



UNITED STATES
NUCLEAR REGULATORY COMMISSION
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and 50-260

Tennessee Valley Authority
ATTN: Mr. Godwin Williams, Jr.
Manager of Power
818 Power Building
Chattanooga, Tennessee 37201

Gentlemen:

Attached is a copy of Supplement No. 1 to the Safety Evaluation
by the Division of Operating Reactors, Supporting the Operation After
the Restoration and Modification of the Browns Ferry Nuclear Plant,
Units 1 and 2, Following the March 22, 1975 Fire.

Sincerely,

A handwritten signature in cursive script, reading "A. Schwencer", is written over the typed name.

A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors

Enclosure:
As stated

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1.0 Introduction

The Safety Evaluation Report by the Division of Operating Reactors Supporting the Operation After the Restoration and Modification of the Browns Ferry Nuclear Plant Units 1 and 2 Following the March 22, 1975 Fire (SER) was issued on February 23, 1976. The SER identified matters requiring additional submittals by the Tennessee Valley Authority (TVA) with subsequent NRC evaluation. Since the date of the SER issuance, there have been meetings with TVA, additional revisions to the "Plan for Evaluation, Repair and Return to Service of Browns Ferry Units 1 and 2 (March 22, 1975 Fire)" dated April 13, 1975 (the Plan), and meetings with the ACRS resulting in an ACRS report dated March 11, 1976.

The purpose of this supplement is to update the SER based on the NRC evaluation work performed since February 23, 1976. The section numbers of this supplement are the section numbers of the SER wherein the matter was identified except for Sections 11, 12, 13, 14, 15 and 16. Section 11 discusses ACRS items which were identified for additional information or evaluation in the ACRS report dated March 11, 1976. Sections 12 through 16 are new sections. In addition, the supplement contains an updated chronology as Appendix A, the report of the Advisory Committee on Reactor Safeguards (ACRS) as Appendix B, a report by the Analytical Research Laboratories, Inc. on combustion test results for Flamemastic 71A as Appendix C, and a comparison of the Browns Ferry Plant with the "Recommendations Related to Browns Ferry Fire, Report by Special Review Group" (NUREG-0050) as Appendix D.

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results of these examinations will be submitted to NRC. We conclude that this program will provide adequate assurance that any deleterious effects of residual chlorides will be detected prior to causing a safety hazard.

8.0 Technical Specifications

In Section 8.0 of the SER we stated that proposed Technical Specifications for the fire protection systems had been submitted by TVA. We stated that these specifications were currently being reviewed and final specifications would be developed prior to restart of Units 1 and 2.

We have been working with TVA to complete the Technical Specifications that will be issued with a license amendment to authorize restart of Units 1 and 2.

The new specifications incorporate limiting conditions for operation for (1) operability of the high pressure fire pumps and unit shutdown requirements if the system does not meet these limits, (2) minimum system pressure and flow limits, (3) minimum storage limits for CO₂ in the storage tank, (4) limits for CO₂ system operability and unit shutdown requirements if the system does not meet these limits, (5) limits on the minimum fire detection system operability and requirements for a fire watch if the detector system limits are not met, (6) requirements for a roving fire watch during the period between restart and the first refueling, (7) requirements for an annual independent fire protection and loss prevention inspection, (8) requirements for an inspection and audit by an outside qualified fire consultant every three years, and (9) requirements for the minimum in-plant fire protection organization and duties to be maintained.

Surveillance requirements are also incorporated in the specifications to require periodic testing and inspection of the fire protection systems and the fire detection systems that must be performed at specified time intervals to ensure that the fire protection systems are operable. The majority of the surveillance intervals are consistent with the NFPA code. The other intervals were determined based on the as-built plant systems and unique requirements for the Browns Ferry Plant.

We conclude that the Fire Protection Technical Specifications will provide for fire protection operability and maintenance to assure acceptable fire protection for plant operations.

13. Environmental

We have determined that the proposed amendments do not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the proposed amendment involve an action which is insignificant from the standpoint of environmental impact and pursuant to 10 CFR 51.5(d)(4), that an environmental statement, negative declaration, or environmental impact appraisal need not be prepared in connection with the issuance of the proposed amendments.

15. Financial Qualification

We prepared a financial analysis for the Safety Evaluation Report (dated June 26, 1972) which concluded that the Tennessee Valley Authority (TVA) was financially qualified to operate Browns Ferry Nuclear Plant, Unit Nos. 1, 2 and 3, and to permanently shut down the facility and maintain it in a safe shutdown condition, should that become necessary. We have recently updated the review of the financial condition of TVA and have determined that there have been no developments that would alter earlier favorable conclusion. The funds necessary to meet the costs noted above will be provided from operating revenues. Recent operating results indicate significant increases in TVA's operating revenues and net income. TVA has statutory authority, independent of any regulatory body, to set its own rates with the objective that they be as low as feasible, but requiring that they be high enough to meet the total of its financial obligations, including all operating costs. In addition, the U.S. Congress recently increased TVA's debt ceiling authorization from \$5 billion to \$15 billion. TVA's power revenue bonds are rated "Aaa" (highest quality) by both Moody's Investors Service and Standard and Poor's. Consequently, we reaffirm its finding that TVA is financially qualified to operate the Browns Ferry Nuclear Plant, Units Nos. 1, 2 and 3, if necessary, to permanently shut down the facility and maintain it in a safe shutdown condition.

