UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

Report Nos. 50-259/82-24, 50-260/82-24 and 50-296/82-24

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

Facility Name: Browns Ferry Nuclear Plant

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

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

Inspection at Browns Ferry site near Athens, Alabama

Inspectors: for Ross Butcher 9/9/82
J. W. Chase Date Signed

for Ross Butcher 9/9/82
G. L. Paulk Date Signed

Approved by: F. S. Cantrell 9/9/82
F. S. Cantrell, Section Chief, Division of Projects and Resident Programs Date Signed

SUMMARY

Inspection on July 26 - August 25, 1982

Areas Inspected

This routine inspection involved 160 resident inspector-hours in the areas of operational safety, reportable occurrences, maintenance, surveillance, TMI action items, physical protection and reactor trips.

Results

Of the seven areas inspected, no violations or deviations were found in five areas. Three violations were identified in two areas: Violation of Technical Specification 4.8.B.1.a, paragraph 5; violation of Technical Specification 6.3.A.6, paragraph 5; and violation of 10 CFR 50 Appendix B, criterion XI, paragraph 6.

DETAILS

1. Persons Contacted

G. T. Jones, Power Plant Superintendent
J. R. Bynum, Assistant Power Plant Superintendent
J. R. Pittman, Assistant Power Plant Superintendent
L. W. Jones, Quality Assurance Supervisor
W. C. Thomison, Engineering Section Supervisor
A. L. Clement, Chemical Unit Supervisor
D. C. Mims, Engineering and Test Unit Supervisor
A. L. Burnette, Operations Supervisor
R. Hunkapillar, Operations Section Supervisor
T. L. Chinn, Plant Compliance Supervisor
M. W. Haney, Mechanical Maintenance Section Supervisor
T. D. Cosby, Electrical Maintenance Section Supervisor
R. E. Burns, Instrument Maintenance Section Supervisor
J. E. Swindell, Field Services Supervisor
A. W. Sorrell, Supervisor, Radiation Control Unit
R. E. Jackson, Chief Public Safety
R. Cole, QA Site Representative, Office of Power

Other licensee employees contacted included licensed reactor operators and senior reactor operators, auxiliary operators, craftsmen, technicians, public safety officers, Quality Assurance, Quality Control and engineering personnel.

2. Management Interviews

Management interviews were conducted on July 30, August 6, 13, 20 and 27, 1982, with the Power Plant Superintendent and/or the Assistant Power Plant Superintendents and other members of his staff. The licensee was informed of three violations identified during this report period. The licensee did not object to the three violations identified.

3. Licensee Action on Previous Inspection Findings

(Closed) Open (259, 260, 296/82-13-03) Diesel Auto Start Safety Circuit. Evaluation by Region II staff indicated the auto start feature associated with the raw cooling water pump during accident conditions did not degrade the LPCI injection availability. This item is considered closed.

(Closed) Violation (259/81-28-05) Weld Permit 1748 not filled out properly. The inspector reviewed the licensee action concerning this failure to follow procedure violation. The inspector considers this item closed.

(Closed) Violation (259/81-28-08, 260, 296/81-28-05) Failure to follow procedure on RHRSW pump testing. The licensee verified the RHRSW pump tests were not adequately conducted annually as required. The licensee has taken

action to assure proper scheduling is ascertained. The inspector has no further questions.

(Closed) Violation (260/82-13-01) Reactor Core Isolation Cooling System inoperable while the High Pressure Coolant Injection System was inoperable. The surveillance instruction for the RCIC and HPCI testing was revised to allow system leak checks as part of the surveillance. Other actions taken by the licensee in response to this violation was adequate. The inspector had no further questions.

(Closed) Open (259/82-19-02) OI-64 needs revision to clarify action on high drywell temperature. The licensee has clarified OI-64 on the action to be taken when a high drywell temperature alarm is received. The clarification consisted of combining two action paragraphs into one. This item is considered closed.

