



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30303

Report Nos.: 50-259/84-21, 50-260/84-21, and 50-296/84-21

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

Inspector: Ross Butcher 7/5/84
R. C. Butcher, Project Inspector Date Signed

Approved by: F. S. Cantrell 7/5/84
F. S. Cantrell, Section Chief Date Signed
Division of Project and Resident Programs

SUMMARY

An enforcement conference was held in the Region II Office on June 21, 1984. The Regional Administrator opened the meeting by presenting NRC concerns related to the design problems recently uncovered. (See Inspection Report 50-259/260/296-84-20 for details). The problems discussed were the inability to parallel Units 1 and 2 and Unit 3 diesel generators, the inadequate electrical cable separation for the Automatic Depressurization System (ADS) and manual safety relief valves, the inadequate separations for the High Pressure Coolant Injection (HPCI) Division 1 and ADS electrical cables and the loss of cooling for electrical shutdown board rooms on an accident signal. Also mentioned, was the recent notification of the lack of isolation valves in six steam heating lines from the turbine building to the reactor building that were discovered during a review of seismic boundaries for IE Bulletin 79-14. NRC stated that the seriousness of these design problems needed TVA's full attention and prompt corrective action. Also it was recognized that the Appendix R review which identified these problem areas and other ongoing reviews at TVA, might reveal other discrepancies and TVA is encouraged to aggressively pursue these reviews.

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REPORT DETAILS

1. Attendees

J. A. Coffey, Site Director, Browns Ferry
H. L. Abercrombie, Director Nuclear Services, Chattanooga
R. W. Cantrell, Manager, Office of Engineering
G. T. Jones, Plant Manager, Browns Ferry
J. Raulston, Chief Nuclear Engineer
J. Dormer, Supervisor BWR Licensing
T. A. Cosby, Supervisor Electrical Maintenance, Browns Ferry
T. Barkalow, Nuclear Engineer, Office of Engineering
M. R. Belevy, Electrical Engineer, Office of Engineering
W. T. Christopher, Electrical Engineer, Browns Ferry
G. R. Hall, Manager Design Services, Browns Ferry
D. C. Mims, Engineering Group Supervisor, Browns Ferry
B. C. Morris, Compliance Supervisor, Browns Ferry
D. L. William, Supervisor Nuclear Licensing Section
J. D. Wolcott, Supervisor Reactor Engineering, Browns Ferry
G. R. Owens, Electrical Projects
H. L. Jones, Nuclear Engineer, Knoxville
D. A. Walker, Nuclear Engineer, Knoxville
G. R. Reed, Electrical Engineer, Knoxville
H. A. Stiles, Reactor Engineer, Browns Ferry

NRC

J. P. O'Reilly, Regional Administrator
R. C. Lewis, Director, Reactor Projects
D. M. Verrelli, Branch Chief, Reactor Projects
F. S. Cantrell, Section Chief, Reactor Projects
D. Clark, Browns Ferry, Project Manager/NRR
C. A. Patterson, Browns Ferry, Resident Inspector
R. C. Butcher, Project Inspector, Browns Ferry
S. G. Burns, Deputy Director, ROED, Office of Executive
Legal Director
J. A. Axelrad, Director Enforcement Staff
J. M. Puckett, Acting Director of Enforcement, Region II
T. E. Conlon, Chief, Plant Systems Section
M. D. Hunt, Reactor Inspector, Region II
P. R. Farron, Enforcement Staff, Headquarters
G. M. Nejfelt, Enforcement Specialist, Region II.

2. Enforcement Issues

The Regional Administrator stated that he was encouraged that the issues had all been licensee identified as part of an ongoing review program and that prompt corrective action was taken when the problems were identified.

TVA representatives provided information on the following problem.

a. Inadequate Electrical Cable Separation

A TVA representative stated that during a 10 CFR 50, Appendix R review that two problems were discovered with electrical cable separation.

- (1) A commitment in the Browns Ferry Fire Recovery Plan to separate cables for the manual safety relief valves and the automatic relief valves in the automatic depressurization system (ADS) was never fully achieved. Later a plant modification to equalize the ADS loading on the torus resulted in further deviation from this commitment.
- (2) IE Notice 79-32, Separation of Electrical Cables for High Pressure Coolant Injection (HPCI) and ADS was not fully examined. The HPCI Inboard Isolation valve (DIV-I) and ADS (DIV-I) are not separated as required by the FSAR. This causes the need for a special third division with the three divisions being HPCI (DIV-II), ADS (DIV-I), and HPCI Inboard Isolation Valve (DIV-I).

