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October 27, 1995

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

In the Matter of) Docket No. 50-296
Tennessee Valley Authority)

BROWNS FERRY NUCLEAR PLANT (BFN) - COMPLETION STATUS OF UNIT 3 RESTART ISSUES

This letter provides notification of the completion or status of the restart issues identified in TVA's July 10, 1991 letter to NRC, which described the overall regulatory framework for the restart of Unit 3. The recovery program establishes a high degree of confidence that the facility and personnel are ready to restart and operate Unit 3 in a safe and reliable manner. TVA's program for the restart of Unit 3 is based on the corrective action programs, commitments, technical specification improvements, minimal backlogs (regulatory, operational, maintenance and engineering) and the resolution of internally identified deficiencies and concerns that were completed prior to the restart of Unit 2. The Unit 3 recovery program also incorporates lessons learned from the restart of Unit 2, Sequoyah restart, and visits to other multiple unit operating facilities.

The recovery program ensures the design baseline of the plant is re-established down to the system and component level. Thorough preoperational reviews and tests and the established power ascension test program ensure that each system will perform as intended.

Readiness self-assessments have been and are being performed by each department and site management. Independent readiness assessments have been or are being performed by Nuclear Assurance and Licensing (NA&L), an independent

Operational Readiness Review Team, TVA's Nuclear Safety Review Board and Senior Management Team, and the Institute of Nuclear Power Operations (INPO).

The readiness self-assessments employs a tiered approach that consists of Operational Readiness Windows and System Windows that show the qualitative assessments by BFN of restart processes and parameters. The operational readiness "windows process" monitors the performance of processes, programs, and organizations in performing recovery activities and readiness to support subsequent two-unit operation. Each process area window has a documented performance objective and criteria to measure performance to the performance objective. The criteria is based on the INPO near-term operating plant guidelines, NRC guidelines for plant startup, restart approval, and site management expectations.

The site NA&L organization completed 12 plant and 21 Unit 3 specific assessments. In addition, 45 evaluations of construction deficiencies identified at the Watts Bar facility were evaluated for applicability to BFN Unit 3.

The corporate NA&L organization conducted a two-phase overview of the site NA&L readiness assessment plan. No findings were identified and the corporate review concluded that the Unit 3 NA&L readiness assessment plan is being thoroughly implemented and will validate if BFN performance is adequate to safely operate dual units.

The independent Operational Readiness Review Team (ORRT) was chartered to assess/evaluate the condition and readiness of BFN staff, procedures, processes, programs and the physical plant to support safe, reliable and efficient multi-unit operations. The ORRT unanimously agreed that BFN is nearing readiness to commence two unit operation. The ORRT identified no issues that would preclude a recommendation to restart Unit 3 pending completion of certain prerequisites. The closure of these prerequisites is being verified by TVA's Nuclear Safety Review Board (NSRB) and Senior Management Team.

The purpose of the NSRB and Senior Management Team is to overview adequacy and quality of preparedness for Unit 3 restart and dual unit operations and to provide an independent restart readiness recommendation to the President of TVA Nuclear. This purpose is being satisfied by the evaluation of line self-assessments, the site NA&L assessments, the independent assessments performed by ORRT,

INPO and corporate NA&L, and the evaluation and oversight of other assessments. The final site meeting of the NSRB and Senior Management Team is currently scheduled for November 7, 1995.

These programs provide the basis for concluding that BFN is ready for Unit 3 restart and dual unit operation. These programs ensure that at the time of Unit 3 restart that the restart commitments have been completed, that the plant material condition is good, regulatory, operational and maintenance backlogs are low, configuration control has been established, required procedures and programs are in place, the previous culture problems have been addressed, and that lessons have been learned and implemented, that an experience management team is in place and stable and the staff are ready, and that adequate personnel, hardware and financial resources have been and will be provided for success.

Enclosure 1 to this letter provide specific information regarding the regulatory framework for the restart of Unit 3, lists each individual commitment, references key correspondence, discusses the background of the issue, and describes the closure or status of each commitment, as appropriate. Other pertinent generic issues (e.g., Bulletins and Generic Letters) issued since TVA's regulatory framework submittal have also been included. A summary of the remaining open issues (restart and post-restart) for Unit 3 is provided as Enclosure 2. TVA intends to update this letter prior to TVA briefing of the Commission, which is currently scheduled for November 9, 1995.

There are no new commitments contained in this letter. If you have any questions, please contact me at (205) 729-2636.

Sincerely,

R. D. Machon

Enclosures
cc: See page 4

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ENCLOSURE 1

TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN)

STATUS OF UNIT 3 ISSUES

BACKGROUND

The regulatory framework for the restart of Unit 2 after its extended outage was unusual. TVA's submittal of the Browns Ferry Nuclear Performance Plan and NRC's review and issuance of Safety Evaluation Reports for each individual program was atypical. While this level of NRC involvement did result in added confidence for the approval of Unit 2 restart, it required significant TVA and NRC resources to negotiate the approval of individual programs and criteria. In most cases, TVA began the implementation of these programs "at risk", which meant prior to NRC approval. Significant redesign and additional modifications were required whenever the criteria was changed during the approval process.

The overall regulatory framework for the restart of Unit 3 was described in Reference 1 and is more consistent with normal industry practice. The program establishes a high degree of confidence that the facility and personnel are ready to restart and operate Unit 3 in a safe and reliable manner, and promote the efficient utilization of TVA and NRC resources. TVA's program for the restart of Unit 3 is based on the corrective action programs, commitments, technical specification improvements, and internally identified deficiencies and concerns which were resolved prior to the restart of Unit 2. NRC approval of the overall regulatory framework for the restart of Unit 3 is documented in References 2 and 3.

Commitments from the Regulatory Framework for the Restart of Units 1 and 3 letter are listed below, by topic, in alphabetical order. Other pertinent generic issues (e.g., Bulletins and Generic Letters) issued since TVA's regulatory framework submittal have also been included. This enclosure lists each commitment, references key correspondence, discusses the background of the issue, and describes the closure or status of each commitment, as appropriate.

REFERENCES

1. TVA letter to NRC, dated July 10, 1991, Regulatory Framework for the Restart of Units 1 and 3

2. NRC letter to TVA, dated August 1, 1991, Return to Service of Browns Ferry, Units 1 and 3

3. NRC letter to TVA, dated April 1, 1992, Return to Service of Browns Ferry, Units 1 and 3

10 CFR 55.45(B)(2)(III) and (IV) - Plant Simulator

Commitment: The BFN simulator would be modified to a plant referenced simulator and that TVA would certify by March 1991, in accordance with 10 CFR 55, that this modification would be completed.

Discussion: Reference 1 requested a temporary exemption, until December 31, 1991, for the simulator certification requirements of 10 CFR 55.45(b)(2)(iii). This exemption was granted in Reference 2.

Status: Complete. In Reference 3, TVA certified the plant reference simulator in accordance with 10 CFR 55.45(b)(5).

References:
1. TVA letter to NRC, dated July 13, 1990, Request for Temporary Exemption from 10 CFR 55.45(b)
2. NRC letter to TVA, dated January 2, 1991, Exemption from 10 CFR 55.45(b)(2)(iii) and (iv)
3. TVA letter to NRC, dated December 17, 1991, Certification of the BFN Simulation Facility

Bulletin 79-02 - Pipe Support Base Plate Designs Using Concrete Expansion Anchor Bolts [TAC R00017]

Commitment: TVA will complete Bulletin 79-02.

Discussion: TVA initiated programs in 1979 to comply with Bulletins 79-02 and 79-14 regarding the adequacy of piping system supports and anchor bolts. The BFN programs involved the reanalysis of pipe stress problems using the as-built configuration and amplified response spectra for Seismic Class I structures and the evaluation of the acceptability of the associated pipe supports. The scope of the program included Unit 3 safety related large bore (greater than 2½ inches in diameter) piping and computer analyzed small bore piping that was not included in the Small Bore Piping Program.

Pipe stress analysis and pipe support evaluations were based on walkdown inspection data for the safety related piping systems. The walkdown

inspections were instituted to determine the actual field configuration of the Class I piping systems and supports. NRC approval of TVA's program for the resolution of Bulletins 79-02 and 79-14 is documented in Reference 1.

Status: Open. The affected systems/supports have been analyzed for Seismic Class I qualification and necessary modifications have been initiated. The majority of these modifications have been completed with the remainder to be completed prior to restart.

NRC has reviewed the pipe stress analysis, pipe support design calculations, and inspected the completed pipe support modifications. Based on the results of this review, the inspector concluded that this issue is resolved for Unit 3 restart. This is documented in Reference 2.

References: 1. NRC letter to TVA, dated January 23, 1991, NUREG-1232, Volume 3, Supplement 2 - Browns Ferry, Unit 2, Section 2.2.3.1 (Page 2-8)

2. NRC letter to TVA, dated October 12, 1995, NRC Inspection Report 95-52 [Section 3.5, page 5]

Bulletin 79-12 - Short Period Scrams at BWR Facilities

Commitment: TVA will complete Bulletin 79-12.

Discussion: In response to Bulletin 79-12, TVA committed to perform unit and cycle specific analyses of control rod withdrawal sequences in order to ensure that rod notch worths were acceptable (References 1 and 2). In Reference 3, TVA notified NRC that it was implementing the generic Banked Position Withdrawal Sequence and Reduced Notch Worth Procedure. The resulting withdrawal sequences ensure that the notch worths are sufficiently small so as to minimize the possibility of a fast period scram. Therefore, cycle specific analyses of control rod withdrawal sequences were no longer required.

Status: Complete. The Banked Position Withdrawal Sequence and Reduced Notch Worth Procedures have been incorporated into plant procedures for Unit 3.

NRC has reviewed Bulletin 79-12, Unit 3 Technical Specifications and Surveillance Requirements that reflect TVA's current position on withdrawal

sequences and reduced notch worths. Based on this review, the inspector concluded that this item is closed for Unit 3. This is documented in Reference 4.

References:
1. TVA letter to NRC, dated July 30, 1979, Office of Inspection and Enforcement Bulletin 79-12 - RII:JPO 50-259, -260, -296 - Browns Ferry Nuclear Plant Units 1, 2, and 3
2. TVA letter to NRC, dated August 19, 1981, Office of Inspection and Enforcement Bulletin 79-12 - RII:JPO 50-259, -260, -296 - Browns Ferry Nuclear Plant
3. TVA letter to NRC, dated January 4, 1990, Office of Inspection and Enforcement Bulletin 79-12 - Commitment Revisions Regarding Fast Period Scrams
4. NRC letter to TVA, dated October 13, 1995, NRC Inspection Report 95-51 [Section 5.3, page 29]

Bulletin 79-14 - Seismic Analysis for As-Built Safety-Related Piping Systems [TAC R00017]

Commitment: TVA will complete Bulletin 79-14.

Discussion: TVA initiated programs in 1979 to comply with Bulletins 79-02 and 79-14 regarding the adequacy of piping system supports and anchor bolts. The BFN programs involved the reanalysis of pipe stress problems using the as-built configuration and amplified response spectra for Seismic Class I structures and the evaluation of the acceptability of the associated pipe supports. The scope of the program included Unit 3 safety related large bore (greater than 2½ inches in diameter) piping and computer analyzed small bore piping that was not included in the Small Bore Piping Program.

Pipe stress analysis and pipe support evaluations were based on walkdown inspection data for the safety related piping systems. The walkdown inspections were instituted to determine the actual field configuration of the Class I piping systems and supports. NRC approval of TVA's program for the resolution of Bulletins 79-02 and 79-14 is documented in Reference 1.

Status: Open. The affected systems/supports have been analyzed for Seismic Class I qualification and necessary modifications have been initiated. The

majority of these modifications have been completed with the remainder to be completed prior to restart.

NRC has reviewed the pipe stress analysis, pipe support design calculations, and inspected the completed pipe support modifications. Based on the results of this review, the inspector concluded that this issue is resolved for Unit 3 restart. This is documented in Reference 2.

References: 1. NRC letter to TVA, dated January 23, 1991, NUREG-1232, Volume 3, Supplement 2 - Browns Ferry, Unit 2, Section 2.2.3.1 (Page 2-8)

2. NRC letter to TVA, dated October 12, 1995, NRC Inspection Report 95-52 [Section 3.5, page 5]

Bulletin 79-18 - Audibility Problems

Commitment: TVA will complete Bulletin 79-18.

Discussion: In response to Bulletin 79-18, Audibility Problem Encountered on Evacuation of Personnel from High-Noise Areas, TVA initiated a design change to improve the public address and evacuation system. The noise levels within the plant were determined and equipment upgrades were recommended for in-plant and onsite buildings. The NRC staff closed this Bulletin in Reference 1.

A weakness in onsite accountability was identified in Reference 2. Reference 3 reflects TVA's commitment to improve the public address and evacuation system before restart from the Unit 2 Cycle 6 outage. The status of this commitment was discussed in Reference 4.