16. Conclusions

Based on our analysis of the restoration and modifications of the Browns Ferry Nuclear Power Plant Units 1 and 2, we have determined that upon favorable resolution of the outstanding matters set forth in Sections 11.6 and 12.0, we will be able to conclude that:

- (1) the application for amendment filed by Tennessee Valley Authority dated August 13, 1975, complies with the requirements of the Atomic Energy Act of 1954, as amended (Act), and the Commission's regulations set forth in 10 CFR Chapter 1;
- (2) Restoration and construction of the Browns Ferry Nuclear Plant Unit 2 has been substantially completed and of Unit 1 will be substantially completed in conformity with "Plan for Evaluation, Repair and Return to Service of Browns Ferry Units 1 and 2 (March 22, 1975 Fire)" dated April 13, 1975, as revised, the provisions of the Act, and the rules and regulations of the Commission;
- (3) The facility will operate in conformity with the application as amended, the provisions of the Act, and the rules and regulations of the Commission;
- (4) There is reasonable assurance (i) that the activities authorized by the license amendments can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the regulations of the Commission set forth in 10 CFR Chapter 1;
- (5) The applicant is technically and financially qualified to engage in the activities authorized by the license amendments, in accordance with the regulations of the Commission set forth in 10 CFR Chapter 1; and
- (6) The issuance of the license amendments will not be inimical to the common defense and security or to the health and safety of the public.

May 21, 1976	TVA letter transmitting a report entitled "Browns Ferry Nuclear Plant Units 1-3, RHR Pump Protection Against Operation in Excess of Design Runout"
May 28, 1976	TVA letter requesting Amendment to load fuel in Units 1 and 2
June 10, 1976	TVA letter regarding the addition of a Safety Engineer to the Browns Ferry Nuclear Plant staff
June 10, 1976	TVA letter transmitting Revision 43 to "Plan for Evaluation, Repair, and Return to Service..."
June 15, 1976	TVA letter transmitting Revision 44 to "Plan for Evaluation, Repair, and Return to Service..."
June 16, 1976	TVA letter transmitting Revision 45 to "Plan for Evaluation, Repair, and Return to Service..."
June 16, 1976	TVA letter transmitting infinite multiplication factor for Unit 2 fuel
June 17, 1976	TVA letter transmitting Quality Assurance for fire protection systems

21. Page 24

RECOMMENDATION

Consider drainage needs and potential for water damage in design of water extinguishment systems.

RESPONSE

TVA has taken into account the drainage and sump capacity requirements associated with the spray and sprinkler systems. (Sections 7.5.1, 7.6.1, and 7.6.3). Protection of all safety related equipment from the effects of water drainage from operation of these systems was also taken into account by providing shields and covers where required. (Sections 7.5.1 and 7.6).

22. Page 24

RECOMMENDATION

Develop guidance for specification of quality and design requirements for water sprinkler systems.

RESPONSE

Development of such guidance is underway. The adequacy of the Browns Ferry sprinkler system was reviewed and, as modified, are considered acceptable.

23. Page 25

RECOMMENDATION

In design of future plants, continue to provide high pressure water system (hoses, nozzles, hydrants) in all plant areas including those protected by sprinklers or sprays.

RESPONSE

At Browns Ferry, all areas, even those with sprays and sprinklers, will have water coverage available from at least two hose stations.

Section 3.5.3 Ventilation Systems and Smoke Control

Page 25

RECOMMENDATION

Review and upgrade ventilation systems to (a) assure continued functioning if needed during a fire and (b) provide capability of isolating fires by cutout valves or dampers - these provisions to be compatible with requirements for containment of radioactivity.

RESPONSE

TVA has a new QA program for Operations which meets the current NRC requirements. In addition, OI&E will verify that the appropriate portions of the detailed QA Procedures Manual have been modified to address the area of fire protection.

44. Page 50

RECOMMENDATION

Operating QA programs in older reactors, known not to conform to current standards, should be upgraded promptly.

RESPONSE

The Browns Ferry program has been upgraded.

45. Page 50

RECOMMENDATION

Upgrade the NRC Inspection program.

RESPONSE

The NRC inspection program for the restoration and modification at Browns Ferry has been upgraded to include fire protection systems, fire prevention, and fire fighting.