These problems were due to a breakdown of design controls. Inadequate documentation led to the subsequent problems discussed in (1) above. Temporary corrective actions were to post fire watches in affected areas and modify plant procedures to alert the operators of the separation problems. On Unit 2, power supplies were interchanged to insure that at least four relief valves were operable under all conditions using the handswitch. Long term corrective action consisting of rerouting of cable to insure adequate separation will be achieved in the next refueling outage for each unit. Also, all IE Notices for 1979 through 1983 will be reviewed to insure the initial review was adequate.

b. Inability to parallel the diesel generators in the presence of an accident signal.

A TVA representative stated that the root cause of this design error was due to a misinterpretation of the "10 minute rule" in the original design. It was thought that after 10 minutes into an accident condition that the accident signal would be cleared. This error was discovered in an Appendix R review. The FSAR requires the diesels to be paralleled for loading consideration during the long term (greater than 10 minutes). Immediate corrective actions taken were to change plant procedures to specify electrical contacts to be jumpered which would permit the diesel generators to be paralleled. Permanent modifications to the Unit 3 diesels have been completed and modifications to the Units 1 and 2 diesels are proceeding. The post modifications testing will include paralleling a Unit 3 diesel to a Unit 1 and 2 diesel with a simulated accident signal present.

c. Shutdown Board Room Ventilation

A TVA representative stated that upon receipt of an accident signal the shutdown board room exhaust fans were load shed from the shutdown boards and could not be restarted. This design error was also due to the misinterpretation of the "10 minute rule." The FSAR requires that the fans be operable at all times for cooling of the board rooms. Further investigations found that the exhaust fans and emergency chiller for the rooms were powered off the same electrical board. A single failure of the electrical board would result in a loss of all cooling. Temporary corrective action was taken to revise plant procedures to allow jumpering of electrical contacts to start the exhaust fans or using one of the available supply fans and manually lining up an exhaust path. Permanent corrective action will be to change the electrical circuits.

d. Secondary Containment Isolation for Building Heating Lines

A TVA representative stated that as part of an ongoing review of seismic boundaries for IE Bulletin 79-14, it was discovered that six building heating lines between the turbine building and reactor building were not seismically qualified and did not contain isolation valves. Per the FSAR, secondary containment must be maintained by one of several possible options. A conservative calculation was made accounting for the additional inleakage if these six lines ruptured. No compromise of secondary containment would exist. Permanent corrective actions are being evaluated.

e. Summary

The Regional Administrator summarized the NRC's thoughts regarding these issues:

- (1) The NRC will closely track TVA's corrective actions on these issues.
- (2) A need for good communications was stressed during the ongoing reviews with regard to other possible findings.
- (3) The enforcement policy encourages prompt reporting and proper corrective action by the licensee.
- (4) The fact that all the findings were licensee identified was noted.
- (5) TVA should aggressively pursue their review program in order to identify other possible issues.
- (6) The NRC will evaluate the information presented by TVA in determining appropriate enforcement action.

3. Discussion Of Other Items

The TVA's reorganization and Regulatory Performance Improvement Plan was discussed and the present status given. It was felt that the organizational changes being made will enhance the design function for TVA. The Regional Administrator stated that "past improvement plans" by TVA have not been effective over the long run, and that the NRC will closely track the changes being made. It was stressed that an overall step improvement in performance is expected by the NRC.

AGENDA FOR JUNE 21, 1984 BROWNS FERRY
ENFORCEMENT CONFERENCE

<u>Item</u>	<u>Speaker</u>
I. Introduction	Jim Coffey, Bob Cantrell
II. HPCI/ADS CABLE SEPARATION	
A. Describe Event/Situation	Tom Cosby
B. Results of Investigation & Root Causes	Tom Barkelow
C. Contributing/Mitigating Circumstances	Tom Barkelow
D. Safety Implications	Tom Barkelow
E. Immediate Corrective Actions	Tom Cosby
F. Long Term Corrective Actions	Tom Barkelow
III. DIESEL GENERATOR PARALLELING	
A. Describe Event/Situation	Tom Cosby
B. Immediate & Long-Term Corrective Actions	Tom Cosby
C. Results of Investigation & Root Causes	Marvin Belew
D. Contributing/Mitigating Circumstances	Marvin Belew
E. Safety Implications	Marvin Belew
IV. OTHER RELATED ISSUES/SHUTDOWN BOARD ROOM VENTILATION	
A. Describe Event/Situation	Tom Cosby
B. Immediate Corrective Actions	Tom Cosby
C. Results of Investigation & Root Causes	Marvin Belew
D. Contributing/Mitigating Circumstances	Marvin Belew
E. Safety Implications	Marvin Belew
F. Long Term Corrective Actions	Marvin Belew
V. GENERIC/PROGRAMMATIC IMPLICATIONS	Bob Cantrell
VI. SUMMARY	Jim Coffey