

June 16, 2004

U.S. Nuclear Regulatory Commission  
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Washington, D.C. 20555-0001

Gentlemen:

In the Matter of ) Docket No. 50-259  
Tennessee Valley Authority )

**BROWNS FERRY NUCLEAR PLANT (BFN) - UNIT 1 - PLAN FOR SATISFYING  
LICENSE CONDITION 2.C(4)**

On February 26, 2004, TVA and NRC met to discuss BFN Unit 1 License Condition 2.C(4), which requires the verification of certain Technical Specification changes. As requested by NRC during that meeting, TVA is submitting its plan to satisfy this License Condition (Enclosure 1). In addition, the NRC requested TVA also provide a summary of the processes used to ensure the as-built facility is reflected by the plant's design basis and Technical Specifications. This summary is provided in Enclosure 2.

The origin of License Condition 2.C(4) began on September 6, 1996 (Reference 1), when TVA submitted Units 1, 2, and 3 Technical Specifications Change 362 - Improved Technical Specifications (ITS). This change was TVA's proposed conversion package from Custom Technical Specifications to ITS. At the time, Units 2 and 3 were operating and Unit 1 was in long-term lay-up with no plans for return to service. Since TVA was adopting a relatively few Unit 1 Technical Specification values that were not supported by design basis documentation, TVA proposed utilizing a License Condition to ensure, in part, that the Unit 1 Technical Specifications would be supported and reflected by the plant's design basis prior to returning the associated equipment to service. As part of NRC's approval of

the ITS for BFN Units 1, 2 and 3 (Amendment 234 - Reference 2), NRC imposed License Condition 2.C(4), which states:

"The licensee shall review the Technical Specification (TS) changes made by License Amendment No. 234 and any subsequent TS changes, verify that the required analyses and modifications needed to support the changes are complete, and submit them for NRC review and approval prior to entering the mode for which the TS applies. This amendment is effective immediately and shall be implemented prior to entering the mode for which the TS applies."

The open items identified during the conversion from custom to ITS were listed on Page 12 of the accompanying Safety Evaluation. The items associated with the confirmation of calibration frequencies, instrument check frequencies, or system configuration will be addressed as part of proposed Technical Specification 433, Unit 1 24 Month Fuel Cycle. The items associated with setpoints will be addressed as part of proposed Technical Specification 447, Extension of Channel Calibration Surveillance Requirement Performance Frequency and Allowable Value Revision.

Since the approval of the conversion to ITS, several Unit 1 Technical Specifications have been approved or are currently under NRC review. For Technical Specification 405 - Alternate Source Term, TVA previously committed to submit the Unit 1 analyses for a Loss of Coolant, Control Rod Drop and Main Steam Line Break accidents prior to Unit 1 restart. These analyses were submitted to NRC on May 17, 2004. The other Unit 1 Technical Specification changes contained the required supporting analyses.

TVA has reviewed the Technical Specification changes made since Unit 3 restart, including the conversion to ITS, and subsequently approved or proposed Technical Specification changes for Unit 1. The specific actions described above will assure that the required analyses needed to support the Unit 1 Technical Specifications are complete. After the submittal of Technical Specifications 433 and 447, TVA also intends to submit a License Amendment to request removal of License Condition 2.C(4).

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At the time of Unit 1 restart, TVA will have reasonable assurance that the as-built facility will be reflected by the plant's design basis and Technical Specifications. This assurance is provided, in part, by:

- Controlling fidelity between the Unit 1 Technical Specifications and the plant design basis during the BFN shutdown period;
- Implementing the Design Baseline Verification Program, which will validate key plant specific values and setpoints that are reflected in the Technical Specifications;
- Utilizing TVA's configuration management, 10 CFR 50.59 and UFSAR programs during the development and implementation of the modifications necessary to restart Unit 1, to ensure the affected areas are accurately reflected in the Technical Specifications; and
- TVA's review of previous Technical Specification amendments to identify required Unit 1 changes.

If you have any questions about this submittal, please contact me at (256) 729-2636.

Sincerely,

**Original signed by:**

T. E. Abney  
Manager of Licensing  
and Industry Affairs

REFERENCES:

1. TVA letter, T.E. Abney to NRC, dated September 6, 1996, "Browns Ferry Nuclear Plant (BFN) - Units 1, 2 and 3 - Technical Specification (TS) Change TS-362 - Request to Convert Current TSs to Improved Standard TS (ISTS) Consistent with NUREG-1433, Revision 1."
2. NRC letter, L. Raghavan to J.A. Scalice, dated July 14, 1998, "Amendment Nos. 234, 253 and 212 to Facility Operating License Nos. DPR-33, DPR-52 and DPR-68: Regarding Conversion to Improved Standard Technical Specifications for the Browns Ferry Nuclear Plant, Units 1, 2 and 3 (TAC Nos. M96431, M96432 and M96433)."

