



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

ENCLOSURE

SAFETY EVALUATION BY THE OFFICE OF SPECIAL PROJECTS

IN REGARD TO VOLUME 3 OF THE BROWNS FERRY NUCLEAR PERFORMANCE PLAN

SECTION III.2.0 - CONFIGURATION MANAGEMENT PROGRAM -

DESIGN BASELINE AND VERIFICATION PROGRAM

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT, UNIT 2

DOCKET NO. 50-260

1.0 INTRODUCTION

Section III.2.0 of the Browns Ferry Nuclear Performance Plan (BFNPP) describes a Tennessee Valley Authority (TVA) commitment to assess and re-establish the plant design basis and evaluate the plant configuration to ensure that it satisfies the design basis.

A TVA assessment team consisting of design engineers, not associated with the Browns Ferry Nuclear (BFN) project, and an independent contractor (M. Bender) had earlier reviewed the design process at BFN prior to the establishment of the BFN Design Baseline and Verification Program (DBVP) (cited in TVA submittal dated December 16, 1986). In September 1985, this team issued a report (the Bender Report) which concluded:

- "1. No design policy currently exists or is in the planning stage that would provide a reference basis for deciding how to judge the design requirements for the BFN plant in view of the fact that it was designed at a time when formalized design criteria were not in vogue and the regulatory system which governed new plant design was not in place, and thus, no explicit set of baseline design documents exists.
2. Design-related activities not controlled by OE that may infringe on design integrity assurance is not correlated with the OE design control policy being established for the BFN plan."

The BFN DBVP was established to resolve the identified problems related to design control that had occurred at BFN. These identified problems are summarized as follows: (1) the original design control program allowed an as-built set of drawings to be maintained by plant operations and an

SECRET

THE UNITED STATES OF AMERICA
DEPARTMENT OF THE ARMY
OFFICE OF THE ADJUTANT GENERAL
WASHINGTON, D. C. 20315
ADJG 10-10-68

ADJG 10-10-68

TO: THE ADJUTANT GENERAL, DEPARTMENT OF THE ARMY, WASHINGTON, D. C. 20315
FROM: THE ADJUTANT GENERAL, DEPARTMENT OF THE ARMY, WASHINGTON, D. C. 20315
SUBJECT: ADJG 10-10-68

1. The purpose of this memorandum is to advise you of the results of the review of the ADJG 10-10-68. The review was conducted by the ADJG 10-10-68 and the results are as follows:

2. The ADJG 10-10-68 is in compliance with the requirements of the ADJG 10-10-68. The ADJG 10-10-68 is in compliance with the requirements of the ADJG 10-10-68. The ADJG 10-10-68 is in compliance with the requirements of the ADJG 10-10-68.

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as-designed set of drawings to be maintained by engineering, (2) the plant configuration was not reconciled with the design basis because the plant design basis was scattered among many documents, thus making them not readily usable, and (3) external reviews and studies indicated weaknesses in plant modifications that had been implemented after the plant became operational.

TVA submitted Revision 0 to the BFN DBVP to the NRC in a letter from R. Gridley dated March 13, 1987. In a letter dated July 10, 1987, TVA submitted a more detailed version (Revision 2) of the DBVP which upgraded the program to (1) reconcile design control issues, (2) re-establish the design basis, and (3) evaluate the plant configuration. Revisions 1 and 3 were internal documents not submitted to the NRC. In a letter dated March 25, 1988, TVA submitted to the NRC Revision 4 of the BFN DBVP which incorporated the DBVP calculational effort.

2.0. PROGRAM DESCRIPTION

The objectives of the DBVP are to re-establish the design basis and evaluate the plant configuration to ensure that: (1) it satisfies the design basis by means of verifying the functional adequacy of the plant configuration, (2) ensuring that the configuration of these systems is supported by engineering analysis and documentation, and (3) providing confidence that the plant configuration is in conformance with licensing commitments.

The essential elements of the overall program are as follows:

- (1) verification of plant configuration;
- (2) reconciliation of the configuration to engineering design documents including essential calculations;
- (3) reconciliation of the configuration to the FSAR and licensing commitments;
- (4) performance of system evaluation for the system configuration;
- (5) issuance of revised key plant drawings for the required systems to be consistent with the plant configuration; and
- (6) implementation of improved design change control.