(Closed) Open (259, 260/82-07-03, 296/82-07-02) SI 4.7.A.4 and Technical Specification bases needed revision. SI 4.7.A.4, Vacuum Breaker Exercise, did not address the method in reducing drywell to torus differential pressure nor did it give a limitation on the amount of time the plant could operate with the differential pressure reduced below the technical specification limit. The licensee has revised the SI to address these points. In addition, the licensee has submitted a technical specification change to correct the conversion of inches of H2O to pounds per square inch as discussed in the technical specification bases. This item is considered closed.

(Closed) Violation (259/82-12-06) Failure to have adequate work plans for Reactor Core Isolation Cooling (RCIC). This violation addressed the discovery of the outer turbine exhaust rupture disc not being installed during reactor operation. The licensee has revised Mechanical Maintenance Instruction (MMI)-22, RCIC System, to include a procedure for installing the RCIC rupture discs. This item is considered closed.

(Closed) Violation (259/82-13-01) High Radiation Area door unlocked. The inspector reviewed Browns Ferry Standard Practice 5.13 which now identifies who is responsible for maintaining an unlocked high radiation area door. This item is considered closed.

(Closed) Violation (260/82-18-02) Performance of feedwater hydro without an approved procedure. The inspector reviewed the current Trouble Report program and had no further questions.

4. Unresolved Items

There were no unresolved items during this reporting period.

5. Operational Safety

The inspectors kept informed on a daily basis of the overall plant status and any significant safety matters related to plant operations. Daily

discussions were held each morning with plant management and various members of the plant operating staff.

The inspectors made frequent visits to the control rooms such that each was visited at least daily when an inspector was on site. Observations included instrument readings, setpoints and recordings; status of operating systems; status and alignments of emergency standby systems; purpose of temporary tags on equipment controls and switches; annunciator alarms; adherence to procedures; adherence to limiting conditions for operations; temporary alterations in effect; daily journals and data sheet entries; and control room manning. This inspection activity also included numerous informal discussions with operators and their supervisors.

General plant tours were conducted on at least a weekly basis. Portions of the turbine building, each reactor building and outside areas were visited. Observations included valve positions and system alignment; snubber and hanger conditions; instrument readings; housekeeping; radiation area controls; tag controls on equipment; work activities in progress; vital area controls, personnel badging, personnel search and escort; and vehicle search and escort. Informal discussions were held with selected plant personnel in their functional areas during these tours. In addition a complete walkdown which included valve alignment, instrument alignment, switch positions was performed on the Secondary Containment. Inspection Report 259, 260, 296/82-23 documents this activity.

During a tour of the refueling floor on August 18, 1982 at approximately 10:00 a.m., the inspector noted that the sample hose for Unit 3 CAM RM-90-250 was disconnected. The inspector had been informed by the Plant Superintendent, on August 17, 1982, that this CAM was inoperable because the pump on the CAM was not operational. During the inspection on August 18, the inspector was under the impression that the CAM was still inoperable.

On August 19, 1982, the inspector reviewed Surveillance Instruction (SI) 4.8.B.1.a which requires hourly air samples to be taken on ventilation effluent streams when a CAM is inoperable. It was at this time the inspector learned that CAM RM-90-250 was declared operable on August 17, 1982 at approximately 6:00 p.m. Therefore, when the inspector noted the sample hose disconnected from the CAM on August 18, the CAM was considered operable by the licensee and hourly air samples were not being taken.

Further investigation into this event shows that the sample hose was reconnected at approximately 12:00 p.m. on August 18 during the course of the daily background checks. Plant Management was not made aware that the sample hose was disconnected until August 19, when it was brought to their attention by the resident inspector. In addition, the last known time the sample hose was authorized to be disconnected was at 1900 on August 17 for background checks.

On August 20, 1982 the Plant Superintendent was informed that failure to monitor the ventilation exhaust was a violation of Technical Specification 4.8.B.1.a which requires effluent streams having continuous

monitoring capability have the flow rate and activity recorded hourly. (296/82-24-01).