Status: Complete. The upgrade to the public address and evacuation system was completed during the Unit 2 Cycle 6 outage. Notification of the completion of this commitment was provided in Reference 5. Although Reference 5 applied only to the Unit 2 docket, the public address system is common to all three units and the commitment was completed for all three units at that time. Explicit notification of the completion of this Bulletin for Units 1 and 3 was provided in Reference 6.

In order to verify system operability and readiness, NRC requested activation of the system in various plant locations. The test took place

on June 1, 1995. Based on the results, NRC concluded that the system appeared to function as designed. The results are documented in Reference 7.

References:

1. NRC letter to TVA, dated February 4, 1986, Report Nos. 50-259/86-01, 50-260/86-01, and 50-296/86-01
2. NRC letter to TVA, dated November 15, 1988, NRC Inspection Report Nos. 50-259/88-30, 50-260/88-30, and 50-296/88-30
3. NRC letter to TVA, dated January 23, 1991, NUREG-1232, Volume 3, Supplement 2 - Browns Ferry Unit 2 [Section 4.9, Page 4-4]
4. TVA letter to NRC, dated September 20, 1991, Status and Schedule for Completion of Unit 2 Post-Restart Issues [Section III.8.0, Page 11]
5. TVA letter to NRC, dated June 22, 1993, Completion of Unit 2 Post-Restart Issues
6. TVA letter to NRC, dated October 21, 1994, Completion of Bulletin 79-18 for Unit 1 and 3 Restart Issues
7. NRC letter to TVA, dated June 23, 1995, NRC Inspection Report 95-30 [Section 2.b., page 3]

Bulletin 80-06 - Engineered Safety Feature (ESF) Reset Controls [TAC M74615]

Commitment: TVA will complete Bulletin 80-06.

Discussion: In Reference 1, TVA stated that the need for modification to the Traversing Incore Probe (TIP) was identified as a result of the reviews performed for Bulletin 80-06. TVA informed NRC that the remaining testing of Unit 3 was complete and no other problems were identified. In Reference 3, TVA committed to perform the modification to the TIP system prior to restart.

Status: Complete. The automatic reset circuitry was removed and a manual pushbutton reset was installed.

NRC has reviewed the design change notice (DCN), has observed installation of the isolation reset switches, and considers this issue closed for Unit 3. The results are documented in Reference 4.

References: 1. TVA letter to NRC, dated December 4, 1981, in regards to Bulletin 80-06

2. TVA letter to NRC, dated May 12, 1983, OIE Bulletin 80-06 - Engineered Safety Feature (ESF) Reset Controls - Browns Ferry Nuclear Plant Units 2 and 3

3. TVA letter to NRC, dated April 28, 1988, IE Bulletin No. 80-06 - Engineered Safety Feature (ESF) Reset Control

4. NRC letter to TVA, dated May 8, 1995, NRC Inspection Report 95-22 [Section 6.c., page 19]

Bulletin 83-08 - Electrical Circuit Breakers with an Undervoltage Trip Feature in Use in Safety-Related Applications Other That the Reactor Trip System

Commitment: TVA will replace the General Electric (GE) molded case circuit breakers that are used on the output of the reactor protection system (RPS) motor-generator (MG) sets. The replacement breakers do not utilize the undervoltage release feature. Undervoltage and overvoltage protection is provided using a combination of contactors and relays.

Discussion: TVA responded to Bulletin 83-08 in Reference 1.

Status: Complete. TVA installed two class 1E detection and isolation assemblies in each of the three sources of power to the RPS. Each assembly includes a circuit breaker and a monitoring module consisting of an undervoltage, an overvoltage and an underfrequency sensing relay. The protective assembly relays operate to disconnect the abnormal source of supply from the RPS bus.

NRC inspectors have reviewed the design change for Unit 3, walked down the completed modification, and considers this issue closed for Unit 3. This is documented in Reference 2.

References: 1. TVA letter to NRC, dated March 29, 1984, Inspection and Enforcement Bulletin 83-08 - Electrical Circuit Breakers with an Undervoltage Trip Feature in Use in Safety-Related Applications other than the Reactor Trip System

2. NRC letter to TVA, dated May 8, 1995, NRC Inspection Report 95-22 [Section 6.d., page 19]

Bulletin 84-02 - Failures of General Electric Type HFA Relays in Use in Class 1E Safety Systems [TAC M73854]

Commitment: TVA will replace relay coil spools in HFA relays in the reactor protection system (RPS) and other safety systems.

Discussion: TVA responded to Bulletin 84-02 by Reference 1.

Status: Closed. Unit 3 HFA relay coil replacement has been completed. Relays requiring coil replacement included the following:

1. Normally energized a/c relays in the RPS or other safety related systems with Nylon or Lexan coil spools.

2. Normally deenergized relays in the RPS or other safety related systems with Nylon coil spools.

The NRC inspected the HFA coil replacement. This is documented in Reference 2. NRC selected various relays at random and verified that the activities were completed. Based on this review, the inspector considers this issue closed for Unit 3.

References: 1. TVA letter to NRC, dated July 10, 1984, Inspection and Enforcement Bulletin 84-02- Failures of General Electric Type HFA Relays in Use in Class 1E Safety Systems - Browns Ferry, Sequoyah, Watts Bar, and Bellefonte Nuclear Plants

2. NRC letter to TVA, dated August 31, 1995, NRC Inspection Report 95-43 [Section 6.5, page 13]

Bulletin 86-02 - Static "O" Ring (SOR) Differential Pressure Switches

Commitment: TVA will complete Bulletin 86-02.

Discussion: TVA responded to Bulletin 86-02 by Reference 1. Two Static "O" Ring differential pressure switches were installed (or planned for installation) in the Residual Heat Removal (RHR)

system minimum flow recirculation lines. TVA committed to:

1. Revise the RHR pump flow rate test to include steps to verify minimum flow switch operability,

2. Perform maintenance instructions semiannually until two consecutive tests were attained, and

3. Evaluate the SOR test report and adjust setpoints, as required.

Status: Complete. TVA has installed two Static "O" Ring differential pressure switches in the Unit 3 RHR system and the RHR Pump Surveillance Instruction has been revised to include steps to verify proper switch operation.

The commitment to perform the maintenance instruction semiannually has been evaluated in accordance with the commitment management process and deleted. NRC was notified of the commitment deletion by Reference 2.

The SOR test report has been evaluated and the setpoint calculations have been revised.

Bulletin 86-02 has been closed for Unit 3. However, an Inspector Followup Item was opened as a restart item for Unit 3. This is documented in Reference 3.

NRC inspectors reviewed the engineering change notice (ECN), calculations, calibration results, and functional testing requirements. Based on the results of this review, NRC considers this issue closed for Unit 3. This is documented in Reference 4.

References:

1. TVA letter to NRC, dated July 20, 1987, NRC Office of Inspection and Enforcement (IE) Bulletin 86-02 - Static "O" Ring (SOR) Differential Pressure Switches

2. TVA letter to NRC, dated August 17, 1995, BFN Revision To Commitments To Perform Testing Of Static-O-Ring Differential Pressure Switches And Voltage Verification Testing Of Reactor Protective System Equipment

3. NRC letter to TVA, dated March 18, 1993, NRC Inspection Report 93-04 [Section 5, page 13]

4. NRC letter to TVA, dated January 17, 1995, NRC Inspection Report 94-31 [Section 6, page 14]

Bulletin 88-03 - Inadequate Latch Engagement in HFA Type Relays Manufactured by General Electric Company [TAC M73854]

Commitment: TVA will complete Bulletin 88-03.

Discussion: TVA originally responded to Bulletin 88-03 in Reference 1. TVA stated the BFN inspections and the repair or replacement of the relays which fail the inspection criteria are scheduled to be completed before restart of each unit.

Status: Complete. In Reference 2, NRC closed Bulletin 88-03. However, TVA was still required to notify the NRC of inspection results for Unit 3. In Reference 3, TVA informed NRC that no inadequate latch engagement had been identified during the inspection of the HFA relays in Unit 3.

References:
1. TVA letter to NRC, dated July 6, 1988, Nuclear Regulatory Commission (NRC) Bulletin 88-03, Inadequate Latch Engagement in HFA-Type Latching Relays Manufactured by General Electric (GE) Company
2. NRC letter to TVA, dated August 2, 1990, Closure of NRC Bulletin 88-03 for the Browns Ferry Nuclear Plant (TAC NOS. 73852, 73853, and 73854)
3. TVA letter to NRC, dated April 11, 1994, NRC Bulletin No. 88-03 Inspection Results

Bulletin 88-04, Potential Safety-Related Pump Loss [TAC M69890]

Commitment: TVA will complete Bulletin 88-04.

Discussion: NRC Bulletin 88-04 requested licensees to investigate and correct, as applicable, two miniflow design concerns for safety-related system pumps. The first concern involved the potential for dead-heading one or more pumps. The second concern was whether or not the installed miniflow capacity was adequate.

TVA responded to the Bulletin (Reference 1), endorsing the BWR Owners' Group response and providing BFN specific information. NRC requested additional information in Reference 2, which was provided by TVA in Reference 3.

Status: Complete. The following actions were taken:

1. The design calculation for the Unit 2 Core Spray system miniflow bypass orifice size was expanded to include Unit 3 with the same results. The affected orifices were removed and inspected to verify proper sizing and if not, bored to the proper size. The system drawings were revised as necessary to reflect the correct orifice size.

2. A review of the Residual Heat Removal Service Water (RHRSW) operating instructions was performed during the resolution of this Bulletin for Unit 2. This review identified that the RHRSW pumps are started prior to opening the discharge flow control valves. The calculation for the RHRSW pumps determined that pump damage would not occur for 43 minutes when the RHRSW pumps were started with the pump discharge valves closed. Based on this, the RHRSW operating instruction was revised to include a precaution that pump damage may occur if RHRSW outlet valves are not opened.

3. The design calculation for the Unit 2 RHRSW system was expanded to include Unit 3 with the same results. Since the RHRSW system operating instruction is a common instruction for both Units 2 and 3, no further changes were required.

Reference 4 documents NRR closure of this issue for Unit 3. NRC has examined associated issue equipment, modifications, documentation and calculations. Based on this review and the NRR closure letter, NRC closed this issue for Unit 3. This is documented in Reference 5.

References:

1. Letter from TVA to NRC dated September 30, 1988, Browns Ferry (BFN), Watts Bar (WBN), and Bellefonte (BLN) Nuclear Plants - NRC Bulletin (NRCB) 88-04, Potential Safety - Related Pump Loss

2. Letter from NRC to TVA dated March 1, 1989, Response to NRC Bulletin 88-04 - Browns Ferry Nuclear Plant, Units 1, 2, and 3

3. Letter from TVA to NRC dated April 05, 1989, Browns Ferry Nuclear Plant (BFN) Units 1

and 3 - Additional Response to NRC Bulletin 88-04 (NRCB 88-04) - Potential Safety Related Pump Loss

4. Letter from NRC to TVA, dated May 8, 1989, Response to NRC Bulletin 88-04 - Browns Ferry Nuclear Plant, Units 1 and 3

5. Letter from NRC to TVA, dated June 28, 1995, NRC Inspection Report 95-31 [Section 7.b., page 18]

Bulletin 88-07 - Power Oscillations in Boiling Water Reactors, and Supplement 1 [TAC M72769]

Commitment: TVA will complete Bulletin 88-07.

Discussion: TVA responded to Bulletin 88-07 by Reference 1 and confirmed that the actions required by the Bulletin were implemented. TVA responded to Supplement 1 to Bulletin 88-07 by Reference 2 and confirmed its plans to implement the General Electric interim stability recommendations. The proposed Technical Specification changes to implement the reactor core thermal-hydraulic stability recommendations contained in Supplement 1 to Bulletin 88-07 were provided by Reference 3 and approved in Reference 4.

Status: Complete. TVA has implemented the General Electric interim stability recommendations into plant procedures. Refer to the topic entitled Generic Letter 94-02 - Long-Term Solutions and Upgrade of Interim Operating Recommendations for Thermal-Hydraulic Instabilities in Boiling Water Reactors for additional actions TVA has taken to address this issue.

References:

1. TVA letter to NRC, dated November 4, 1988, NRC Bulletin 88-07: Power Oscillations in Boiling Water Reactors

2. TVA letter to NRC, dated March 6, 1989, NRC Bulletin 88-07, Supplement 1 - Power Oscillations in Boiling Water Reactors (BWRs)

3. TVA letter to NRC, dated January 14, 1992, TVA BFN Technical Specification (TS) No. 300 Reactor Core Thermal-Hydraulic Stability

4. NRC letter to TVA, dated May 31, 1994, Issuance of Technical Specification Amendments for the Browns Ferry Nuclear Plant Units 1 and 3 (TS 300)

Bulletin 90-01 - Loss of Fill Oil in Rosemount Transmitters [TAC M85362]

Commitment: TVA will complete Bulletin 90-01.

Discussion: TVA originally responded to Bulletin 90-01 in Reference 1. TVA responded to Supplement 1 to Bulletin 90-01 in Reference 2. The commitments made in Reference 2 superseded the commitments made in Reference 1. In Reference 2, TVA committed to replace or refurbish the Model 1153 Series B, Model 1153 Series D, and the Model 1154 Rosemount transmitters, which were manufactured prior to July 11, 1989, in Unit 3 safety related or Anticipated Transient Without Scram (ATWS) applications.