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S:lic/submit/subs/license condition plan satisfy u1

**ENCLOSURE 1**  
**BROWNS FERRY NUCLEAR PLANT (BFN) UNIT 1**  
**PLAN TO SATISFY LICENSE CONDITION 2.C(4)**

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## 1. INTRODUCTION

The letter provides TVA's plan for satisfying Browns Ferry Unit 1 License Condition 2.C(4):

"The licensee shall review the Technical Specification (TS) changes made by License Amendment No. 234 and any subsequent TS changes, verify that the required analyses and modifications needed to support the changes are complete, and submit them for NRC review and approval prior to entering the mode for which the TS applies. This amendment is effective immediately and shall be implemented prior to entering the mode for which the TS applies."

## 2. BACKGROUND OF THE LICENSE CONDITION

All three BFN units were voluntarily shutdown by TVA in March 1985. Unit 2 restarted in May 1991 and Unit 3 in November 1995. Several modifications and the resulting changes to the Units 2 and 3 Technical Specifications were made during the recovery efforts. Unit 1 has been maintained in a long-term lay-up state.

On September 6, 1996<sup>(1)</sup>, TVA submitted Units 1, 2, and 3 Technical Specifications Change 362 - Improved Technical Specifications, which was TVA's conversion package from Custom Technical Specifications to Improved Technical Specifications (ITS). The Units 1, 2 and 3 ITS were based on NUREG-1433, *Standard Technical Specification for BWR/4 Plants*, Revision 1. At the time, Units 2 and 3 were operating and Unit 1 was in long-term lay-up with no plans for return to service.

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1 TVA letter, T.E. Abney to NRC, dated September 6, 1996, "Browns Ferry Nuclear Plant (BFN) - Units 1, 2 and 3 - Technical Specification (TS) Change TS-362 - Request to Convert Current TSs to Improved Standard TS (ISTS) Consistent with NUREG-1433, Revision 1."

During the conversion process, a relatively few Unit 1 specific setpoints or configurations adopted the ITS values used for Units 2 and 3. TVA's application identified these items for Unit 1 that must be validated prior to restart or necessary changes made. Since these Unit 1 Technical Specification values were not supported by design basis documentation, NRC requested<sup>(2)</sup> TVA to provide a description of the controls, including license requirements, which would ensure that BFN Unit 1 could not be put into an operating configuration before all required activities were completed.

On December 29, 1997<sup>(3)</sup>, in response to the NRC letter, TVA stated that it planned to perform the required analyses and modifications on Unit 1 such that on restart, the Unit 1 plant configuration and analysis basis will be the same or similar to Units 2 and 3. Hence, in TS-362, the proposed Unit 1 ITS were the same as those proposed for Units 2 and 3 except for minor intrinsic unit differences. TVA proposed a License Condition be added to the Unit 1 license. This would ensure that the appropriate modifications and analyses were in place prior to entering modes of operation for which the TS apply. The purpose of the License Condition was to:

- Ensure the changes to the Unit 1 Technical Specifications, identified in the application for conversion to ITS as lacking the required analysis, were supported and reflected by the plant's design basis prior to returning the associated equipment to service; and
- Allow future Technical Specification changes to be made to all three units, during the period that Unit 1 was in a long-term lay-up condition, without requiring Unit 1 supporting analyses be performed prior to submittal or requiring additional license conditions be added for each amendment.

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2 NRC letter, J.F. Williams to O.D. Kingsley, dated July 14, 1997, "Browns Ferry Nuclear Plant Unit 1 - Improved Standard Technical Specifications (TAC No. M96431)."

3 TVA letter, T.E. Abney to NRC, dated December 29, 1997, "Browns Ferry Nuclear Plant (BFN) - Units 1, 2, and 3 Technical Specifications (TS) Change - 362 - Improved Technical Specifications (ITS) Supplement 13 - Response to Request for Additional Information (RAI) - ITS Section 3.6 (TAC Nos. M96431, M96432, and M96433) and Proposed ITS License Condition - BFN Unit 1 (TAC No. M96431)."

NRC approved TVA's proposed conversion to ITS for BFN Units 1, 2 and 3. As part of the License Amendment, dated July 14, 1998(4), NRC imposed License Condition 2.C(4). Page 12 of the Safety Evaluation states:

"Unit 1 Restart Issues:

The Unit 1 license will contain a restart license condition to require staff acceptance of Unit 1 channel calibration and channel check frequency changes for CTS Tables 3.2.A, 3.2.B, 4.1.B, 4.2.A, 4.2.B made to be consistent with Units 2 and 3. These changes to frequencies have been reflected in the proposed BFN ITS for Unit 1 as the same as those in the proposed ITS for Units 2 and 3. The Unit 1 Calibration frequencies for these functions will be validated prior to Unit 1 recovery and changes to the proposed BFN ITS for Unit 1 will be made as necessary.