During an operational safety tour on August 25, 1982 at approximately 12:30 p.m. the inspector observed the sample hose for Unit 1 CAM RM 90-250 disconnected. The inspector informed the Shift Engineer, Chemical Section Supervisor, and Assistant Plant Superintendent. A review of the recorder for RM 1-90-250 was inconclusive as to when the hose may have been disconnected. However, the hoses were verified correctly connected during the daily background check on August 24, 1982, by plant personnel. The hose fittings used were of the Chicago type and can become easily dislodged with minimal movement. The licensee is taking action to changeout the hose fittings to a more positive fitting type. The Plant Superintendent was informed at the management meeting on August 27, 1982 that failure to monitor the ventilation exhaust was a violation of Technical Specification 4.8.B.1.a. This is the second example of this violation this reporting period. (259/82-24-01)

During a routine tour of the Unit 1 control room on July 26, 1982, the inspector reviewed SI-2. During this review, the inspector had the following comments:

a. SI-2 requires the Shift Engineer (SE) to be informed if oxygen content in the drywell is greater than 3.5%. On July 18, 1982 oxygen content was recorded as 3.8% without any indication on SI-2 that the SE had been informed. It was later determined that the SE had been informed. (Cause of the high oxygen was water in the oxygen sensing line.)

b. SI-2 requires that if recirculation pump speed is not available, then pump generator speed shall be recorded daily. From July 18 to 25, 1982 the "B" recirculation pump speed indicator was inoperable. The operators were recording either 0 or NA for the pump speed and were not recording recirculation pump generator speed as required by SI-2.

c. During the review of SI-2 on August 19, 1982, the inspector noted that Unit 1 torus level was logged as 2.8" on August 15, 1982. The Technical Specifications require torus water level to be -6" to -1". By comparing other torus water level indicators logged for that shift, the correct entry should have been -2.8".

On July 26, 1982, the inspector expressed his concerns to the Plant Superintendent concerning adequacy of the review process performed by the plant staff for SIs and the over-familiarization of operators to daily routine activities. In addition, the Plant Superintendent was informed that failure to log the recirculation pump generator speeds daily as required by SI-2, was a violation of Technical Specification 6.3.A.6 which requires SIs be adhered to. The Plant Superintendent was requested to address the inspector's concern as stated above in TVA's response to the above violation. (259/82-24-02).

6. Reportable Occurrence

The below listed licensee event reports (LERs) were reviewed to determine if the information provided met NRC reporting requirements. The determination included adequacy of event description and corrective action taken or planned, existence of potential generic problems and the relative safety significance of each event. Additional inplant reviews and discussions with plant personnel as appropriate were conducted for those reports indicated by an asterisk:

LER No.	Date	Event
*260/81-50 R-3	7-22-82	Drywell H2 analyzer removed from service for corrective maintenance.
*260/81-60 R-1	7-01-82	25 gallon Scram Discharge Instrument Volume level switch failed.
*259/82-05 R-1	7-22-82	Removal of 1EN motor generator from service.
*260/82-08	2-11-82	Rod Block Monitor B bypassed for greater than 24 hours.
260/82-13 R-1	6-01-82	Pressure switch instrument drift.
260/82-19	7-14-82	Upscale drift of "B" flow bias comparator trip.
*259/82-20 R-1	7-22-82	High unidentified leakage in drywell. (This item will be further inspected in followup to violation 82-11-01).
*296/82-27	7-20-82	H2 analyzer for drywell inoperable.
259/82-37	6-25-82	First stage turbine pressure permissive switches setpoint drift.
259/82-38	6-29-82	Core cooling system instrumentation setpoint drift.
*259/82-39	7-06-82	Failure of relay coil resulting in isolation of hydrogen analyzer.
259/82-40	7-8-82	Failure to drywell sump pump discharge flow control valve.
259/82-41	7-15-82	Inoperative rod block monitors.

296/82-20	6-15-82	Failure to a control rod to scram and failure of a control rod to have proper scram insertion time.

LER 296/82-20, failure of a control rod to scram and failure of another control rod to insert within prescribed time limits, was reviewed during this report period by the inspectors. The LER stated that the failure of the control rod to scram was attributed to an extra O-ring being installed in one of its associated scram pilot valves and the slow scram insertion time of the other control rods was due to a diaphragm in one of its scram pilot valves being installed backwards. As stated in the LER, the licensee maintained that random personnel error was the root cause. The licensee claimed this to be the root cause because all 370 scram pilot valves on Unit 3 were repaired and only two errors were detected.