Status: Complete. TVA has replaced or refurbished the Model 1153 Series B, Model 1153 Series D, and Model 1154 Rosemount transmitters, which were manufactured prior to July 11, 1989, in Unit 3 safety related or ATWS applications.

NRC has reviewed TVA's response and concluded that TVA conforms to the requested actions of Bulletin 90-01, Supplement 1. This is documented in Reference 4.

References:

1. TVA letter to NRC, dated July 18, 1990, Response to NRC Bulletin No. 90-01: Loss of Fill-Oil in Transmitters Manufactured by Rosemount
2. TVA letter to NRC, dated March 5, 1993, Response to NRC Bulletin No. 90-01, Supplement 1 - Loss of Fill Oil in Transmitters Manufactured by Rosemount
3. NRC letter to TVA, dated May 31, 1995, NRC Inspection Report 95-29 [Section 2.0-7.0]
4. NRC letter to TVA, dated April 4, 1995, NRC Bulletin 90-01, Supplement 1, Loss of Fill-Oil in Transmitters Manufactured by Rosemount

Bulletin 93-02 - Debris Plugging of Emergency Core Cooling Suction Strainers, and Supplement 1 [TAC M86537 & M89279]

Commitments: TVA will complete Bulletin 93-02 and Supplement 1 prior to restart.

9. Cable 3PL575 will be rerouted to correct the deficiency in accordance with the TVA design requirements prior to Unit 3 restart.

Discussion: TVA had identified instances where the electrical separation requirements have not been met at BFN. These discrepancies were discovered while implementing design changes and conducting reviews as part of the BFN Unit 2 recovery effort and was documented in LER 88-032, dated October 21, 1988 (Reference 1) and subsequent condition adverse to quality reports (CAQRs). TVA submitted the Reference 2 cable separation report to the NRC to describe TVA's plan for evaluating the problem and correcting discrepancies for Unit 2 restart. Revisions 1, 2, and 3 to this report were submitted by References 3, 4 and 5 respectively. The cable separation report provided the details of the evaluation and the results. In addition, some correction actions were identified which required implementation prior to Unit 2 restart and some were required after Unit 2 restart. The corrective actions required prior to Unit 2 restart were subsequently completed. The post Unit 2 restart items included commitments 1 through 5 above.

In addition to the post Unit 2 restart corrective actions that resulted from the Unit 2 evaluation, a Units 1 and 3 specific action plan for the evaluation of to disposition concerns related to cable installation issues, including cable separation, was provided in Reference 6. The Unit 3 plans for resolution are included in Commitments 6 and 7 above. The following deviations were proposed from the Unit 2 precedent:

1. Unit 2 cables were manually routed. Since Unit 3 was constructed using a computerized cable routing system, two random samples would be analyzed to verify cable routing data to the same 95/95 confidence level as was used for Unit 2.

2. The development of the Q-List will identify the safety and quality related systems. Circuit block diagrams will be analyzed to identify the associated cables. A comparison of the cable database will be performed to determine if the cables are correctly identified as divisional.

3. For cables contained in divisional and nondivisional cables, corrective actions involving cable separation discrepancies will be resolved.

The Safety Evaluation on this program was provided by Reference 7. In summary, the seven categories of separation discrepancies that were to be resolved in accordance with the Unit 2 precedent were adequate to resolve these discrepancies for Unit 3. In addition:

1. The action plan and the acceptance criteria for the review of field verified cable routing data was considered adequate to resolve the cable routing validation issue for Unit 3,

2. The action plan for resolving the nondivisional cables issue was considered adequate, and

3. Additional information was requested regarding the corrective actions to be implemented for discrepancies associated with the two cables contained in divisional and nondivisional cables trays that physically connect.

This additional information was provided by TVA in Reference 8. The information provided specifically described the corrective actions to implement commitment 7.c above which resulted in commitments 8 and 9 above. The NRC Staff accepted this determination in Reference 9.

Status: Complete.

1. The sixteen V4 and V5 cables originating from Safety-Related power supplies and that were deenergized for Unit 2 restart have been appropriately modified.

2. Seven of the eight non-divisional V3 cables originating from safety related power supplies that were deenergized for Unit 2 restart have been appropriately modified. The remaining one cable affects Unit 1 only and will be appropriately modified prior to Unit 1 restart.

3. 600 of the 604 divisional and nondivisional cables designated with an "IE" suffix were corrected by updating the design drawings. An exception was issued for three cables.

One cable is a Unit 1 only cable and will be corrected prior to restart of Unit 1. Physical retagging was determined by the commitment management process to be unnecessary. Cables that were deenergized for Unit 2 restart were appropriately modified.

4. The 109 nondivisional V4 and V5 cables contained in the project Q-list were corrected by updating the design drawings. Physical retagging was determined by the commitment management process to be unnecessary.

5. The project Q-list has been revised to remove the V1, V2, V3, V4, and V5 sample cables determined by the evaluation to be nonsafety-related and nondivisional.

6. a. V4 and V5 cables originating from safety-related power supplies were evaluated for separation in accordance with the Unit 2 precedent. Breakage identified by the evaluation has been resolved by modifications.

   b. V4 and V5 nondivisional cables originating from non safety-related power supplies were evaluated for separation in accordance with the Unit 2 precedent. Breakage identified by the evaluation has been resolved by modifications.

   c. V3 nondivisional cables originating from safety-related power supplies were evaluated for separation in accordance with the Unit 2 precedent. Breakage identified by the evaluation has been resolved by modifications.

   d. V3 nondivisional cables originating from non safety-related power supplies were evaluated for separation in accordance with the Unit 2 precedent. Breakage identified by the evaluation has been resolved by modifications.

   e. V1 and V2 nondivisional cables originating from both safety-related and non safety-related power supplies were evaluated for separation in accordance with the Unit 2 precedent. The evaluation concluded there is not a

concern relative to the separation of these cables. These are low energy cables and therefore do not result in a concern using the separation criteria.

f. Cables designated with "IE" or "IES" suffix were evaluated and rerouted and/or downgraded as required.

g. V1 and V2 divisional cables were evaluated for separation in accordance with the Unit 2 precedent. The evaluation concluded there is not a concern relative to the separation of these cables. These are low energy cables and therefore do not result in a concern using the separation criteria.

7. a. The Unit 3 Consolidated Cable Routing System (CCRS) database information was validated for divisional separation to a 95/95 confidence level using two random samples. The samples were analyzed either by walkdown and/or signal tracing to the relevant design criteria.

b. Nondivisional V1, V2, V3, V4 and V5 cables contained in the Q-list were evaluated against the separation criteria. Breakage identified by the evaluation consisted of either cables which were incorrectly identified as having a safety-related active function or required rework to conform to the separation criteria. Cables were either appropriately downgraded, modified or justified for use-as-is based on a specific evaluation. The specific steps to implement this commitment have been modified in accordance with the commitment management process. NRC was notified of these changes by Reference 10.

c. Cable routed through node points where divisional and nondivisional cable trays are physically connected were evaluated against the separation criteria. Cable breakage identified by this evaluation were either rerouted, retagged, double isolated and/or exceptions to the criteria were approved. See commitments 8 and 9 below.

8. Cable PL1163 has been double isolated.

9. Cable 3PL575 has been rerouted.

References:

1. Licensee Event Report (LER) 259-88-032 dated 10/21/88, Violation of Electrical Separation Requirements

2. TVA letter to NRC dated 1/6/89, Electrical Cable Separation

3. TVA letter to NRC dated 6/9/89, Electrical Cable Separation

4. TVA letter to NRC, dated 10/23/89, Electrical Cable Separation

5. TVA letter to NRC dated 12/14/89, Electrical Cable Separation

6. TVA letter to NRC, dated May 10, 1991, Action Plan to Disposition Concerns Related to Units 1 and 3 Cable Installation Issues Including Cable Separations

7. NRC letter to TVA, dated April 8, 1992, Safety Evaluation of TVA Plans to Resolve Electrical Cable Installation and Separation Issues

8. TVA letter to NRC, dated December 29, 1992, Response to Request for Additional Information on Electrical Cables in Divisional and Nondivisional Trays Which Are Physically Connected

9. NRC letter to TVA, dated January 28, 1993, Resolution of Cable Separation Discrepancies

10. TVA letter to NRC, dated October 25, 1995, Browns Ferry Nuclear Plant (BFN) - Units 1, 2, and 3 - Revision to Commitments to Provide Continuous Indication of Containment Pressure, Piece Part Component Qualification, and Cable Separation for Non-Divisional Cables on the Q-List

Cable Installation Issue Number 3 - Low Voltage Vertical Cable Supports

Commitment: TVA will resolve the low voltage vertical cable supports issue in accordance with the Unit 2 precedent.

Discussion: The action plan to disposition concerns related to cable installation issues, including cable separation, was provided in Reference 1. The Safety Evaluation on this program was provided by

Reference 2. In summary, since no Unit 2 cables with acceptable sidewall bearing pressure failed Hi-Pot testing, the walkdowns and evaluation of Class 1E low voltage power, control and instrumentation cables is adequate to satisfactorily resolve the vertical support issue.

Status: Complete. TVA has analyzed safety related low voltage cables that were installed in vertical raceways. Cables in one conduit exceeded the specified cable support spacing and the sidewall pressure limit. Insulation damage was also found on this cable. Additional supports were added and conduits/cables were replaced as required.

References:
1. TVA letter to NRC, dated May 10, 1991, Action Plan to Disposition Concerns Related to Units 1 and 3 Cable Installation Issues Including Cable Separations

2. NRC letter to TVA, dated April 8, 1992, Safety Evaluation of TVA Plans to Resolve Electrical Cable Installation and Separation Issues

Cable Installation Issue Number 4 - Medium Voltage Cable Bend Radius [TAC M86255]

Commitment: Safety related medium voltage cables will be identified, walked down and evaluated against the bend radius criteria used for Unit 2 (General Construction Specification G-38). The following corrective actions will be completed:

A. Group 1 cables, with bend radius of less than 6 times the cable outside diameter (OD) will be replaced.

B. Group 2 cables, with bend radius from 6 to less than 8 times the cable OD will be tested prior to restart and during subsequent outages to facilitate a trend analysis.

C. Group 3 cables, with bend radius 8 times or greater than the cable OD will be allowed to remain in service and be subjected to only normal maintenance testing.

Discussion: The action plan to disposition concerns related to cable installation issues, including cable separation, was provided in Reference 1. The Safety Evaluation of this program was provided by Reference 2. In summary, since safety related

medium voltage cables are to be identified, walked down and evaluated against the bend radius acceptance criteria contained in Construction Specification G-38 and dispositioned in accordance with the same criteria used for Unit 2, the proposed corrective actions are adequate.

In Reference 3, TVA proposed a new program and corrective actions for medium cable bend radius issues. Results of reinspections were presented to NRC and Hi-Pot testing was replaced with Load Cycle and Corona Testing. Additional information regarding the revised program was requested in Reference 4, which was provided by TVA in Reference 5. NRC issuance of a Safety Evaluation for this program and a request for additional information was contained in Reference 6. TVA replied in Reference 7 and the Supplemental Safety Evaluation Report was provided in Reference 8.

Status: Complete. TVA has performed an evaluation of the cable bend radius of Unit 3 safety related medium voltage power cables against the TVA minimum bending radius criteria. Among the cables addressed in the evaluation, five cables were replaced because of other cable issues. There were three other cables identified as Group 3 cables which will be allowed to remain in service and be subjected to only normal maintenance testing.

References:

1. TVA letter to NRC, dated May 10, 1991, Action Plan to Disposition Concerns Related to Units 1 and 3 Cable Installation Issues Including Cable Separations

2. NRC letter to TVA, dated April 8, 1992, Safety Evaluation of TVA Plans to Resolve Electrical Cable Installation and Separation Issues

3. TVA letter to NRC, dated March 17, 1993, Medium Voltage Cable Bend Radius Issues

4. NRC letter to TVA, dated August 23, 1993, Request for Additional Information Regarding Medium Voltage Cable Bend Radius

5. TVA letter to NRC, dated January 10, 1994, Response to Request for Additional Information Regarding Medium Voltage Cable Bend Radius

6. NRC letter to TVA, dated July 1, 1994, Safety Evaluation and Request for Additional Information Regarding Medium Voltage Cable Bend Radius Issues

7. TVA letter to NRC, dated September 15, 1994, Reply to NRC Request for additional Information (RAI) Regarding Medium Voltage Cable Bend Radius Issues

8. NRC letter to TVA, dated January 9, 1995, Supplemental Safety Evaluation for Medium Voltage Cable Bend Radius

Cable Installation Issue Number 5 - Missing Conduit Bushings

Commitment: Type PN cables in 10 CFR 50.49 circuits will be replaced under the Environmental Qualification program.

Discussion: The action plan to disposition concerns related to cable installation issues, including cable separation, was provided in Reference 1. The Safety Evaluation on this program was provided by Reference 2. In summary, the only cables found damaged on Unit 2 as a result of pulling the cables over a conduit end with a missing bushing were the Type PN. Replacing this type of cable in Unit 3 10 CFR 50.49 circuits was considered adequate to resolve this issue.