[The DOCS that are affected for this example are 3.3.1.1, A11; 3.3.5.1, A3; 3.3.5.2, A8; 3.3.6.1, A12, A13, A14, A15 (partial); 3.3.6.2 A10; and 3.3.7.1, A5.] Staff acceptance of these calibrations and frequencies are shown here as an example of the kinds of reviews that will be required before Unit 1 restarts. Additional issues that will require staff acceptance before Unit 1 restarts exist in other sections of the ITS."

### **3. PLAN FOR SATISFYING LICENSE CONDITION 2.C(4)**

TVA's plan for satisfying Browns Ferry Unit 1 License Condition 2.C(4) includes:

- Closure of the specific ITS conversion open items;
- Closure of open items associated with Technical Specifications approved or proposed since the conversion to Improved Technical Specifications; and
- Requesting removal of the License Condition.

Each of these areas are discussed below.

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4 NRC letter, L. Raghavan to J.A. Scalice, dated July 14, 1998, "Amendment Nos. 234, 253 and 212 to Facility Operating License Nos. DPR-33, DPR-52 and DPR-68: Regarding Conversion to Improved Standard Technical Specifications for the Browns Ferry Nuclear Plant, Units 1, 2 and 3 (TAC Nos. M96431, M96432 and M96433)."

**A. Closure of the Specific Improved Technical Specification Conversion Open Items**

TVA's application for conversion to ITS identified the changes for Unit 1 that must be validated prior to Unit 1 recovery or necessary changes made. These changes were listed on Page 12 of the NRC's Safety Evaluation. Each of these changes and the planned method for validation and confirmatory submittal to NRC are described below:

- Justification for Change A11 in Section 3.3.1.1:  
Calibration frequencies for High Reactor Pressure, High Drywell Pressure and Reactor Low Water Level.

There are three instrument calibration frequencies within the scope of this change:

- The High Reactor Pressure instrument calibration frequency of 184 days for Technical Specification Table 3.3.1.1-1, Function 3, has been confirmed by design calculations for all three units. A statement validating the current Unit 1 Technical Specification value will be included as part of proposed Technical Specification 433, Unit 1 24 Month Fuel Cycle.
- Validation of the High Drywell Pressure instrument calibration frequency of 18 months for Technical Specification Table 3.3.1.1-1, Function 6 is no longer required. TVA will propose a 24 month calibration frequency as part of proposed Technical Specification 433.
- Validation of the Reactor Low Water Level instrument calibration frequency of 18 months for Technical Specification Table 3.3.1.1-1, Function 4 is no longer required. TVA will propose a 24 month calibration frequency as part of proposed Technical Specification 433.

- Justification for Change A3 in Section 3.3.5.1:  
Calibration frequencies for Reactor Low Water Level, Drywell High Pressure, Reactor Low Pressure, and Reactor High Water Level.

There are four sets of instrument calibration frequencies within the scope of this change:

- Validation of the Reactor Low Water Level instrument calibration frequency of 18 months for Technical Specification Table 3.3.5.1-1, Functions 1a, 2a, 2e, 3a, 4a, 4d, and 5a is no longer required. TVA will propose a 24 month calibration frequency as part of proposed Technical Specification 433.
- Validation of the Drywell High Pressure instrument calibration frequency of 18 months for Technical Specification Table 3.3.5.1-1, Functions 1b, 2b, 3b, 4b, and 5b is no longer required. TVA will propose a 24 month calibration frequency as part of proposed Technical Specification 433.
- The Reactor Low Pressure instrument calibration frequency of 184 days for Technical Specification Table 3.3.5.1-1, Functions 1c, 2c and 2d, has been confirmed by design calculations for all three units. A statement validating the current Unit 1 Technical Specification value will be included as part of proposed Technical Specification 433, Unit 1 24 Month Fuel Cycle.
- Validation of the Reactor High Water Level instrument calibration frequency of 18 months for Technical Specification Table 3.3.5.1-1, Function 3c is no longer required. TVA will propose a 24 month calibration frequency as part of proposed Technical Specification 433.

- Justification for Change A8 in Section 3.3.5.2:  
Calibration frequencies for Reactor Low Water Level and Reactor High Water Level.

There are two instrument calibration frequencies within the scope of this change:

- Validation of the Reactor Low Water Level instrument calibration frequency of 18 months for Technical Specification Table 3.3.5.2-1, Function 1 is no longer required. TVA will propose a 24 month calibration frequency as part of proposed Technical Specification 433.
  - Validation of the Reactor High Water Level instrument calibration frequency of 18 months for Technical Specification Table 3.3.5.2-1, Function 2 is no longer required. TVA will propose a 24 month calibration frequency as part of proposed Technical Specification 433.
- Justification for Changes in Section 3.3.6.1:
    - Change A12 - The Reactor Water Cleanup (RWCU) temperature functions (Cleanup System Floor Drain and Space High Temperatures).

