signed
Engineering Branch
Division of Reactor Safety

SUMMARY

Scope: This routine, unannounced inspection involved 46 inspector-hours on site in the areas of surveillance testing and maintenance of main steam isolation valve, and closeout of IE Bulletin No. 80-25.

Results: No violations or deviations were identified.

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REPORT DETAILS

1. Licensee Employees Contacted

- *A. W. Gordon, Regulatory Compliance
- J. L. Hollins, Mechanical Engineer
- *G. T. Jones, Plant Manager
- *G. J. Lee, Mechanical Engineer
- *B. C. Morris, Supervisor Regulatory Compliance
- C. W. Pratt, Mechanical Engineer
- *J. E. Swindell, Assistant Plant Manager

Other licensee employees contacted included two technicians, two mechanics, and three office personnel.

NRC Resident Inspectors

- *G. L. Paulk, Senior Resident Inspector
- *C. Patterson, Resident Inspector
- *C. Brooks, Resident Inspector

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on January 25, 1985, with those persons indicated in paragraph 1 above. The licensee acknowledged the findings without significant comment. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector during this inspection.

3. Licensee Action on Previous Enforcement Matters

This subject was not addressed in the inspection.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Independent Inspection Effort - Units 1, 2, and 3 (92706)

The inspector toured portions of Units 1, 2, and 3 reactor buildings, turbine buildings and Unit 2 drywell to observe on-going activities for compliance with NRC requirements and license commitments.

The areas of particular interest were Unit 2 drywell and steam tunnel where the inspector observed maintenance in progress on the Unit 2 main steam isolation valves (MSIVs) that failed local leak rate testing during the current outage (see paragraph 6). The inspector witnessed seat lapping, valve cylinder honing, and valve seat drifting.

During the observations, the inspector gained an appreciation of the difficulties encountered when performing this maintenance due to valve location, physical size, and design.

No violations or deviations were identified.

6. Maintenance Surveillance (62701)

The main purpose of this inspection was to followup on the licensee's efforts to reduce MSIV seat leakage to within the Technical Specification (TS) limit of 11.5 SCFH. The licensee's program commenced during the Unit 2 Cycle 4 outage and has continued through the Unit 1 Cycle 5, Unit 3 Cycle 5, and the present Unit 2 Cycle 5 outages.

The Unit 2 MSIV seat leakage test results obtained during the current outage indicated that B and C line leakage were in excess of the TS limit. Leakage of 1101.7 SCFH and 2818.3 SCFH, respectively, were determined on B and C lines, while the A and D lines were satisfactory 9.6 SCFH and 10.7 SCFH. Subsequent testing indicated that the specific valves needing repair were 2B inboard (1101.7 SCFH), 2C inboard (2793.4 SCFH), and 2C outboard (24.9 SCFH).

Prior to this outage, the following modifications had been performed on all MSIVs which failed leak rate testing: (Unit 1 Cycle 5 - all except 1B outboard; Unit 2 Cycle 4 - all except 2D inboard; Unit 3 Cycle 5 - 3A, 3C outboard and 3A, 3D inboard).

- Machine the poppet and overlay the lower guide with stellite.
- Check the poppet upper guide and weld buildup as necessary.
- Ensure that both upper and lower guide concentricities are within 0.001 inch, as well as overall guide diameter tolerances.
- All valve body machining was performed using a standard which consisted of a poppet mockup manufactured to exact vendor drawing specifications. After lapping the seating surface, each valve body was measured using this standard. The upper bore was then honed as required and additional lapping was performed to ensure adequate clearance in the poppet upper-guide area and to align the seat with the guides. The lower three inches of the guide were then built-up with stellite, machined, and clearances verified using the mockup.
- The MSIVs have also been provided with rebuilt control panels, heavy duty limit switch mountings, and better locking tabs.

- In addition to the modifications cited above, all reworked Units 1 and 3 MSIV's have received two-inch diameter poppet stems during operation in the open position and with anti-rotation assemblies to prevent poppet rotation during closure. Unit 2 did not receive this additional modification as new parts were not available during the Cycle 4 outage.

The inspector and the responsible licensee engineers discussed the recent leak test failure of several Unit 2 MSIVs; three out of eight MSIVs failed during the current outing; 2B inboard, 2C inboard, and 2C outboard. All three valves had been previously modified as discussed above. The licensee contends its MSIV improvement program to be a dedicated, continuous effort which requires time for the actual results of the modifications to be measured. The following reasons were given by the licensee as to why their program is still on track:

- 2B and 2C inboard valves were the first valves to receive the modifications and the licensee considered that they were on a learning curve at that time and subsequently they have improved with each valve worked.
- 2C outboard was very close to the TS limit during the leak test, 24.9 SCFH vs. 11.5 SCFH, which indicated improvement over previous tests.
- 2A and 2D line valves passed leak testing during the outage which also indicates improvement as both lines have a previous history of gross failures.
- More stringent measuring techniques have been developed since the improvement program commenced. For example, all measurement instruments are maintained at the same temperature as the component being measured to ensure better measurement accuracy.
- The modification to install larger poppet stems with anti-rotation assemblies will be accomplished on reworked Unit 2 valves during this outage.
- Machine tool design has been improved to meet the exacting tolerances required.
- A new method has been developed to drift the seat in the valve body to ensure it lines up with the way the poppet contacts the seat.

The inspector considers TVA's efforts in the MSIV improvement program to be on the right track and informed the licensee that the NRC will continue to follow the progress of the program.

No violations or deviations were identified.

7. Previously Identified Inspector Followup Items (IFI) (92701)

(Closed) IFI 259/80-BU-25, IFI 260/80-BU-25, and IFI 296/80-BU-25, Operating Problems with Target: Rock Safety-Relief Valves at BWRs.

The subject problems and required licensee action are outlined in IF. Bulletin No. 80-25. The inspector verified that licensee action that was taken was applicable and appropriate within the scope of the identified problems. Results of the investigating, testing and reviewing were provided within the prescribed time and the inspector considers the licensee action in this matter to be satisfactory.