Status: Complete. All type PN cables in 10 CFR 50.49 circuits have been replaced in Unit 3. In addition, conduit bushings were installed during the cable installation. TVA has analyzed other Unit 3, 10CFR50.49 cables for missing conduit bushings. Some cables have been replaced because of other issues and the conduit bushings were installed during the cable installation. Protective sleeves have been installed on the remaining cables.

References: 1. TVA letter to NRC, dated May 10, 1991, Action Plan to Disposition Concerns Related to Units 1 and 3 Cable Installation Issues Including Cable Separations

2. NRC letter to TVA, dated April 8, 1992, Safety Evaluation of TVA Plans to Resolve Electrical Cable Installation and Separation Issues

Cable Installation Issue Number 6 - Sidewall Pressure, Cable Pullbys, Cable Jamming, Pulling Around 90 Degree Condulets and thru Mid-Run Flex Conduit Issues

Commitment: TVA will implement a confirmatory cable issues walkdown using the Unit 2 methodology for the sidewall pressure, cable pullbys, cable jamming, pulling around 90 degree condulets and thru mid-run flex conduit issues.

Discussion: The action plan to disposition concerns related to cable installation issues, including cable separation, was provided in Reference 1. Information regarding cable walkdowns and cable routing system database validation was provided in Reference 2.

A Safety Evaluation on cable installation and separation and request for additional information on divisional/non-divisional separation discrepancies was provided in Reference 3. In summary, cable damage was not identified on Unit 2 during the resolution of the sidewall pressure, cable pullbys, cable jamming and pulling around 90-degree condulets and through mid-run flex conduits issues. Confirmatory walkdowns are adequate to address this issue for Unit 3.

Status: Complete. TVA has performed confirmatory walkdowns to address this issue for Unit 3. There was no sidewall pressure (SWP) induced damage observed. However, cables with greater than 360 degrees of total bend between pull points were evaluated and one cable with excessive sidewall pressure was found. This cable has been replaced.

The results of the walkdown also indicated that there was no damage observed as a result of cable pullbys, cable jamming, or pulls around 90 degree condulets. In addition, there were no mid-run flex conduits observed during the walkdown. Due to these observations, no further action concerning this issue is required.

References:

1. TVA letter to NRC, dated May 10, 1991, Action Plan to Disposition Concerns Related to Units 1 and 3 Cable Installation Issues Including Cable Separations

2. TVA letter to NRC, dated March 6, 1992, Additional Information on TVA's Action Plan for

Units 1 and 3 Cable Installation Issues Including Cable Separations

3. NRC letter to TVA, dated April 8, 1992, Safety Evaluation of TVA Plans to Resolve Electrical Cable Installation and Separation Issues

Cable Installation Issue Number 7 - Use of Condulets as Pull Points

Commitment: The 600V safety related cables that are susceptible to damage from the use of condulets as pull points will be resolve in accordance with the Unit 2 precedent.

Discussion: The action plan to disposition concerns related to cable installation issues, including cable separation, was provided in Reference 1. The Safety Evaluation on this program was provided by Reference 2. In summary, TVA's evaluation of this issue for Unit 2 determined that the type of conduit configurations susceptible to this problem was limited to several cases of 600 volt cables in three inch conduits. Therefore, TVA's program to identify and correct other susceptible Unit 3 conduits was satisfactory.

Status: Complete. TVA performed an evaluation of 600 volt safety related cables, installed in conduit, for damage resulting from the use of condulet fittings as pullpoints. There were six cases of jacket damage and two cases of insulation damage identified. These cables have been replaced.

References: 1. TVA letter to NRC, dated May 10, 1991, Action Plan to Disposition Concerns Related to Units 1 and 3 Cable Installation Issues Including Cable Separations

2. NRC letter to TVA, dated April 8, 1992, Safety Evaluation of TVA Plans to Resolve Electrical Cable Installation and Separation Issues

Cable Installation Issue Number 8 - Medium Voltage Vertical Cable Supports

Commitment: The medium voltage vertical cable supports issue will be resolved by evaluating cables not meeting the vertical cable support criteria for static sidewall bearing pressure (SSBP). Cables with unacceptable SSBP will be Hi-Pot tested. Cables

passing the Hi-Pot test will be supported in accordance with G-38. Cables failing the Hi-Pot test will be replaced.

Discussion: The action plan to disposition concerns related to cable installation issues, including cable separation, was provided in Reference 1. The Safety Evaluation on this program was provided by Reference 2. In summary, since no Unit 2 cables with acceptable sidewall bearing pressure failed Hi-Pot testing, the walkdowns and evaluation of Class 1E medium voltage cables is adequate to satisfactorily resolve the vertical support issue.

Status: Complete. TVA has analyzed safety related medium voltage cables that were installed in vertical raceways. Cables in three conduits exceeded the specified cable support spacing and the sidewall pressure limit. Additional supports were added and conduits/cables were replaced as required.

References:
1. TVA letter to NRC, dated May 10, 1991, Action Plan to Disposition Concerns Related to Units 1 and 3 Cable Installation Issues Including Cable Separations
2. NRC letter to TVA, dated April 8, 1992, Safety Evaluation of TVA Plans to Resolve Electrical Cable Installation and Separation Issues

Cable Tray Supports [TAC M80684]

Commitment: TVA intends to utilize the Seismic Qualification Utility Group (SQUG) Generic Implementation Procedure (GIP) for seismic qualification of cable trays.

Discussion: The original action plan to disposition concerns related to Unit 3 cable tray supports was provided in Reference 1. However, due to the issuance of Supplement 4 to Generic Letter 87-02, Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors, Unresolved Safety Issue (USI) A-46, BFN submitted a revised program in order to take advantage of the NRC approved process for resolving USI A-46 (Reference 2). NRC requested additional information regarding the schedule for implementing the revised program in Reference 3. In Reference 4, TVA committed to implement the long-term qualification of cable trays and supports prior to Unit 3 restart. In

Reference 5, NRC determined that it was acceptable for TVA to complete the portion of its USI A-46 program that pertain to cable trays, including their supports, prior to Unit 3 restart.

Status: Open. The Unit 3 cable tray supports have been evaluated utilizing the GIP in accordance with USI A-46. Necessary modifications and repairs have been initiated and will be completed prior to Unit 3 restart.

References:

1. TVA letter to NRC, dated March 27, 1991, Action Plan to Disposition Concerns Related to Units 1 and 3 Cable Tray Supports

2. TVA letter to NRC, dated September 21, 1992, Supplement 1 to Generic Letter 87-02, Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors, Unresolved Safety Issue (USI) A-46 and Supplement 4 to Generic Letter 88-20, Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities

3. NRC letter to TVA, dated November 19, 1992, Generic Letter 87-02, Supplement 1 Response - Browns Ferry Nuclear Plant

4. TVA letter to NRC, dated January 19, 1993, Generic Letter (GL) 87-02, Supplement 1, 120-Day Response, Request for Additional Information

5. NRC letter to TVA, dated March 19, 1993, Generic Letter 87-02, Supplement 1 Response - Browns Ferry Nuclear Plant

Component and Piece Part Qualification [TAC M83828]

Commitment: TVA will implement a component and piece part qualification program.

Discussion: In Reference 1, TVA provided a change in methodology in performing the component and piece part qualification for safety related components in 10 CFR 50.49 applications. TVA proposed to use statistical sampling techniques to achieve a 95/95 confidence level of qualification adequacy as opposed to the 100 percent verification performed for Unit 2. Additional information was requested by the NRC Staff in Reference 2, which was provided by TVA in Reference 3. In Reference 4, NRC responded that this issue would be

addressed by inspection rather than a revision to the Safety Evaluation. Since this correspondence, TVA has decided to perform a 100 percent verification as performed on Unit 2.

Status: Open. The Unit 3 component and piece part qualification for safety related components in 10 CFR 50.49 applications is in progress and will be completed prior to restart. This review was performed in accordance with the previous Unit 2 review and included replacement and inventoried commercial grade spare parts.

References:

1. TVA letter to NRC, dated June 12, 1992, Request for Revision to Safety Evaluation Issued by NRC on January 10,1990, Related to Component and Piece Part Qualification Plan
2. NRC letter to TVA, dated October 29, 1992, Request for Additional Information Regarding Browns Ferry Nuclear Plant Units 1 and 3 Component and Piece Parts Qualification Program
3. TVA letter to NRC, dated December 17, 1992, Request for Additional Information (RAI) Regarding BFN Units 1 and 3 Component and Piece Parts Qualification Plan
4. NRC letter to TVA, dated December 7, 1993, Browns Ferry Nuclear Plant Units 1 and 3 Component and Piece Parts Qualification Program

Conduit Supports [TAC M80690 and R00024]

Commitment: TVA intends to utilize the Seismic Qualification Utility Group (SQUG) Generic Implementation Procedure (GIP) for seismic qualification of conduit supports.

Discussion: The original action plan to disposition concerns related to Unit 3 conduits and conduit supports was provided in References 1 through 3 and approved in Reference 4. However, due to the issuance of Supplement 4 to Generic Letter 87-02, Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors, Unresolved Safety Issue (USI) A-46, BFN submitted a revised program in order to take advantage of the NRC approved process for resolving USI A-46 (Reference 5). NRC requested additional information regarding the schedule for implementing the revised program in Reference 6. In Reference 7, TVA committed to implement the

long-term qualification of conduits and conduit supports prior to Unit 3 restart. In Reference 8, NRC determined that it was acceptable for TVA to complete the portion of its USI A-46 program that pertain to conduits and conduit supports, prior to Unit 3 restart in lieu of its prior restart commitments.

Status: Open. The Unit 3 conduit supports have been evaluated utilizing the GIP in accordance with USI A-46. Necessary modifications and repairs have been initiated and will be completed prior to Unit 3 restart.

References:

1. TVA letter to NRC, dated May 6, 1991, Program for Resolving Conduit and Conduit Supports Issue Prior to the Restart of Units 1 and 3

2. TVA letter to NRC, dated December 12, 1991, Small Bore Piping Program, Tubing, and Conduit Support Plans for Units 1 and 3 - Additional Information

3. TVA letter to NRC, dated January 29, 1992, Action Plan to Disposition Concerns Related to Units 1 and 3 Conduit and Conduit Support - Additional Information

4. NRC letter to TVA, dated March 20, 1992, Safety Evaluation of Action Plan to Resolve Conduit and Conduit Supports Issues for the Browns Ferry Nuclear Plant Units 1 and 3

5. TVA letter to NRC, dated September 21, 1992, Supplement 1 to Generic Letter 87-02, Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors, Unresolved Safety Issue (USI) A-46 and Supplement 4 to Generic Letter 88-20, Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities

6. NRC letter to TVA, dated November 19, 1992, Generic Letter 87-02, Supplement 1 Response - Browns Ferry Nuclear Plant

7. TVA letter to NRC, dated January 19, 1993, Generic Letter (GL) 87-02, Supplement 1, 120-Day Response, Request for Additional Information

8. NRC letter to TVA, dated March 19, 1993, Generic Letter 87-02, Supplement 1 Response - Browns Ferry Nuclear Plant

Configuration Management/Design Baseline [TAC M80688]

Commitment: The Unit 3 Design Baseline Verification Program (DBVP) will consolidate the two-phase (pre- and post-restart) approach performed on Unit 2.

Discussion: The objective of the DBVP was to re-establish the design basis and evaluate the plant configuration to ensure that it satisfies the design basis. The DBVP, including a discussion of lessons learned from the Unit 2 precedent, was provided in Reference 1. In Reference 2, NRC determined that this commitment was more comprehensive than that accepted by the staff for Unit 2, and was therefore acceptable.

Status: Open. TVA will complete this item prior to restart.

References:
1. TVA letter to NRC, dated June 13, 1991, Design Baseline Verification Program (DBVP).
2. NRC letter to TVA, dated November 21, 1991, Assessment of Browns Ferry Nuclear Plant, Units 1 and 3 Design Baseline Verification Program

Containment Coatings

Commitment: The containment coating program will be implemented in accordance with the Unit 2 precedent.

Discussion: TVA performed walkdown inspections of unqualified coating on components installed inside primary containment on Unit 2 to baseline the uncontrolled coating log. An analysis was performed to determine the maximum allowable quantity of coating debris which could be transported to the suction strainers without affecting the ability of the ECCS pumps to perform their post-Loss of Coolant Accident (LOCA) function. Corrective actions were taken to ensure that the amount of unqualified coating is maintained below the maximum allowable quantity.

On June 23, 1994, NRC issued a Notice of Violation for the misapplication of protective coatings on BFN Unit 2 suppression chamber T-quenchers (Reference 1). As part of the July 17, 1994, reply to the Notice of Violation (Reference 2), TVA committed to remove the

misapplied coating from the Unit 3 T-quenchers, sample other stainless steel components within the Unit 3 primary containment, and take appropriate action to ensure that other similar unanalyzed coating conditions do not exist. As discussed in Reference 3, TVA identified other instances of coated stainless steel. The coating exhibited a high degree of resiliency to several removal methods. Therefore, TVA is pursuing the qualification of this coating for stainless steel applications.