The inspector reviewed the work package associated with the maintenance on the scram pilot valves, Mechanical Maintenance Instruction (MMI)-28. This MMI requires, on MMI 28-4 Date Sheet, that after maintenance is performed on a scram pilot valve that a scram test be acceptable on the scram pilot valve. This data sheet was not included in the work package for 370 scram pilot valves so a retest was not performed prior to returning the scram pilot valves to service. (The scram pilot valves were subsequently tested with the reactor at 33% power during the course of control rod scram time testing).

In addition the inspector discussed with various cognizant engineers, the type of test which should be performed on the scram pilot valves prior to returning them to service after maintenance. These discussions did not produce a uniform, consistent test, since there was no test criteria as guidance.

The Plant Superintendent was informed that failure to perform and properly document the method of post maintenance testing on the scram pilot valves was a violation of 10 CFR 50, Appendix B, Criterion XI which requires a test program be established to assure that all testing required to demonstrate that components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate requirements and acceptance limits. (296/82-24-03).

7. Maintenance Observation

During the report period, the inspectors observed the below listed maintenance activities for procedure adequacy, adherence to procedure, proper tagouts, adherence to Technical Specifications, radiological controls, and adherence to Quality Control hold points:

a. Torus modifications Unit 2

b. Security fence boundary testing

c. Ultrasonic testing of plant fire protection system piping.

d. Blade guide movement from Unit 3 to Unit 2 fuel pools

e. Weld repair of one inch jet pump sensing line.

In the above areas, no violations or deviations were identified.

8. Surveillance Testing Observation

The inspectors observed the performance of the below listed surveillance procedures. The inspection consisted of a review of the procedure for technical adequacy, conformance to technical specifications, verification of test instrument calibration, observation on the conduct of the test, removal from service and return to service of the system and a review of test data.

a. S.I. 4.2.A.6 - Surveillance Requirements for Primary Containment and Reactor Building Isolation Instrumentation - Main Steam Line Low Pressure, Unit 2

b. S.I. 4.7.C - Secondary Containment Integrity Surveillance, all units.

c. S.I. 4.7.A.2.g.3 - Main Steam Isolation Valve Leak.

d. S.I. 4.11.A.1.g - High Pressure Fire Protection System Building Hydraulic Performance Verification.

In the above area, no violations or deviations were identified other than those noted in Inspection Report 259, 260, 296/82-23 for S.I. 4.7.C.

9. TMI Action Items

The following TMI Action item was reviewed during this report period.

II.B.1 - Reactor Coolant System Vents. A safety evaluation was performed by the Division of Licensing based on a technical evaluation performed by Lawrence Livermore Laboratory. Both evaluations found the design and procedures for the reactor coolant vents to be acceptable at Browns Ferry. This item is considered closed. (Ref. report 259, 260, 296/82-13 and 82-18).

In the above area, no violations or deviations were identified.

10. Plant Physical Protection

During the course of routine inspection activities, the inspectors made observations of certain plant physcial protection activities. These included personnel badging, personnel search and escort, vehicle search and escort, communications and vital area access control.

No violations or deviations were identified within the areas inspected.

11. Reactor Trips

The inspectors reviewed activities associated with the below listed reactor trips during this report period. The review included determination of cause, safety significance, performance of personnel and systems, and corrective action. The inspectors examined instrument recordings, computer printouts, operations journal entries, scram reports, and had discussions with operations, maintenance, and engineering support personnel as appropriate.

On July 19, 1982, Unit 2 tripped from 58% power due to APRM high flux. the high flux resulted from a pressure transient caused by a failure of the main steam pressure sensing line for the EHC system. The line was repaired and the unit returned to service.