TVA is implementing the BFN DBVP in two phases: Phase I will be completed before startup and will include the evaluation of systems and portions of systems required for safe shutdown. These systems will be identified by evaluating the abnormal operational transients, design basis accident and special events addressed in Chapter 14 of the BFN Final Safety Analysis Report (FSAR) and by determining the safety functions necessary to mitigate these events. Phase II will be completed after startup and will include implementation of the remaining modifications of systems not required for startup, completion and revision of the design criteria documentation, completion of system evaluations, and implementation of corrective actions to other systems as required.

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An improved design change control process will be put into effect to ensure that compliance with the design basis continues.

TVA identified the systems required to accomplish a safe shutdown. A staff review of these required systems revealed that the containment purge valve (CPV) capability to open against a 30 psig containment pressure was assigned as a Phase II priority item. The staff has concluded that this item should be assigned as a Phase I priority item because of the importance of purging the containment atmosphere 30 days into the accident sequence in order to expel the buildup of combustible gases in the containment. TVA has provided vendor procurement data and walkdown data which indicate that the installed valves are mechanically capable of opening against the containment pressure. TVA has also demonstrated that electrical power can be supplied to the purge valve operator by various methods involving minor repairs that are easily completed within the 30-day period for opening the containment purge valve. Based on the review of the containment purge valve operability and the list of safe shutdown systems, the staff concludes that the Browns Ferry DBVP has identified the systems required for safe shutdown of the plant following design basis accidents. The staff's evaluation of the acceptability of the Browns Ferry safe shutdown systems including the supporting essential calculations will be addressed in conjunction with its review of the DBVP implementation in a future safety evaluation report or staff inspection report.

3.0 EVALUATION

From October 26 through October 30, 1987, an NRC inspection team reviewed and assessed the adequacy of the information contained in the BFN DBVP up to and including Revision 2. The NRC team found that TVA's DBVP contained the essential elements needed to achieve its goals and objectives; however, several weaknesses were identified which required resolution and the team requested that TVA address them. The extent, scope, and findings of this NRC team inspection are documented in the NRC Inspection Reports 50-259/87-36, 50-260/87-36, and 50-296/87-36 dated January 21, 1988.

From April 18 through April 22, 1988, an NRC inspection team reviewed and assessed the adequacy of Revision 4 of the BFN DBVP which incorporated the DBVP calculational effort. In addition, the team reviewed TVA's responses to open items from the NRC team inspection on Revision 2 of the DBVP. The NRC team found that Revision 4 of the BFN DBVP incorporated the required DBVP calculation effort and, in general, did not contain other significant technical changes. Therefore, the conclusions reached earlier that TVA's DBVP contained the essential elements needed to achieve its goals and objectives were found still valid. The team reviewed TVA's responses to the previous inspection report finding concerning communication and interaction between the DBVP and ongoing programs at BFN. The response was documented in a letter from R. Gridley (TVA) to NRC dated April 20, 1988. In addition, TVA initiated a review effort to enhance coordination and communication between the various special programs established for BFN as described in Section III of the Nuclear Performance Plan (NPP) Volume 3. As a result, TVA developed an output matrix of BFN programs which are needed for input into other BFN programs. The matrix is used by the



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responsible TVA program managers to enhance coordination and interface requirements. The NRC team's review of the TVA response to the interfacing programs issue found that it adequately addressed the team's concerns. The extent, scope and finding of the NRC team inspection are documented in the NRC Inspection Reports 50-259/88-07, 50-260/88-07 and 50-296/88-07 dated September 8, 1988.

The staff is continuing its review of the implementation of the BFN DBVP and its findings will be provided in a future safety evaluation report or staff inspection reports.

4.0 CONCLUSIONS

The NRC staff finds that TVA has adequately identified the problems associated with design control and design control changes and has established an appropriate design basis and verification program (DBVP) to reestablish the design basis and to evaluate the plant configuration to ensure its conformance to the plant design basis. The NRC staff concludes that the DBVP, if properly implemented, will ensure that the functional plant configuration is reflected in the plant design documents and drawings, and thus, provides confidence that the systems required for safe shutdown of the plant can perform their safety-related function in a satisfactory manner.

The staff further concludes that TVA has adequately addressed the issues identified in the Bender Report since the BFN DBVP is intended to recapture the design baselines and configurations.

Principal Contributors: G. Georgiev and P. Hearn

Dated: December 8, 1988



11-11-68

Dear Mr. [Name],

I am writing to you regarding the [subject] of your letter dated [date].

The information you provided is being reviewed and we will contact you again once a decision has been reached.

Thank you for your patience.

Sincerely,
[Name]