Status: Open. TVA will implement the containment coating program prior to restart.

References:
1. NRC letter to TVA, dated June 23, 1994, Notice of Violation (NRC Inspection Report 50-260/94-09)
2. TVA letter to NRC, dated July 17, 1994, Reply to Notice of Violation (NOV) Regarding Inappropriate T-Quencher Coating (NRC Inspection Report 50-260/94-09)
3. TVA letter to NRC, dated November 10, 1994, Evaluation of Epoxy Coating on Stainless Steel Components Inside the Unit 2 Suppression Chamber

Control Rod Drive (CRD) Insert and Withdrawal Piping

Commitment: The seismic qualification of the CRD insert and withdrawal piping will be implemented in accordance with the Unit 2 precedent.

Discussion: TVA's program for the seismic qualification of the 185 CRD insert and withdrawal lines on Unit 2 was provided in Reference 1 and approved by NRC in Reference 2.

Status: Complete. The Unit 3 CRD insert and withdrawal piping supports have been modified as determined by stress analyses performed on the installed piping configurations. The modifications for Unit 3 consisted of the installation of new pipe support frames rather than the modification of the original framing as was performed for the Unit 2 piping.

NRC has conducted a walkdown inspection of the Unit 3 CRD pipe support frames. The inspector concluded that the modifications were implemented in accordance with design requirements and this issue is resolved for Unit 3 restart. This is documented in Reference 3.

References: 1. TVA letter to NRC, dated December 11, 1989, Revised Program Plan - Seismic Qualification of the Control Rod Drive Hydraulic (CRDH) Piping System

2. NRC letter to TVA, dated January 23, 1991, NUREG-1232, Volume 3, Supplement 2 - Browns Ferry, Unit 2, Section 2.2.3.2 (Page 2-9)

3. NRC letter to TVA, dated October 12, 1995, NRC Inspection Report 95-52 [Section 3.4, page 5]

Design Calculations Review

Commitment: The design calculations review will be implemented in accordance with the Unit 2 precedent.

Discussion: The reconciliation of the plants configuration to engineering design documents, including essential calculations, is included as part of the Design Baseline Verification Program.

Status: Refer to the section entitled Configuration Management/Design Baseline

References: None.

Environmental Qualification [TAC M42483]

Commitment: TVA will complete the qualification of Class IE safety-related equipment.

Discussion: The qualification of Class IE safety-related equipment will be accomplished when BFN certifies compliance with 10 CFR 50.49, Environmental qualification of electric equipment important to safety for nuclear power plants.

Status: Open. TVA will certify compliance with 10 CFR 50.49 prior to restart.

References: None.

Fire Protection/10 CFR 50, Appendix R [TAC M48136 and M85254]

Commitment: TVA will implement a Fire Protection/10 CFR 50, Appendix R program.

Discussion: The overall action plan and schedule for the BFN Appendix R program was submitted in Reference 1. The Appendix R Safe Shutdown Program was provided in Reference 2. Required Technical Specification changes were requested in Reference 3.

Status: Open. TVA will implement a Fire Protection/10 CFR 50, Appendix R program prior to restart.

References:
1. TVA letter to NRC, dated July 11, 1991, Overall Action Plan and Schedule for the Appendix R Program for Unit 3
2. TVA letter to NRC, dated December 15, 1992, Unit 3 Appendix R Program Submittal
3. TVA letter to NRC, dated September 30, 1993, TVA BFN Technical Specification (TS) No. 337, Appendix R License Amendment

Flexible Conduits

Commitment: Actions necessary to disposition flexible conduit concerns for the 10 CFR 50.49 equipment will be completed prior to restart. Other safety related flexible conduits attached to safety related equipment will be evaluated for seismic adequacy using the BFN A-46 program.

Discussion: The program and schedule for the resolution of flexible conduit issues for Unit 3 has been provided to the NRC as part of the resolution of Generic Letter 87-02. In Reference 1, TVA provided a schedule for flexible conduits associated with the resolution of USI A-46. NRC requested additional information regarding the schedule in Reference 2. In Reference 3, TVA provided the schedule for completing flexible conduit concerns in two phases. Flexible conduits attached to electrical equipment covered by 10 CFR 50.49 would be resolved prior to restart of Unit 3. Seismic qualification of flexible conduit, other than those connected to electrical equipment covered by 10 CFR 50.49 (i.e., important to safety, but in a mild environment), would be included as part of the resolution of USI A-46.

In Reference 4, NRC found this program acceptable; however, additional information was requested regarding two separate issues regarding flexible conduit. TVA provided the requested information in Reference 5. Additional

information was provided by TVA in Reference 6. NRC subsequently provided a supplemental safety evaluation in Reference 7.

Status: Open. Actions necessary for flexible conduits attached to electrical equipment covered by 10 CFR 50.49 have been completed. These flexible conduits were analyzed per the requirements of TVA General Engineering Specification G-40. Any necessary modifications were identified and have been completed. This completes the restart portion of this commitment.

Other safety related flexible conduits attached to safety related equipment will be evaluated as part of the resolution of USI A-46.

References:

1. TVA letter to NRC, dated September 21, 1992, Supplement 1 to Generic Letter 87-02, Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors, Unresolved Safety Issue (USI) A-46 and Supplement 4 to Generic Letter 88-20, Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities

2. NRC letter to TVA, dated November 19, 1992, Generic Letter 87-02, Supplement 1 Response - Browns Ferry Nuclear Plant

3. TVA letter to NRC, dated January 19, 1993, Generic Letter (GL) 87-02, Supplement 1, 120-Day Response, Request for Additional Information

4. NRC letter to TVA, dated March 19, 1993, Generic Letter 87-02, Supplement 1 Response - Browns Ferry Nuclear Plant

5. TVA letter to NRC, dated October 15, 1993, Generic Letter (GL) 87-02, Supplement 1, Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors, Unresolved Safety Issue (USI) A-46 - Response to Request for Additional Information Regarding the Evaluation of the Seismic Adequacy of Flexible Conduit

6. TVA letter to NRC, dated September 28, 1995, Browns Ferry Nuclear Plant (BFN)- Units 1, 2, and 3 - Seismic Adequacy of Flexible Conduits

7. NRC letter to TVA, dated October 3, 1995, Supplemental Safety Evaluation of Flexible Conduit Seismic Design and Installation Criteria

Fuses

Commitment: The fuse issue will be resolved in accordance with the Unit 2 precedent.

Discussion: NRC approval of TVA's fuse program is documented in NUREG-1232 (Reference 1). The completion plan for the fuse program was provided by Reference 2. TVA committed to remove the reference to amperage from drawings and replace them with the appropriate unique identifier for Class 1E fuses and install permanent fuse labeling.

Status: Complete. The inspection of this issue by the NRC is documented in References 3 and 4.

References:
1. NRC letter to TVA, dated January 23, 1991, NUREG-1232, Volume 3, Supplement 2 - Browns Ferry, Unit 2, Section 3.11.2 (Page 3-9)
2. TVA letter to NRC, dated January 29, 1992, Completion Plan for the Fuse Program
3. NRC letter to TVA, dated February 21, 1995, NRC Inspection Report 95-02 [Section 2, page 1]
4. NRC letter to TVA, dated September 29, 1995, NRC Inspection Report 95-45 [Section 2, page 1]

Generic Letter 82-33 - Instrumentation to Follow the Course of an Accident - Regulatory Guide 1.97 [TAC M51075]

Commitment: TVA will complete Generic Letter 82-33 - Instrumentation to Follow the Course of an Accident - Regulatory Guide 1.97.

Discussion: Supplement 1 to NUREG-0737, which included the request to review Regulatory Guide 1.97, was sent to TVA in Reference 1. TVA originally responded to Generic Letter 82-33 in Reference 2.

TVA was ordered to submit a report to NRC describing how the requirements of Supplement 1 to NUREG-0737 have been or will be met and an implementation schedule (Reference 3).

NRC requested additional information and/or justification in Reference 4. TVA responded to this request in Reference 5. TVA provided updated information regarding Reactor Coolant System pressure indication in Reference 6.

A Safety Evaluation Report (SER) was issued by NRC in Reference 7. As part of this SER, TVA was directed to qualify the instrumentation that measures seven variables in accordance with 10 CFR 50.49. TVA either provided additional justification or committed to upgrade the instrumentation discussed in the SER in Reference 8. A revised SER was issued as part of the NRC's February 8, 1990 letter (Reference 9). This revised SER also directed TVA to install a qualified neutron monitoring system. In Reference 10, TVA requested further BFN specific actions regarding the neutron flux monitoring instrumentation be deferred pending the resolution of the BWR Owners' Group appeal.

In Reference 11, TVA identified previously submitted deviation to Regulatory Guide 1.97 for which NRC review was still required, addressed discrepancies between TVA letters and NRC SERs, and identified new deviations for NRC review. Additional information regarding emergency damper position indication was provided by TVA in Reference 12. The deviations addressed above were addressed in the NRC's May 10, 1991 SER (Reference 13). In addition, implementation of qualified neutron flux monitoring capability was deferred pending review of an appeal by the BWR Owners Group.

A revised SER regarding neutron flux monitoring instrumentation was issued in Reference 14. TVA's review of the BFN neutron flux monitoring instrumentation against the criteria referenced by the SER was provided in References 15 and 16. NRC acceptance of the deviation requested by TVA was documented in the May 3, 1994 SER (Reference 17).

Status: Complete. NRC has reviewed drawings, calculations, design criteria, and the Unit 3 Regulatory Guide 1.97 Compliance Report. In addition, walkdowns of selected instrumentation was performed. Based on the results, NRC concluded that the Unit 3 Regulatory Guide 1.97 program was being adequately implemented. This is documented in Reference 18.

References:

1. NRC letter to All Licensees of Operating Reactors, Applicants for Operating Licenses, and Holders of Construction Permits, dated December 17, 1982, Supplement 1 to NUREG-0737 - Requirements for Emergency Response Capability (Generic Letter 82-33)

2. TVA letter to NRC, dated April 30, 1984, in regards to Generic Letter 82-33

3. NRC letter to TVA, dated June 12, 1984, Issuance of Orders Confirming Licensee Commitments on Emergency Response Capability

4. NRC letter to TVA, dated January 23, 1985, Emergency Response Capability - Conformance to R.G. 1.97, Rev. 2

5. TVA letter to NRC, dated May 7, 1985, in regards to conformance with Regulatory Guide 1.97

6. TVA letter to NRC, dated November 20, 1985, in regards to conformance with Regulatory Guide 1.97

7. NRC letter to TVA, date June 23, 1988, Generic Letter 82-33, Request for Compliance with the Guidelines of Regulatory Guide (R.G.) 1.97 as Applied to Emergency Response Facilities

8. TVA letter to NRC, dated August 23, 1988, Response to NRC's Safety Evaluation Report on Regulatory Guide 1.97 as Applied to Emergency Response Facilities Dated June 23, 1988

9. NRC letter to TVA, dated February 8, 1990, Emergency Response Capability - Conformance to Regulatory Guide 1.97. Revision 3

10. TVA letter to NRC, dated September 14, 1990, Response to NRC's February 8, 1990 Safety Evaluation Report Regarding Conformance to Regulatory Guide 1.97, Revision 3 - Neutron Flux Monitoring Instrumentation

11. TVA letter to NRC, dated October 15, 1990, Response to NRC Supplemental Safety Evaluation Report (SER) on Regulatory Guide (RG) 1.97 Compliance dated February 8, 1990.

12. TVA letter to NRC, dated December 21, 1990, Regulatory Guide (RG) 1.97 Emergency Ventilation Dampers Position Indication

13. NRC letter to TVA, dated May 10, 1991, Safety Evaluation of Emergency Response Capability - Conformance to Regulatory Guide 1.97, Revision 3

14. NRC letter to TVA, dated May 27, 1993, Regulatory Guide 1.97 - Boiling Water Reactor Neutron Flux Monitoring

15. TVA letter to NRC, dated July 30, 1993, Regulatory Guide 1.97 - Boiling Water Reactor Neutron Flux Monitoring

16. TVA letter to NRC, dated March 10, 1994, Regulatory Guide 1.97 - Boiling Water Reactor Neutron Flux Monitoring

17. NRC letter to TVA, dated May 3, 1994, Boiling Water Reactor Neutron Flux Monitoring for the Browns Ferry Nuclear Plant

18. NRC letter to TVA, dated August 25, 1995, NRC Inspection Report 95-39 [Summary Results, Enclosure page 1]

Generic Letter 83-28 - Salem ATWS, Item 1.2, Post Trip Review (Data and Information Capability) [TAC M53573]

Commitment: TVA will complete Generic Letter 83-28 - Salem ATWS, Item 1.2.