A statement, asserting that the design change to make the Unit 1 RWCU steam line break temperature monitoring functions consistent with their Units 2 and 3 counterparts has been issued and will be implemented prior to entering the modes for which their respective Technical Specifications apply, will be included as part of proposed Technical Specification 433, Unit 1 24 Month Fuel Cycle. Validation or proposed changes to the allowable values for the RWCU temperature functions for Technical Specification Table 3.3.6.1-1, Functions 5a-f, will be included as part of proposed Technical Specification 447, Extension of Channel Calibration Surveillance Requirement Performance Frequency and Allowable Value Revision for Units 1, 2 and 3.

- Change A13 - The Reactor Low Water Level, High Drywell Pressure, RWCU temperature function, and Reactor Core Isolation Cooling (RCIC) and High Pressure Coolant Injection (HPCI) Turbine Steam Line High Flow calibration frequencies.

There are five instrument calibration frequencies within the scope of this change:

- o Validation of the Reactor Low Water Level instrument calibration frequency of 18 months for Technical Specification Table 3.3.6.1-1, Functions 1a, 2a, 5h and 6b is no longer required. TVA will propose a 24 month calibration frequency as part of proposed Technical Specification 433.
  - o Validation of the Drywell High Pressure instrument calibration frequency of 18 months for Technical Specification Table 3.3.6.1-1, Functions 2b, and 6c is no longer required. TVA will propose a 24 month calibration frequency as part of proposed Technical Specification 433.
  - o Validation the RWCU High Temperature System Isolation instrument calibration frequency of 122 days for Technical Specification Table 3.3.6.1-1, Functions 5a-f, is no longer required. TVA will propose a 24 month calibration frequency as part of proposed Technical Specification 447.
  - o Validation of the RCIC Turbine Steam Line High Flow instrument calibration frequency of 18 months for Technical Specification Table 3.3.6.1-1, Function 4a is no longer required. TVA will propose a 24 month calibration frequency as part of proposed Technical Specification 433.
  - o Validation of the HPCI Turbine Steam Line High Flow instrument calibration frequency of 18 months for Technical Specification Table 3.3.6.1-1, Function 3a is no longer required. TVA will propose a 24 month calibration frequency as part of proposed Technical Specification 433.
- Change A14 - The Instrument Checks for RCIC and HPCI Steam Supply Low Pressure and Turbine Exhaust Diaphragm High Pressure.

There are four instrument calibration checks within the scope of this change:

- o The justification for asserting that no RCIC Steam Supply Low Pressure instrument check frequency is required for Technical Specification Table 3.3.6.1-1, Function 4b, will be included as part of proposed Technical Specification 433, Unit 1 24 Month Fuel Cycle.
- o The justification for asserting that no RCIC Turbine Exhaust Diaphragm High Pressure instrument check frequency is required for Technical Specification Table 3.3.6.1-1, Function 4c, will be included as part of proposed Technical Specification 433, Unit 1 24 Month Fuel Cycle.
- o The justification for asserting that no HPCI Steam Supply Low Pressure instrument check frequency is required for Technical Specification Table 3.3.6.1-1, Function 3b, will be included as part of proposed Technical Specification 433, Unit 1 24 Month Fuel Cycle.
- o The justification for asserting that no HPCI Turbine Exhaust Diaphragm High Pressure instrument check frequency is required for Technical Specification Table 3.3.6.1-1, Function 3c, will be included as part of proposed Technical Specification 433, Unit 1 24 Month Fuel Cycle.

- Change A15 - The RCIC and HPCI Torus and Pump Room High Temperature trip functions.

A statement, asserting that the design changes to make the Unit 1 RCIC and HPCI steam line break temperature monitoring functions consistent with their Units 2 and 3 counterparts have been issued and will be implemented prior to entering the modes for which their respective Technical Specifications apply, will be included as part of proposed Technical Specification 433, Unit 1 24 Month Fuel Cycle. Validation or proposed changes to the allowable values for the RCIC and HPCI Torus and pump room temperature functions for Technical Specification Table 3.3.6.1-1, Functions 3d-g and 4d-g, will be included as part of proposed Technical Specification 447, Extension of Channel Calibration Surveillance Requirement Performance Frequency and Allowable Value Revision for Units 1, 2 and 3.

- Justification for Change A10 in Section 3.3.6.2: Calibration frequencies for Reactor Low Water Level and High Drywell Pressure.

There are two instrument calibration frequencies within the scope of this change:

- Validation of the Reactor Low Water Level instrument calibration frequency of 18 months for Technical Specification Table 3.3.6.2-1, Function 1 is no longer required. TVA will propose a 24 month calibration frequency as part of proposed Technical Specification 433.
- Validation of the High Drywell Pressure instrument calibration frequency of 18 months for Technical Specification Table 3.3.6.2-1, Function 2 is no longer required. TVA will propose a 24 month calibration frequency as part of proposed Technical Specification 433.

- Justification for Change A5 in Section 3.3.7.1:  
Calibration frequencies for High Drywell Pressure.