On July 20, 1982, Unit 2 tripped from 863 MWe due to the sensing in the RPS logic of two MSIV's at less than 90% open. This trip was due to personnel error during S.I. 4.1.A.11 (MSIV closure functional Test). Step 4.2 was performed without having removed the TACF boot from relay 5AK3G for MSIV "D". A scram resulted from RPS logic having two MSIV's picked up at less than 90% open. All safety systems performed as designed.

On July 21, 1982, Unit 2 tripped from 77% power due to low condenser vacuum. The low condenser vacuum was caused by SJAE "B" third stage isolation due to an increase in discharge pressure. This same problem of increasing SJAE discharge pressure reoccurred during the next startup and investigation at that time revealed that when charcoal beds are lined up in parallel the offgas pressure returned to normal. It is believed that the problem is with flow blockage in the charcoal beds or a problem with discharge valve 66-116. The problem will be resolved during the current refueling outage. All safety systems operated as designed.

On July 21, 1982, Unit 2 tripped from 4% power due to low condenser vacuum. The reactor scrammed on low condenser vacuum as the unit operator placed the unit in Run mode. SJAE 'A' was operating below maximum efficiency with SJAE 'B' inoperable, which caused the margin to the scram setpoint to be reduced. The vacuum indicator was reading -24.8" Hg at the time of the scram, however, after the scram it was noted as reading 0.5" Hg too high. This error in the recorder and the inefficiency of SJAE 'A', coupled with the decision to go to the Run mode with reduced margin resulted in the scram. All safety systems performed satisfactorily.

On July 30, 1982, Unit 2 was tripped manually from 29% power since the RWM/RSCS had not and could not be proven operable at 30% power. During control rod testing recirculation flow power dropped low enough that 'A' feedwater signal (reading lower than actual) dropped out. This caused a recirculation pump runback to minimum speed. Therefore, the unit was manually scrammed. The root valve for the 'A' feedwater flow transmitter was leaking causing erroneous feedwater flow signal. Safety systems operated as designed.

On June 5, 1982, Unit 3 tripped from 716 MWe power due to a turbine trip. The turbine trip was caused by a relay race upon reenergizing 250 VDC power to the turbine bearing wear detector circuitry following troubleshooting. Safety systems operated as designed.

On July 31, 1982, Unit 3 was manually scrammed from 38% power due to failure to verify secondary containment integrity. Safety systems operated as designed. Secondary containment integrity was verified before unit restart. Refer to report 82-23.

On June 24, 1982, Unit 1 was manually scrammed from 400 MWe in order to repair a split in a 8" section of feedwater heater piping. The split was caused by steam erosion. The pipe was repaired and the unit returned to service. All safety systems functioned as designed.

On August 3, 1982, Unit 1 was tripped from 45% power due to failure to verify secondary containment integrity in the Unit 1 reactor building. Repairs were made to secondary containment and the unit restarted. Safety systems operated as designed.

During a review of the scram reports the inspector noted several errors as listed below. Scram reports are completed in accordance with Browns Ferry Standard Practice 12.8 and form B. F. 58. A similar concern relative to scram report errors was brought to your attention in I.E. inspection report 82-13.

a. Unit 2 Scram of July 19, 1982 (report #135) indicates no "02 position" rods on the report. An OD-7 printout after the scram indicated rod 34-27 was at position 02.

b. Unit 2 Scram of July 20, 1982 (report #136) indicates no "02 position" rods after scram. OD-7 printout indicated rod 34-27 was at 02 after the scram.

c. Unit 2 Scram of July 21, 1982 (report #137) indicates no MSRV lifts during the event. TR1-1 printout indicated four relief valve lifts. This indication was possibly due to a failed recorder, but no comments were included in the report to indicate the recorder was out of commission.

d. Unit 2 Scram of July 21, 1982 (report #138) indicates no MSRV lifts during event. TR1-1 printout indicated four relief valve lifts. This indication was possibly due to a failed recorder, but no comments were included in the report to indicate the recorder was out of commission.

The inspector expressed his concern to the Plant Superintendent of the continuing errors noted in the scram reports at the exit meeting of August 27, 1982. This item will remain open and followed up on future inspections. (260/82-24-04).