Discussion: In response to Generic Letter 83-28, Item 1.2, TVA committed in Reference 1 to the installation of an upgraded process computer and an enhanced sequence of events recording capability. TVA's response was found to be acceptable in the NRC's Safety Evaluation provided by Reference 2. As discussed in Reference 3, the discussed equipment has been replaced with more modern and sophisticated hardware, since the time of the original TVA submittal. The previously described upgrade to a Digital VAX 11/750 process computer system was accomplished using a Digital VAX 6000 system. The functions previously performed by the sequence of events and time history recorder are now accomplished using the process computer system. However, the guidance contained in the Generic Letter and the requirements of the Safety Evaluation continue to be met.

Status: Open. This item will be certified complete post-restart as part of the Safety Parameter Display System (SPDS) certification.

References: 1. TVA letter to NRC, dated November 7, 1983, in regards to Generic Letter 83-28

2. NRC letter to TVA, dated June 12, 1985, Safety Evaluation for Generic Letter 83-28, Item 1.2, Post Trip Review (Data and Information Capability)

3. TVA letter to NRC, dated November 9, 1993, Completion of Unit 2 Commitment for Generic Letter 83-28, Item 1.2 - Post-Trip Review - Data and Information Capability (GSI 75 / MPA B-085)

Generic Letter 83-28 - Salem ATWS, Item 4.5.2, Periodic On-Line Testing [TAC M53966]

Commitment: TVA will complete Generic Letter 83-28 - Salem ATWS, Item 4.5.2.

Discussion: The NRC's position on this item was that plants not currently designed to permit periodic on-line testing shall justify not making modifications to permit such testing. Alternatives to on-line testing proposed by licensees will be considered where special circumstances exist and where the objective of high reliability can be met in another way. TVA's initial response to this item (Reference 1), stated that online testing was being evaluated. A description of the Reactor Protection System (RPS) functional testing and reliability was provided by TVA in Reference 2. The NRC Safety Evaluation states the on-line testing capability of the BFN RPS meets the intent of this item and is therefore acceptable (Reference 3).

Status: Complete.

References: 1. TVA letter to NRC, dated November 7, 1983, in regards to Generic Letter 83-28

2. TVA letter to NRC, dated March 15, 1984, in regards to Generic Letter 83-28

3. NRC letter to TVA, dated September 2, 1986, Reactor Trip System Reliability, On-Line Testing, Generic Letter 83-28, Item 4.5.2

Generic Letter 83-28 - Salem ATWS, Item 4.5.3, Intervals for On-Line Testing [TAC M53966]

Commitment: TVA will complete Generic Letter 83-28 - Salem ATWS, Item 4.5.3.

Discussion: The NRC Staff has reviewed the General Electric Topical Reports NEDC-30844, BWR Owners' Group (BWROG) Response to NRC Generic Letter 83-28, Item 4.5.3, and NEDC-30851P, Technical Specifications Improvement Analysis for

BWR Reactor Protection System, and issued a favorable Safety Evaluation Report (Reference 1).

In Reference 2, TVA endorsed the BWROG position and stated the analysis presented in NEDC-30851P were applicable to BFN. No Technical Specification instrument calibration frequency extensions were requested based on these reports. Differences between the parts of the BFN Reactor Protection System (RPS) that perform the trip functions and those of the base case plant were analyzed using the procedures of Appendix K of NEDC-30851P to demonstrate no appreciable change in RPS availability or public risk. The Safety Evaluation that closed this item was provided by Reference 3.

Status: Complete. TVA evaluated the BFN RPS and determined it was in conformance with the requirements contained in NEDC 30844A.

References:

1. NRC letter to BWR Owners Group, dated July 15, 1987, General Electric Company (GE) Topical Reports NEDC-30844, "BWR Owners' Group Response to NRC Generic Letter 83-28," and NEDC-30851P, "Technical Specifications Improvement Analysis for BWR RPS"

2. TVA letter to NRC, dated July 5, 1990, Generic Letter 83-28, Required Actions Based on Generic Implications of Salem ATWS Events, Item 4.5.3, Reactor Trip System Reliability

3. NRC letter to TVA, dated August 17, 1990, Safety Evaluation of Generic Letter 83-28, Item 4.5.3, Reactor Trip Reliability - On-Line Functional Testing of the Reactor Trip System

Generic Letter 83-36 - NUREG-0737 Technical Specifications

Commitment: TVA will complete Generic Letter 83-36.

Discussion: Generic Letter 83-36 (Reference 1), dated November 1, 1983, requested Licensees implement Technical Specification changes resulting from the reviews of the Three Mile Island incident. The status of each item is referenced below:

- Reactor Coolant System Vents (II.B.1) -

  The Generic Letter states that there are no changes required in Technical Specification requirements for BWRs that do not have

isolation condensers. BFN does not have isolation condensers. Thus the item is considered closed.

- Post-accident Sampling System (II.B.3) -

  The changes for the Post-Accident Sampling System were proposed by TVA letter, dated April 1, 1992 (Technical Specification No. 302). These changes were approved as Amendment 180 on June 21, 1994. Thus the item is considered closed.

- Noble Gas Effluent Monitors (II.F.1.1) -

  Technical Specification No. 313 proposed the changes associated with the Noble Gas Effluent Monitor on October 7, 1993. These changes were approved in Amendment 187, dated December 21, 1994. Thus the item is considered closed.

- Sampling and Analysis of Plant Effluents (II.F.1.2) -

  Amendment No. 171, which was approved by NRC on August 22, 1989, removed the monitoring of iodides and particulates from the Unit 2 Technical Specifications. Iodines and particulates are now measured by onsite laboratory analysis of particulate and carbon filters installed in the continuous flow effluent sample line. This amendment found these provisions to be in compliance with the requirements of Item II.F.2 and Regulatory Guide 1.97. Thus the item is considered closed.

- Containment High-Radiation Monitor (II.F.1.3) -

  Technical Specification No. 313, dated October 7, 1993 proposed the addition of two drywell radiation monitors changes. These changes were approved in Amendment 187, dated December 21, 1994. Thus the item is considered closed.

- Containment Pressure Monitor (II.F.1.4) -

  Amendment No. 78, which was approved by NRC on August 27, 1984, reference this TMI Action Item and stated that the operability and surveillance requirements on the new Unit 3

monitoring system are acceptable. Thus the item is considered closed.

- Containment Water Level Monitor (II.F.1.5) -

  Amendment No. 78, which was approved by NRC on August 27, 1984, reference this TMI Action Item and stated that the operability and surveillance requirements on the new monitoring system are acceptable for Unit 3. Thus the item is considered closed.

- Containment Hydrogen Monitor (II.F.1.6) -

  TVA letter, dated March 7, 1984, stated that Browns Ferry Units 1, 2, and 3 had adequate technical specifications on the containment hydrogen monitors. Thus the item is considered closed.

- Control Room Habitability Requirements (III.D.3.4) -

  TVA letter, dated March 7, 1984, stated that Table 3.2.G of the Technical Specifications listed the control room isolation instrumentation; therefore, no revisions were required. Thus the item is considered closed.

Status: Complete. As discussed above for each specific item, TVA has completed the NUREG-0737 Technical Specifications changes associated with Generic Letter 83-36.

References: 1. NRC letter to All Boiling Water Reactor Licensees, dated November 1, 1983, NUREG-0737 Technical Specifications (Generic Letter No. 83-36)

Generic Letter 88-01 - NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping [TAC M85296]

Commitment: TVA will complete Generic Letter 88-01 - NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping.

Discussion: TVA's program to address Generic Letter 88-01 was provided by Reference 1. The Safety Evaluation documenting the acceptability of the program was included in Reference 2.

Status: Open. In order to reduce the potential for Intergranular Stress Corrosion Cracking (IGSCC), TVA has performed Nondestructive Examination (NDE), repair, stress improvement, and pipe replacement on Unit 3. This work is complete except for the inaccessible welds on the Residual Heat Removal system penetrations described in Reference 3. These welds will be inspected during the reactor vessel hydrostatic testing prior to restart.

NRC has reviewed TVA's actions regarding Generic Letter 88-01. TVA's actions for long-term mitigation of IGSCC of Unit 3 reactor vessel internals were found to be aggressive and satisfactory. Based on this review, no IGSCC issues were found that would negatively impact Unit 3 restart. This is documented in Reference 4.

References:

1. TVA letter to NRC, dated December 28, 1992, Supplemental Response to Generic Letter (GL) 88-01, NRC Position on Intergranular Stress Corrosion Cracking (IGSCC) in BWR Austenitic Stainless Steel Piping

2. NRC letter to TVA, dated December 3, 1993, Safety Evaluation of Supplemental Response to Generic Letter 88-01

3. TVA letter to NRC, dated November 25, 1992, Browns Ferry Nuclear Plant (BFN) - Request for NRC Approval of Alternate Methods for the Reactor Water Cleanup (RWCU) and Residual Heat Removal (RHR) Inservice Inspections Required by Generic Letter 88-01

4. NRC letter to TVA, dated August 30, 1995, NRC Inspection Report 95-44 [Section 3.b., page 6]

Generic Letter 88-11 - Radiation Embrittlement of Reactor Vessel Materials and its Impact on Plant Operations [TAC M71469]

Commitment: TVA will complete Generic Letter 88-11 - Radiation Embrittlement of Reactor Vessel Materials and its Impact on Plant Operations.

Discussion: TVA responded to Generic Letter 88-11 in Reference 1. TVA concluded that the current pressure-temperature curves in each plant's Technical Specifications were valid through the next two fuel cycles when compared to the Regulatory Guide 1.99, Revision 2, methodology.

Supplemental information was provided for BFN in References 2 and 3.

In Reference 4, TVA proposed Technical Specification changes to incorporate pressure-temperature curves calculated using Regulatory Guide 1.99, Revision 2, methodology. NRC requested additional information in Reference 5, which was provided by TVA in Reference 6. The proposed Technical Specifications were issued by Reference 7.

Status: Complete.

References:

1. TVA letter to NRC, dated November 30, 1988, Browns Ferry Nuclear Plant (BFN), Sequoyah Nuclear Plant (SQN), and Watts Bar Nuclear Plant (WBN) - Response to Generic Letter 88-11 - NRC Position on Radiation Embrittlement of Reactor Vessel Materials and its Impact on Plant Operations

2. TVA letter to NRC, dated February 28, 1991, TVA Supplemental Response to Generic Letter 88-11, NRC Position of Radiation Embrittlement of Reactor Vessel Materials and its Impact on Plant Operations

3. TVA letter to NRC, dated April 30, 1991, TVA Supplemental Response to Generic Letter 88-11, NRC Position of Radiation Embrittlement of Reactor Vessel Materials and its Impact on Plant Operations

4. TVA letter to NRC, dated July 19, 1991, TVA BFN Technical Specification (TS) No. 293

5. NRC letter to TVA, dated August 28, 1991, Pressure-Temperature Limits Pursuant to Generic Letter 88-11 as Reflected in Proposed Amendment to Technical Specification (TS 293)

6. TVA letter to NRC, dated October 24, 1991, TVA BFN Technical Specification (TS) No. 293 - Radiation Embrittlement of Reactor Vessel Material and its Impact on Plant Operations - Response to Request for Additional Information

7. NRC letter to TVA, dated January 8, 1993, Issuance of Amendments for the Browns Ferry Nuclear Plant (TS 293)

Generic Letter 88-14 - Instrument Air Supply System Problems Affecting Safety-Related Equipment [TAC M71633]

Commitment: TVA will complete Generic Letter 88-14 - Instrument Air Supply System Problems Affecting Safety-Related Equipment.

Discussion: The original response to Generic Letter 88-14 was included as part of Reference 1. Additional information regarding the dew point of air being supplied to certain components was provided in Reference 2.

Status: Open. TVA will complete this item prior to restart.

References:
1. TVA letter to NRC, dated February 23, 1989, Browns Ferry Nuclear Plant (BFN), Sequoyah Nuclear Plant (SQN), and Watts Bar Nuclear Plant (WBN) - Response to Generic Letter 88-14 - Instrument Air Supply System Problems Affecting Safety-Related Equipment
2. TVA letter to NRC, dated July 30, 1993, Supplemental Response to Generic Letter (GL) 88-14, Instrument Air Supply System Problems Affecting Safety-Related Equipment

Generic Letter 88-20 - Initiation of the Individual Plant Examination for Severe Accident Vulnerabilities [TAC M74385]

Commitment: TVA committed to complete a Level 1 Probabilistic Risk Assessment (PRA) and containment analysis, in accordance with the requirements of Generic Letter 88-20, and submit the results by September 1, 1992.

Discussion: In Reference 1, the NRC staff requested all licensees perform an Individual Plant Examination (IPE) for severe accident vulnerabilities. TVA responded to this request in Reference 2. The IPE for BFN was forwarded to NRC on September 1, 1992 (Reference 3), as requested by Generic Letter 88-20. NRC requests for additional information were issued in References 4 and 6. TVA's responses were provided by References 5 and 7. The NRC Safety Evaluation for the BFN IPE was issued by Reference 8. Responses to the open items were provided in Reference 9.

Status: Complete.