Validation of the High Drywell Pressure instrument calibration frequency of 18 months for Technical Specification Table 3.3.7.1-1, Function 2 is no longer required. TVA will propose a 24 month calibration frequency as part of proposed Technical Specification 433.

#### **B. Review of Technical Specifications Approved or Proposed since the Conversion to Improved Technical Specifications**

Since the approval of the conversion to ITS in Amendment 234, several Technical Specifications have been approved for Unit 1 or are currently under NRC review. These amendments and proposed Technical Specifications have been reviewed to identify any outstanding Unit 1 supporting analyses which would have to be submitted to NRC. For TS 405 - Alternate Source Term, TVA committed to submit the Unit 1 analyses for a Loss of Coolant, Control Rod Drop and Main Steam Line Break accidents. These analyses were provided to NRC as part of a separate submittal <sup>(5)</sup>. No other Unit 1 supporting analyses need to be submitted to NRC.

#### **C. Requesting Removal of the License Condition**

The open items identified by TVA during the conversion from custom to ITS have been identified and will be addressed as part of proposed Technical Specification 433, Unit 1 24 Month Fuel Cycle, and Technical Specification 447, Extension of Channel Calibration Surveillance Requirement Performance Frequency and Allowable Value Revision.

Since the approval of the conversion to ITS, several Unit 1 Technical Specifications have been approved or are currently under NRC review. For Technical Specification 405 - Alternate Source Term, TVA previously committed to submit the Unit 1 analyses for a Loss of Coolant, Control Rod Drop and Main Steam Line Break accidents prior to Unit 1 restart. These analyses were provided to NRC as part of a separate submittal.

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5 TVA letter, T.E. Abney to NRC, "Browns Ferry Nuclear Plant (BFN) - Units 1, 2, and 3 - Response to Request for Additional Information (RAI) and Unit 1 Analysis Results Related to Technical Specifications (TS) Change No. TS-405 - Alternative Source Term (AST) (TAC Nos. MB5733, MB 5734, MB5735)," dated May 17, 2004.

Upon submittal of Technical Specifications 433 and 447, TVA intends to submit a License Amendment to request removal of License Condition 2.C(4).

#### **4. FUTURE TECHNICAL SPECIFICATION CHANGES**

Since Unit 1 is no longer in a long-term lay-up condition, future Unit 1 Technical Specification changes will be treated just like any other operating unit. There will be no need for the License Condition in the future since the Unit 1 supporting analyses will be included for each proposed Technical Specification change.

#### **5. CONCLUSION**

TVA has reviewed the Technical Specification changes made during the conversion to ITS (Amendment 234) and subsequent approved or proposed Technical Specification changes for Unit 1. The specific actions described above assure that the required analyses needed to support the Unit 1 Technical Specifications will be completed prior to entering the mode for which the Technical Specifications apply.

Since Unit 1 is no longer in a long-term lay-up condition, future Unit 1 Technical Specification changes will be treated just like any other operating unit. There will be no need for the License Condition in the future since the Unit 1 supporting analyses will be included for each proposed Technical Specification change.

**ENCLOSURE 2**  
**SUMMARY OF PROCESSES USED TO ENSURE THE**  
**UNIT 1 AS-BUILT FACILITY WILL BE REFLECTED BY THE**  
**PLANT'S DESIGN BASIS AND TECHNICAL SPECIFICATIONS**

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## 1. INTRODUCTION

TVA has reasonable assurance that, when Unit 1 restarts, the as-built facility will be reflected by the plant's design basis and Technical Specifications. As described in detail below:

- A. TVA controlled fidelity between the Unit 1 Technical Specifications and the plant design basis during the BFN shutdown period from 1985 to present.
- B. During the recovery of Unit 1, several overlapping and complimentary programs will verify that the as-built facility is reflected by the Technical Specifications:
  - (1) Implementation of the Design Basis and Verification Program (DBVP), including the Essential Calculation Program, will result in the validation of key plant specific values and setpoints that are reflected in the Browns Ferry Unit 1 Technical Specifications.
  - (2) During the development and implementation of the modifications necessary to restart Unit 1, several programs will continue to ensure that changes to plant structures, systems, and components conform to approved design requirements, including the design basis, and that the plant's physical and functional characteristics are accurately reflected in the Technical Specifications and other plant documents. These programs include:
    - a) Configuration Management;
    - b) Evaluation of 10 CFR 50.59, Changes, tests and experiments; and
    - c) Maintenance of the Updated Final Safety Analysis Report (UFSAR).
- C. TVA has reviewed previous Technical Specification amendments to identify required Unit 1 changes.

2. **MAINTENANCE OF FIDELITY BETWEEN UNIT 1 TECHNICAL SPECIFICATIONS AND PLANT DESIGN BASIS DURING SHUTDOWN**

Browns Ferry Units 1, 2 and 3 suspended power operations in 1985 due to concerns regarding performance. During the recovery process, there were two possible ways for the Unit 1 Technical Specifications to become divergent from the plant's design basis:

- The Technical Specifications were modified without updating the plant's design basis (or undertaking a regulatory commitment or license condition); or
- The plant's design basis was revised without requesting an amendment to the Technical Specifications.