46. Page 50

RECOMMENDATION

Licensee QA programs, and NRC licensing and inspection programs should include explicit reference to fire prevention, fire fighting and consequence mitigation in their written procedures.

RESPONSE

The NRC licensing and inspection programs for the Browns Ferry restoration and modifications explicitly evaluate fire prevention, fire fighting, and fire prevention and the SER and its supplements and the inspection reports provide written evidence of this.

Section 5.3.1.2 Offsite

47. Page 51

RECOMMENDATION

Consideration should be given to providing alternate or emergency power supplies for fixed in-plant radiological monitoring equipment or providing sufficient manpower for use of portable monitors.

RESPONSE

TVA is preparing emergency procedures to provide added personnel and portable equipment.

48. Page 51

RECOMMENDATION

"Standby" classification in emergency plans appears necessary to cover those incidents (like the fire) with potential for later triggering one of the four major incident classification categories.

RESPONSE

TVA is changing their Emergency Procedures to provide for a "standby alert" condition.

Section 6.2.3

NRC Organization - Application to Unusual Events and Incidents

49. Page 54,60

RECOMMENDATION

Improve NRC procedures for the safety review of incidents. Clarify the concept of "Lead responsibility".

RESPONSE

OI&E and ONRR are now holding regular monthly meetings to discuss issues as they arise regarding interface relationships between the offices. As an outgrowth of these meetings, new written guidelines are under development defining more clearly the responsibility for these interface areas.

50. Page 55

RECOMMENDATION

Implementation of Review Groups recommendations must be decided plant-by-plant.

RESPONSE

This tabulation together with the SER for the return to operation of Browns Ferry shows the implementation of the SRG recommendations appropriate for this plant at this time. As the staff implements additional SRG recommendations in the future, the need for further action for this plant as well as others, will be considered.

Section 6.3

NRC Action Before the Fire

51. Page 56

RECOMMENDATION

Present NRC programs in fire prevention and control research, standards and criteria, licensing and inspection should be continued and expanded as needed and as recommended in report.

RESPONSE

Additional fire protection requirements generated by such continued and expanded efforts will be considered for this plant to the extent that significant improvements in safety can be achieved.

Section 6.3.3

Inspection of Licensee Operations

52. Page 57

RECOMMENDATION

Reevaluate procedures for resolution by NRC management of issues involving "poor practice" findings by inspectors.

RESPONSE

The staff recognizes the need for NRR to responsibly deal with "feedback" from IE inspectors and where appropriate, will develop enforceable criteria and requirements applicable to this and other nuclear power plants.

Section 6.4

NRC Action During and After the Fire

53. Page 58

RECOMMENDATION

Develop alternate modes of transportation for emergency use to avoid undue delays between a region office and a site.

RESPONSE

Alternative methods of transportation from house or Regional Office to the affected nuclear site at any hour are being evaluated. The objective is to assure dispatch of appropriate personnel within two hours after notification.

54. Page 58

RECOMMENDATION

Give attention to availability of back-up management and technical personnel at Headquarters to provide for a prolonged emergency.

RESPONSE

Duty Officers are being established in all the offices necessary to respond to any emergency.

55. Page 58

RECOMMENDATION

Provide improved communications facilities - start with a system study.

RESPONSE

An Incident Management Center(IMC) has been established in the IE Headquarters Office in Bethesda. The Center houses the existing communications equipment for incident management, which consists of telephones with arrangements for conference calls. During emergency periods, the NRC operators' services are available for assisting the IMC on an augmented basis. Four of the IE principal staff and the IE Duty Officers have been assigned papers for prompt response to messages. Two facsimile machines and communicating magnetic card typewriters are located within the IE offices. Procedures for notification of their agencies are in effect.

Acquisition of communications facilities and development of procedures necessary to establish a link between Headquarters, Regions and the incident site remains to be accomplished. AT&T consultation for the discussion of operational needs and equipment has been arranged. Internal procedures are under development.

Section 7.0 Response to Other Government Agencies

56. Page 61 RECOMMENDATION

Alabama and local governments should reassess and strengthen emergency notifications methods and procedures.

RESPONSE

Meetings have been held with the Alabama and local officials and training sessions and drills have been held with the appropriate emergency personnel.

Section 7.2.2 Tennessee

57. Page 62 RECOMMENDATION

TVA emergency spokesman needs to use more careful phraseology to avoid inciting undue alarm in offsite agencies.

RESPONSE

This recommendation has been passed on to TVA.

58. Page 63 RECOMMENDATION

Recommend continued efforts for helping States develop radiological emergency response plans.

RESPONSE

Efforts are continuing in this area.

Section 7.3.6 Drills and Exercise

59. Page 64 RECOMMENDATION

Recommends that drills and exercises to test emergency interface between TVA, the State of Alabama and its local governments be conducted at least annually.