References:

1. NRC letter to All Licensees, dated November 23, 1988, Individual Plant Examination for Severe Accident Vulnerabilities - 10 CFR 50.54(f)

2. TVA letter to NRC, dated October 30, 1989, Proposed Program in Response to Generic Letter 88-20 - Individual Plant Examination (IPE) for Severe Accident Vulnerabilities

3. TVA letter to NRC, dated September 1, 1992, Response to Generic Letter 88-20, Individual Plant Examination for Severe Accident Vulnerabilities

4. NRC letter to TVA, dated August 4, 1993, Request for Additional Information Regarding the Browns Ferry Unit 2 Individual Plant Examination

5. TVA letter to NRC, dated September 21, 1993, Response to Request for Additional Information Regarding the Individual Plant Examination (IPE)

6. NRC letter to TVA, dated November 19, 1993, Request for Additional Information Regarding the Browns Ferry Unit 2 Individual Plant Examination

7. TVA letter to NRC, dated December 23, 1993, Response to Request for Additional Information Regarding the Individual Plant Examination (IPE)

8. NRC letter to TVA, dated September 28, 1994, Individual Plant Examination Submittal for Internal Events

9. TVA letter to NRC, dated April 14, 1995, Multi-Unit Probabilistic Risk Assessment (PRA)

Generic Letter 88-20, Supplement 4 - Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities [TAC M83597]

Commitment: TVA will complete an Individual Plant Examination of External Events (IPEEE)

Discussion: In Reference 1, TVA described the BFN program and schedule for completing the internal fires, high winds, external floods, and transportation and nearby facility accidents portions of the IPEEE. TVA committed to:

1. Complete the internal fires IPEEE and provide a summary report to NRC within one hundred

twenty days after the restart of Unit 3 from its first refueling outage following restart.

2. Complete the high winds, external floods, and transportation and nearby facility accidents IPEEE for all three units and provide a summary report to NRC within one hundred twenty days after the restart of Unit 2 from the Cycle 7 refueling outage.

NRC acceptance of the methods and schedules for the addressed portions of the IPEEE was documented in Reference 2. Due, in part, to a request from NRC to expand the scope of the multi-unit Probabilistic Risk Assessment submittal, TVA rescheduled the portions of the IPEEE discussed in Item 2, above, to June 26, 1995 (Reference 6). This revised date was discussed with the NRC's Project Manager.

TVA provided its initial program and schedule for responding to the seismic portion of the IPEEE in Reference 3. NRC requested additional information on this subject in Reference 4, which TVA provided in Reference 5.

The summary report for the high winds, external floods, and transportation and nearby facility accidents IPEEE was provided by TVA in Reference 7.

Status: Open. The seismic portion of the IPEEE will be submitted by March 19, 1995. TVA will complete the internal fires IPEEE and provide a summary report to NRC within one hundred twenty days from its first refueling outage following restart.

References:

1. TVA letter to NRC, dated December 20, 1991, Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities (Generic Letter 88-20, Supplement 4)

2. NRC letter to TVA, dated July 2, 1992, Review of Response to Generic Letter 88-20, Supplement No. 4 - Individual Plant Examinations for External Events

3. TVA letter to NRC, dated September 21, 1992, Supplement 1 to Generic Letter 87-02, Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors, Unresolved Safety Issue (USI) A-46 and Supplement 4 to Generic Letter 88-20, Individual

Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities

4. NRC letter to TVA, dated November 19, 1992, Generic Letter 87-02, Supplement 1 Response

5. TVA letter to NRC, dated January 19, 1993, Generic Letter (GL) 87-02, Supplement 1, 120-Day Response, Request for Additional Information

6. TVA letter to NRC, dated January 19, 1995, Schedule for Submittal of the Expanded (Multi-Unit) Probabilistic Risk Assessment (PRA) and Portions of the Individual Plant Examination of External Events (IPEEE)

7. TVA letter to NRC, dated July 24, 1995, Browns Ferry Nuclear Plant - Generic Letter 88-20, Supplement 4, Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities - Partial Submittal of Report

Generic Letter 89-06 - Safety Parameter Display System [TAC M51225 & M73636]

Commitment: TVA will install and make operational a Safety Parameter Display System (SPDS) and certify that the SPDS fully meets the requirements of NUREG-0737, Supplement 1, taking into account the information provided in NUREG-1342.

Discussion: Certification that the BFN SPDS fully meets the requirements of NUREG-0737, Supplement 1, taking into account the information provided in NUREG-1342, was requested by Generic Letter 89-06 (Reference 1). TVA's commitment to implement an SPDS on Unit 2 before restart is contained in Reference 2. The final design description for the SPDS was provided by TVA in References 3 and 4. The initial Safety Evaluation Report (SER) of the SPDS design description was documented in Reference 5. TVA responded to the SER open items in Reference 6. NRC concluded in a Supplemental SER that TVA's SPDS design description fully met the requirements of NUREG-0737, Supplement 1 (Reference 7).

Status: Open. At the time of restart, the SPDS will be fully functional. The SPDS will be able to continuously monitor the status of all five of the critical safety functions by monitoring the

plant process parameters that are used for Emergency Operating Instruction entry conditions.

TVA will evaluate the performance of the SPDS and the new process computed during the power ascension test program and for a few weeks during normal operation. Pending the successful demonstration of the SPDS and process computer, TVA intends to declare the SPDS fully operational. This includes evaluating and certifying its compliance with the requirements of NUREG-0737, Supplement 1. TVA is committed to provide this certification within two months after the SPDS is declared fully operational. The certification includes completion of the Generic Letter 89-06 SPDS Certification Checklist, control room overview and workstation photographs, and color screen prints of the SPDS display screens.

References:

1. NRC letter to All Licensees of Operating Plants, Applicants for Operating Licenses and Holders of Construction Permits, dated April 12, 1989, Task Action Plan Item I.D.2 - Safety Parameter Display System - 10 CFR §50.54(f) - (Generic Letter No. 89-06)

2. TVA letter to NRC, dated April 7, 1987, Safety Parameter Display System (SPDS) - Schedule for Response to Request for Additional Information

3. TVA letter to NRC, dated October 22, 1990, Notification of Implementation of NUREG-0737 (TMI Action Plan), Item I.D.2.1, Safety Parameter Display System (SPDS), Phase I Installation and Final Design Description

4. TVA letter to NRC, dated December 11, 1990, Notification of Implementation of NUREG-0737 (TMI Action Plan), Item I.D.2.1, Safety Parameter Display System (SPDS), Final Design Description

5. NRC letter to TVA, dated March 6, 1991, Interim and Final Design of the Safety Parameter Display System at the Browns Ferry Nuclear Plant

6. TVA letter to NRC, dated December 17, 1991, Safety Parameter Display System (SPDS), Response to NRC Safety Evaluation Report (SER) Open Items

7. NRC letter to TVA, dated February 5, 1992, Safety Parameter Display System - Browns Ferry Nuclear Plant, Units 1, 2, and 3)

Generic Letter 89-08 - Erosion/Corrosion-Induced Pipe Wall Thinning [TAC M73459]

Commitment: TVA will complete Generic Letter 89-08 - Erosion/Corrosion-Induced Pipe Wall Thinning

Discussion: TVA responded to Generic Letter 89-08 in Reference 1 and committed to implement a long-term monitoring program (single and dual phase piping).

Status: Complete. Plant instructions for Unit 3 have been prepared and implemented for the dual phase and single phase flow monitoring requirements for Unit 3. These instructions require pipe wall thickness measurements each outage at established monitoring locations. They also provide direction on trending of data as well as engineering review for any necessary corrective action. The monitoring points were selected using the EPRI CHECWORKS program. The inspections in accordance with the instructions have been completed for Unit 3. Inspected components were either acceptable or maintenance was completed.

NRC has reviewed documentation to evaluate the Flow Accelerated Corrosion (FAC) program. Based on this review, NRC concluded that the erosion/corrosion program is acceptable for restart of Unit 3. This is documented in Reference 2.

References: 1. TVA letter to NRC, dated July 19, 1989, Response to Generic Letter 89-08 - Erosion/Corrosion-Induced Pipe Wall Thinning

2. NRC letter to TVA, dated September 8, 1995, NRC Inspection Report 95-41 [Section 3, page 5]

Generic Letter 89-10 - Safety-Related Motor-Operated Valve Testing and Surveillance [TAC M75637]

Commitment: TVA will complete Generic Letter 89-10 - Safety-Related Motor-Operated Valve Testing and Surveillance.

Discussion: TVA responded to Generic Letter 89-10 in Reference 1 and committed to implement a comprehensive motor operated valve program within the requested 5-year implementation schedule. Additional schedule information was provided by

NRC in Reference 2. TVA provided the 30-day response to Generic Letter 89-10, Supplement 3 by Reference 3 and informed the Staff that the plant specific safety assessment was available for review. TVA also responded to Reference 2 and informed the Staff in Reference 4 that the program description for implementing Generic Letter 89-10 was also available for review.

The 120-day response requested in Supplement 3 to the Generic Letter was provided by TVA in Reference 5. It states that no deficiencies were identified in the motor-operated valves for primary containment isolation for the High Pressure Coolant Injection and Reactor Core Isolation Cooling steam supply lines or the Reactor Water Cleanup water supply line.

In Reference 6, TVA clarified the implementation schedule for Unit 3. Based on test requirements and system configurations, it would be necessary to perform differential pressure testing on some motor operated valves during the power ascension test program. Consequently, TVA committed to complete the required testing within 30 days following the completion of the power ascension test program. This implementation schedule was acknowledged by the NRC Staff in Reference 7.

Status: Open. As previously committed, TVA will complete the required testing within 30 days following the completion of the power ascension test program.

References:

1. TVA letter to NRC, dated December 21, 1989, Browns Ferry Nuclear Plant (BFN), Sequoyah Nuclear Plant (SQN), and Watts Bar Nuclear Plant (WBN) - Response to Generic Letter 89-10 - Safety-Related Motor-Operated Valve (MOV) Testing and Surveillance

2. NRC letter to TVA, dated September 14, 1990, Response to Generic Letter 89-10. "Safety-Related Motor-Operated Valve Testing and Surveillance" for the Browns Ferry, Sequoyah, Watts Bar and Bellefonte Nuclear Plants (MPA B-110)

3. TVA letter to NRC, dated December 10, 1990, Response to Generic Letter (GL) 89-10, Supplement 3 - "Consideration of the Results of NRC-Sponsored Tests of Motor-Operated Valves" (MOV)

4. TVA letter to NRC, dated December 21, 1990, Response to Generic Letter 89-10. "Safety-Related Motor-Operated Valve Testing and Surveillance"

5. TVA letter to NRC, dated March 31, 1991, Response to Generic Letter (GL) 89-10, Supplement 3 - "Consideration of the Results of NRC-Sponsored Tests of Motor-Operated Valves" (MOV)

6. TVA letter to NRC, dated April 14, 1992, Generic Letter (GL) 89-10, "Safety-Related Motor-Operated Valve Testing and Surveillance" - Implementation Schedule

7. NRC letter to TVA, dated June 30, 1992, Implementation Schedule for Generic Letter 89-10

Generic Letter 89-13 - Service Water Systems Problems Affecting Safety-Related Equipment [TAC M73972]

Commitment: TVA will complete Generic Letter 89-13 - Service Water Systems Problems Affecting Safety-Related Equipment.

Discussion: TVA responded to Generic Letter 89-13 in Reference 1. Three of the near-term commitments were rescheduled in Reference 2. NRC was notified of the completion of the majority of the commitments made in response to Generic Letter 89-13 in Reference 3. The remaining commitment on Unit 3 was to verify that portions of the Residual Heat Removal Service Water (RHRSW) and Emergency Equipment Cooling Water (EECW) systems satisfied their design criteria.

Status: Complete. The RHRSW and EECW systems have been verified to meet their design criteria. Engineering has verified that both systems can perform their intended function as stated in the Updated Final Safety Analysis Report.

References: 1. TVA letter to NRC, dated March 16, 1990, Response to Generic Letter (GL) 89-13 Service Water System Problems Affecting Safety-Related Equipment

2. TVA letter to NRC, dated December 31, 1990, Generic Letter (GL) 89-13, Service Water System Problems Affecting Safety-Related Equipment

3. TVA letter to NRC, dated August 17, 1995, Browns Ferry Nuclear Plant (BFN) - Response to Generic Letter (GL) 89-13 - Service Water System (SWS) Problems Affecting Safety-Related Equipment

Generic Letter 89-16 - Installation of a Hardened Wetwell Vent [TAC M74860]

Commitment: TVA will complete Generic Letter 89-16 - Installation of a Hardened Wetwell Vent.

Discussion: In Reference 1, NRC requested Licensees with Mark I containments voluntarily install a hardened vent. In response, TVA committed to install a hardened vent prior to restart in Reference 2.

Status: Complete. TVA has installed the Hardened Wetwell Vent in Unit 3 as recommended by Generic Letter 89-16.

References:
1. NRC letter to All Operating Licensees with Mark I Containments, dated September 1, 1989, Installation of a Hardened Wetwell Vent (Generic Letter 89-16)
2. TVA letter to NRC, dated October 30, 1989, Response to Generic Letter 89-16 "Installation of Hardened Wetwell Vent"

Generic Letter 89-19 - Request for Action Related to Resolution of Unresolved Safety Issue A-47, "Safety Implication of Control Systems in LWR Nuclear Power Plants" [TAC M74917]

Commitment: TVA will complete Generic Letter 89-19 - Request for Action Related to Resolution of Unresolved Safety Issue A-47, "Safety Implication of Control Systems in LWR Nuclear Power Plants".