Neither of these is considered to be have been a credible occurrence for the following reasons:

- Since the time of the shutdown in 1985, Technical Specifications for all three units were controlled using approved procedures. Technical Specifications amendment requests were submitted to NRC, which contained a summary of the supporting design basis analyses. Documents that required revision in order to implement the proposed amendment were identified to Licensing by each site line organization. Licensing verified the identified documents were updated prior to incorporation of the approved amendments into the controlled copies of the Technical Specifications. When Unit 1 specific design documentation was not available to support the proposed amendment, TVA either made a formal commitment (e.g., as with the Alternative Source Term submittal discussed in Enclosure 1) or TVA proposed a License Condition (e.g., as with the conversion to Improved Technical Specifications also discussed in Enclosure 1) to ensure the Technical Specifications would be supported by the plant's design basis documentation.
- Since the time of the shutdown in 1985, changes to Unit 1 were evaluated in accordance with 10 CFR 50.59, *Changes, tests, and experiments* in accordance with approved procedures. TVA's procedures for performing 50.59 evaluations ensured that any required changes to the Technical Specifications were identified and incorporated prior to the implementation of the change. TVA's 50.59 procedures provided for several levels of oversight. In

addition, numerous NRC inspections evaluated the implementation of TVA's program. These controls ensured that changes to facility were reflected in the Unit 1 Technical Specifications.

**3. VERIFICATION THAT THE AS-BUILT FACILITY IS REFLECTED BY THE TECHNICAL SPECIFICATIONS**

**A. Design Basis Verification Program (DBVP)**

The purpose and scope of the DBVP will result in the validation of key plant specific values and setpoint in the Browns Ferry Unit 1 Technical Specifications. The DBVP confirms the design bases and evaluates plant configurations to ensure:

- Plant configuration satisfies the design bases,
- Configuration of the systems and components within the scope of the DBVP is supported by engineering analysis and documentation, and
- Plant configuration is in conformance with NRC regulations and TVA licensing commitments.

The DBVP addresses systems, or portions thereof, that perform safety-related functions including the safety functions necessary to mitigate postulated design basis accidents which are discussed in the UFSAR. The essential elements of the overall DBVP program are as follows:

- Research and develop design basis documentation,
- Verify the plant configuration,
- Reconcile the plant configuration with engineering design documents, including essential calculations and design criteria,
- Reconcile the plant configuration with the Browns Ferry Final Safety Analysis Report and licensing commitments,
- Perform system evaluations of the verified plant configuration to identify design discrepancies,

- Issue configuration control drawings consistent with the plant configuration for systems within the scope of the DBVP, and
- Implement an improved change control process to ensure the accuracy and completeness of design basis documents (i.e., design criteria, calculations, drawings, and the safe shutdown analysis). These documents are reviewed when design changes are made and are updated accordingly.

Design basis documents verified or developed during the DBVP include the Safe Shutdown Analysis, system design criteria, essential calculations, and drawings.

The essential calculations portion of the DBVP included plant systems or features (or portions thereof) whose failure could:

- (1) Result in a loss of Reactor Coolant System integrity;
- (2) Result in loss of ability to achieve safe shutdown;  
or
- (3) Result in a release of radioactivity offsite in excess of the 10 CFR 100 guidelines.

The essential calculations program:

- (1) Identifies calculations considered to be essential;
- (2) Ensures that essential calculations support the plant licensing commitments and design basis requirements;
- (3) Ensures that essential calculations are technically adequate and consistent with the plant configuration;
- (4) Ensures that essential calculations supporting the DBVP are consistent with the plant functional configuration;
- (5) Implements a process to maintain the technical adequacy and retrievability of essential calculations;

- (6) Implements a process that identifies and tracks calculations supporting engineering changes, identifies interactions between calculations and plant modifications and correlates the calculations with design documents.

The Browns Ferry Nuclear Plant is a three-unit plant. Therefore, the design must be evaluated in respect to possible influence of one unit on the others through the various coupling mediums which exist in the design. The subject of unit sharing and interactions was reviewed at the time of the original licensing of BFN. Multi-unit sharing and interactions are extensively discussed in UFSAR, Appendix F - Unit Sharing and Interactions. One of the explicit objectives of this appendix is to provide additional information to support the technical specifications and the associated operating and emergency procedures in respect to shared systems. The DBVP ensures design requirements reflected the demands of multi-unit operation.

The adequacy of the DBVP and its implementation on Unit 2 were extensively reviewed by NRC <sup>(1,2,3,4,5,6,7)</sup>. NRC's review of the Unit 3 DBVP program confirmed it was more comprehensive than the Unit 2 effort, and was therefore

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<sup>1</sup> NRC letter to TVA, dated December 8, 1988, Volume 3, Section III.2.0 (Configuration Management Program - Design Baseline and verification Program) of the Nuclear Performance Plan - Browns Ferry Nuclear Plant

<sup>2</sup> NRC letter to TVA, dated April 14, 1989, Safety Evaluation Report on the Browns Ferry Nuclear Performance Plan - NUREG-1232, Volume 3

<sup>3</sup> NRC letter to TVA, dated October 24, 1989, Supplement 1 to the Safety Evaluation Report on the Browns Ferry Nuclear Performance Plan - NUREG-1232, Volume 3

<sup>4</sup> NRC letter to TVA, dated September 8, 1988, Inspection Report Nos. 50-259/88-07, 50-260/88-07 and 50-296/88-07

<sup>5</sup> NRC letter to TVA, dated June 30, 1989, Inspection Report Nos. 50-259/89-07, 50-260/89-07 and 50-296/89-07

<sup>6</sup> NRC letter to TVA, dated February 26, 1990, NRC Inspection Report No. 50-260/89-42

<sup>7</sup> NRC letter to TVA, dated January 23, 1991, NUREG-1232, Volume 3, Supplement 2 - Browns Ferry Unit 2 [Section 2.1, Page 2-1]

acceptable<sup>(8)</sup>. A special NRC DBVP inspection was conducted in December, 1994<sup>(9)</sup>.

In accordance with TVA's prior commitments<sup>(10,11)</sup>, TVA will complete the DBVP on Unit 1 prior to return to service. Currently, the design changes necessary to support the restart of Unit 1 are essentially complete, essential calculations are issued, and Baseline Test Requirement Documents are being developed.

## **B. Configuration Management**

During the restart of Unit 1, changes to the design basis will be processed using the configuration management program. The required reviews performed while implementing the configuration management program will result in the validation of the as-built facility as well as the design basis reflected in the Browns Ferry Unit 1 Technical Specifications.

As part of the restart efforts for the first Browns Ferry unit (Unit 2), TVA upgraded its configuration management program to ensure a documented design basis for our nuclear plants was maintained and plant configuration was controlled in accordance with that basis. TVA's configuration management program is an integrated process that is designed to ensure that plant structures, systems, and components conform to approved design requirements, including design basis, and that the plant's physical and functional characteristics are accurately reflected in design basis and other plant documents. As described below, plant configuration is controlled throughout the life of the plant by the identification and documentation of design requirements and through procedures which ensure that the design is implemented properly.

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<sup>8</sup> NRC letter to TVA, dated November 21, 1991, Assessment of Browns Ferry Nuclear Plant, Units 1 and 3 Design Baseline Verification Program

<sup>9</sup> NRC letter to TVA, dated January 17, 1995, NRC Inspection Report Nos. 50-259/94-31, 50-260/94-31, and 50-296/94-31

<sup>10</sup> TVA letter to NRC, dated July 10, 1991, Regulatory Framework for the Restart of Units 1 and 3

<sup>11</sup> TVA letter to NRC, dated April 16, 1996, in regards to Removal of BFN Unit 1 as a Category 3 Plant on the NRC's Problem Plant List

In order to change the design basis of the facility, a Design Change Notice (DCN) package must be developed. This not only includes design changes to safety related structures, systems and components (SSCs), but is also used for design changes to non-safety related SSCs<sup>(12)</sup>. DCN packages are required for design changes that involve plant modifications, document-only changes, generic system/component changes, or other changes that also involve a design output document change. DCN packages may be used to update design basis documents (e.g., design criteria, calculations, and essential drawings). The DCN package provides a basis for the change including references to supporting analyses with new or revised calculations that support the change. DCN packages are developed from a range of inputs including Technical Specifications, design criteria, applicable regulatory requirements, industry and TVA codes and standards, and other similar design considerations in accordance with administrative procedures. DCN packages include 10 CFR 50.59 reviews as required.

Implementation of a DCN (e.g., using Work Orders) includes installation instructions or references to those instructions. DCN packages also specify the required post-modification testing necessary to ensure design basis requirements are met. The preparation and approval of these packages includes appropriate multi-discipline and independent reviews and reviews by affected organizations, as required.

The DCN process also includes a Return to Operation evaluation that is required to be completed before the turnover of a modified structure, system, or component to plant operations. This process ensures that operations, maintenance and testing procedures have been updated, that training required to support proper operability has been completed, and that control room drawings have been revised.

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An exclusion list may be established to identify site features that are not subject to configuration management control. The list can include only SSCs that are not quality related and are not described in the FSAR. The list must be approved by the Site Vice President or his designee.

The DCN process includes the updating of the design basis documents (e.g., safe shutdown analysis, design criteria, critical drawings, and supporting calculations), and any required Technical Specification or Updated Final Safety Analysis Report (UFSAR) changes. The package is archived for future reference.

**C. 10 CFR 50.59 - Changes, tests and experiments**

The 10 CFR 50.59 process is controlled by a Nuclear Power administrative procedure<sup>(13)</sup>. The procedure addresses (1) changes to the facility as described in the UFSAR, (2) changes to procedures described in the UFSAR, and (3) tests or experiments not described in the UFSAR, to ensure that the changes, tests, or experiments do not require NRC approval prior to implementation. The TVAN program for implementing the requirements of 10 CFR 50.59 consists of a screening review that is performed to determine if a technical specification change is required or if a 50.59 Evaluation is required and a 50.59 Evaluation to determine if a license amendment per 10 CFR 50.90 is required prior to making a change. The TVAN program is based on NEI 96-07 [Revision 1], *Guidelines for 10 CFR 50.59 Implementation*.

Line managers are responsible for assigning qualified preparers and reviewers for Screening Reviews and 50.59 Evaluations consistent with the complexity and scope of the proposed activity. The knowledge and experience of the assigned preparer and reviewer should be commensurate with the activity being evaluated. The Plant Operations Review Committee reviews 50.59 Evaluations as an oversight function of the 10 CFR 50.59 activities.

If it is determined that a change requires NRC approval prior to implementation, TVA either (1) submits a license amendment as required by 10 CFR 50.90 to obtain NRC approval, (2) modifies the change so that prior NRC approval is not required, or (3) cancels the change.

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<sup>13</sup> TVAN Standard Programs and Processes (SPP) 9.4 - 10CFR50.59 Evaluation of Changes, Tests and Experiments.

**D. UPDATED FINAL SAFETY ANALYSIS REPORT (UFSAR)**

TVA administratively controls the UFSAR<sup>(14)</sup>, including how this document is revised and updated, in accordance with 10 CFR 50.71(e). Changes to the UFSAR are identified during the performance of the Screening Reviews and 50.59 Evaluations process (described above). The procedural requirements for submitting a change to the UFSAR include:

- A UFSAR change form must be completed, which includes specific references to the pages, figures, tables, that require revision.
- The preparer must provide annotated pages, figures, tables, or replacement pages that clearly indicate the requested change.
- Identification of the date that the activity addressed by the UFSAR Change Request was implemented (Field complete and plant approved). This date is used to ensure that the UFSAR is up to date as of a maximum of six months prior to the date of filing the amendment in accordance with 10 CFR 50.71 (e) (4).
- The preparer must also provide the supporting justification for the change. This normally consists of the Screening Reviews and/or 50.59 Evaluations performed in accordance with 10 CFR 50.59. However, the justification may also be in the form of an NRC Safety Evaluation Report (SER) that addresses the subject of the change request, such as the SER from an NRC approved operating license amendment, or justification that the UFSAR Change Request is an administrative change.

In accordance with the administrative controls for the UFSAR change process, the Licensing Department logs and tracks each UFSAR change and ensures that the organization assigned primary technical responsibility for the affected UFSAR section evaluates each proposed UFSAR change. Each approved change is periodically incorporated into the living FSAR, so that there is access to the latest FSAR material. The living FSAR is a document that compiles each

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<sup>14</sup> TVAN Standard Department Procedure NADP-7, FSAR Management

approved FSAR change that has not yet been incorporated into a UFSAR amendment package.

In order to prepare a UFSAR amendment, Licensing consolidates each individual change that has been implemented prior to the UFSAR amendment cutoff date. Licensing coordinates a multi-discipline review of the UFSAR amendment submittal to NRC. Once the UFSAR amendment is approved for submittal to NRC, the controlled copies of the UFSAR are updated in accordance with the administrative controls.

#### **4. IDENTIFICATION OF REQUIRED TECHNICAL SPECIFICATION CHANGES**

TVA has reviewed the Technical Specifications made for Units 2 and 3 which were not submitted for Unit 1. This list of required Technical Specification changes was incorporated into TVA's proposed regulatory framework for the restart of Unit 1<sup>(15)</sup>. As discussed in Enclosure 1, TVA also reviewed the conversion to Improved Technical Specifications to identify the Technical Specification changes for Unit 1 that must be validated prior to Unit 1 restart or necessary changes made. No additional Technical Specification changes were identified.

#### **5. CONCLUSION**

At the time of Unit 1 restart, TVA will have reasonable assurance that the as-built facility will be reflected by the plant's design basis and Technical Specifications. This assurance is provided, in part, by:

- Maintaining fidelity between the Unit 1 Technical Specifications and the plant design basis during the BFN shutdown period;
- Implementing the DBVP, which will validate key plant specific values and setpoints that are reflected in the Technical Specifications;

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15 TVA letter, T.E. Abney to NRC, "Browns Ferry Nuclear Plant (BFN) - Unit 1 - Regulatory Framework for the Restart Of Unit 1," dated December 13, 2002.

- Utilizing TVA's configuration management, 10 CFR 50.59 and UFSAR programs during the development and implementation of the modifications necessary to restart Unit 1, to ensure the affected areas are accurately reflected in the Technical Specifications; and
- TVA's review of previous Technical Specification amendments to identify required Unit 1 changes.