Discussion: TVA responded to Generic Letter 89-19 in Reference 1. A revised response was provided in Reference 2 and TVA committed to finalize the engineering calculations that forms the basis for the high vessel feedwater level switches setpoint. A request for additional information regarding TVA's conformance to the generic BWR Owners' group response was issued by NRC in Reference 3. In Reference 4, TVA stated that BFN was bounded by the BWR Owners' Group response and requested Generic Letter 89-19 be closed.

Status: Complete. The engineering calculation for the high vessel feedwater level switches setpoint has been completed and BFN is bounded by the BWR Owners' Group response.

NRC has reviewed TVA's August 29, 1994 reply and agrees that the inclusion of the reactor vessel overfill protection system is not required for BFN Units 1, 2, and 3. This is documented in Reference 5.

References:

1. TVA letter to NRC, dated May 4, 1990, Response to Generic Letter 89-19 - Request for Action Related to Resolution of Unresolved Safety Issue A-47, "Safety Implication of Control Systems in LWR Nuclear Power Plants"

2. TVA letter to NRC, dated August 17, 1990, Revised Response to Generic Letter (GL) 89-19 - Request for Action Related to Resolution of Unresolved Safety Issue A-47 "Safety Implication of Control Systems in LWR Nuclear Power Plants" and Notification of Commitment Completion

3. NRC letter to TVA, dated June 28, 1994, Request for Additional Information Regarding Generic Letter 89-19, "Safety Implication of Control Systems in LWR Nuclear Power Plants"

4. TVA letter to NRC, dated August 29, 1994, Reply to NRC Request for Additional Information Regarding Generic Letter (GL) 89-19

5. NRC letter to TVA, dated September 21, 1994, Response to Generic Letter 89-19 - Safety Implications of Control Systems Browns Ferry Nuclear Plant Units 1, 2, and 3

Generic Letter 91-06 - Resolution of Generic Issue A-30, "Adequacy of Safety-Related DC Power Supplies"

Commitment: TVA will add procedures to provide for reading the bus (250V DC unit and shutdown board batteries, and 125V DC diesel generator batteries) voltmeters and battery ammeters daily. In addition, TVA will provide response procedures for the associated alarms and indications.

Discussion: TVA responded to Generic Letter 91-06 in Reference 1.

Status: Complete. TVA clarified its commitments and notified NRC that the commitments were completed in Reference 2.

References:

1. TVA letter to NRC, dated October 28, 1991, Response to Generic Letter 91-06, Resolution of

Generic Issue (GI) A-30, Adequacy of Safety-Related DC Power Supplies

2. TVA letter to NRC, dated May 27, 1992, Supplemental Response to Generic Letter (GL) 91-06, Resolution of Generic Issue (GI) A-30, Adequacy of Safety-Related DC Power Supplies

Generic Letter 91-11 - Resolution of Generic Issues 48, "LCOs for Class 1E Vital Instrument Buses," and 49, "Interlocks and LCOs for Class 1E Tie Breakers"

Commitment: None.

Discussion: TVA responded to Generic Letter 91-11 in Reference 1.

Status: Complete. TVA concluded that the existing controls for Class 1E tie-breakers are sufficient to resolve the identified concerns.

References: 1. TVA letter to NRC, dated April 30, 1992, Generic Letter (GL) 91-11, Resolution of Generic Issues (GIs) 48, "LCOs for Class 1E Vital Instrument Buses," and 49, "Interlocks and LCOs for Class 1E Tie Breakers"

Generic Letter 92-01 - Reactor Vessel Structural Integrity, Revision 1, and Revision 1 Supplement 1 [TAC M83440 & M92651]

Commitment: TVA will submit a summary evaluation of the time and accumulated fluence during intervals of BFN operation below 525°F and its effect on the reference temperature and on the Charpy upper shelf energy.

Discussion: TVA provided an initial response to Generic Letter 92-01 in Reference 1 and made the commitment reiterated above. The summary evaluation of the time and accumulated fluence during intervals of BFN operation below 525°F was provided by TVA in Reference 2. Additional information was requested by the NRC Staff in Reference 3, which was provided by TVA in Reference 4.

In Reference 5, NRC requested TVA verify the data entered into the Reactor Vessel Integrity Database. TVA responded to this request in

References 6 and 7. Updated material and fluence data was provided by TVA in Reference 8.

Status: Open. In Reference 9, NRC requested Licensees verify the completeness of the information previously submitted by November 15, 1995. TVA's response is scheduled for that date.

References:

1. TVA letter to NRC, dated July 7, 1992, Browns Ferry Nuclear Plant (BFN), Sequoyah Nuclear Plant (SQN), and Watts Bar Nuclear Plant (WBN) - Response to generic Letter 92-01 (Reactor Vessel Structural Integrity)

2. TVA letter to NRC, dated December 1, 1992, Completion of Commitment Made in Response to Generic Letter 92-01, "Reactor Vessel Structural Integrity"

3. NRC letter to TVA, dated May 27, 1993, Request for Additional Information Regarding TVA Response to Generic Letter 92-01, Revision 1, "Reactor Vessel Structural Integrity"

4. TVA letter to NRC, dated August 2, 1993, Response to Request for Additional Information, Generic Letter 92-01, Revision 1

5. NRC letter to TVA, dated April 19, 1994, Generic Letter 92-01, Revision 1, "Reactor Vessel Structural Integrity"

6. TVA letter to NRC, dated May 23, 1994, TVA's Response to NRC's Letter Dated April 19, 1994, Generic Letter 92-01, Revision 1, "Reactor Vessel Structural Integrity"

7. TVA letter to NRC, dated July 28, 1994, Supplemental Response to TVA letter Dated May 23, 1994, Generic Letter 92-01, Revision 1, "Reactor Vessel Structural Integrity"

8. TVA letter to NRC, dated March 27, 1995, Generic Letter 92-01, Reactor Vessel Structural Integrity - Update to the Initial Reference Nil-Ductility Temperature (RT_{NDT}), Chemical Composition and Fluence Values

9. NRC letter to TVA, dated May 19, 1995, Reactor Vessel Structural Integrity

Generic Letter 92-04 - Resolution of the Issues Related to Reactor Vessel Water Level Instrumentation in BWRs [TAC M86884]

Commitment: TVA will continue to support the BWR Owners' Group (BWROG) program of analysis, testing, and development of possible hardware changes which is being conducted by the BWROG.

TVA will review the results of the BWROG program for potential training requirements for operators.

Discussion: TVA responded to Generic Letter 92-04 by Reference 1. Resolution of the water level instrumentation issue was addressed as part of the previous item entitled Bulletin 93-03 - Resolution of Issues Related to Reactor Vessel Water Level Instrumentation in BWRs.

Status: Refer to the previous item entitled Bulletin 93-03 - Resolution of Issues Related to Reactor Vessel Water Level Instrumentation in BWRs

References: 1. TVA letter to NRC, dated September 28, 1992, Response to Generic Letter (GL) 92-04 - Resolution of the Issues Related to Reactor Vessel Water Level Instrumentation in BWRs

Generic Letter 92-08 - Thermo-Lag 330-1 Fire Barriers [TAC M85525]

Commitment: TVA committed to:

1. Install isolation fuses in the 4KV Shutdown Board AC power circuit, and

2. Replace the Thermo-Lag material currently installed in the Intake Pumping Station.

Discussion: TVA responded to Generic Letter 92-08 in Reference 1. TVA requested an exemption from 10 CFR 50, Appendix R requirements for Residual Heat Removal Service Water (RHRSW) system power cables in the Intake Pumping Station and notified NRC of its intent to perform modifications that would allow BFN to comply with Section III.G of Appendix R without the use of Thermo-Lag 330-1 fire barrier systems. NRC denied TVA's request for an exemption to Appendix R. TVA performed the modifications to comply with Section III.G of Appendix R without the use of Thermo-Lag in all

areas except the Intake Pumping Station prior to Unit 2 Cycle 7 operation. In Reference 2, TVA notified NRC of a Thermo-Lag related problem affecting the availability of a required 4kV Shutdown Board. TVA committed to install isolation fuses in the AC power circuit and maintain a fire watch in the affected area until the modification was implemented. TVA implemented this modification prior to Unit 2 Cycle 8 operation.

In a separate letter (Reference 3) the Staff also requested additional information regarding long-term compliance with Appendix R and identified concerns regarding test results and criteria. TVA responded in Reference 4 and committed to complete the modifications necessary to bring the RHRSW system power cables into compliance with Appendix R by July 26, 1995.

An indictment of Thermal Science Incorporated and deficiencies in Thermo-Lag barriers installed at comanche peak resulted in an NRC request for additional information regarding Thermo-Lag materials and fire barriers at BFN (Reference 5). TVA responded in Reference 6, and committed to remove the Thermo-Lag material currently installed in the Intake Pumping Station and replace this material with new material obtained from the Watts Bar Nuclear Plant. TVA intends to complete this modification prior to performing reactor pressure vessel hydrostatic testing on Unit 3. This commitment supersedes the previous commitment to complete modifications necessary to bring the RHRSW system power cables into compliance with Appendix R (Reference 4).

Status: Open. TVA has installed isolation fuses in the 4KV Shutdown Board AC power circuit. The Thermo-Lag material currently installed in the Intake Pumping Station will be replaced prior to restart.

References:

1. TVA letter to NRC, dated May 10, 1993, Generic Letter (GL) 92-08 - Thermo-Lag 330-1 Fire Barriers, Revision 1

2. TVA letter to NRC, dated July 1, 1993, Generic Letter (GL) 92-08 - Thermo-Lag 330-1 Fire Barriers, Revision 1 (Supplement)

3. NRC letter to TVA, dated January 18, 1994, Denial of Exemption from Section III.G of Appendix R to 10 CFR Part 50 and Request for Additional Information

4. TVA letter to NRC, dated March 10, 1994, Response to Nuclear Regulatory Commission (NRC) Request for Additional Information Regarding Generic Letter 92-08, "Thermo-Lag 330-1 Fire Barriers"

5. NRC letter to TVA, dated December 22, 1994, Request for Additional Information Regarding Generic Letter 92-08, Issued Pursuant to 10 CFR 50.54(f)

6. TVA letter to NRC, dated March 22, 1995, Request for Additional (RAI) Information Regarding Generic Letter (GL) 92-08, "Thermo-Lag 330-1 Fire Barriers"

Generic Letter 94-02 - Long-Term Solutions and Upgrade of Interim Operating Recommendations for Thermal-Hydraulic Instabilities in Boiling Water Reactors

Commitment:

1. TVA will modify BFN operating procedures and training programs to make them consistent or more conservative than the interim BWR Owners' Group (BWROG) guidelines.

2. TVA will implement the BWROG Option III methodology for the stability long-term solution. This is a post Unit 3 restart commitment.

Discussion: TVA responded to Generic Letter 94-02 in Reference 1. In Reference 2, TVA notified NRC that the Unit 3 procedure revisions would be completed prior to restart.

Status: Open. TVA has implemented the interim BWROG guidelines into plant procedures. Implementation of the BWROG Option III methodology for the stability long-term solution for Unit 3 will not be completed prior to restart (Reference 1). TVA's confirmation of the installation schedule was provided in Reference 3.

References:

1. TVA letter to NRC, dated September 8, 1994, Response to NRC Generic Letter (GL) 94-02 - Long-Term Solutions and Upgrade of Interim Operating Recommendations for Thermal-Hydraulic Instabilities in Boiling Water Reactors

2. TVA letter to NRC, dated December 22, 1994, NRC Generic Letter (GL) 94-02, Long-Term Solutions and Upgrade of Interim Operating Recommendations for Thermal-Hydraulic Instabilities in Boiling Water Reactors - Completion of Requested Action 1, Interim Corrective Actions

3. TVA letter to NRC, dated October 4, 1995, Browns Ferry Nuclear Plant (BFN) - Units 1, 2, and 3 - TVA Confirmation of the Installation Schedule for the Stability Long-Term Solution for NRC Generic Letter (GL) 94-02

Generic Letter 94-03 - Intergranular Stress Corrosion Cracking of Core Shrouds in Boiling Water Reactors

Commitment: None.

Discussion: TVA performed core shroud inspections in Unit 3 during June and July 1994. The results of the Unit 3 inspections indicated that severe core shroud cracking is not occurring at BFN. TVA analyzed the Unit 3 inspection results and determined that Unit 3 can safely be returned to service and operated for at least one cycle of operation without repairs. The results of the Unit 3 inspection were provided as part of TVA's response to Generic Letter 94-03 (Reference 1). The NRC's Safety Evaluation is contained in Reference 2.

Status: Complete. NRC has reviewed TVA's actions regarding Generic Letter 94-03. TVA's actions for long-term mitigation of Intergranular Stress Corrosion Cracking (IGSCC) of Unit 3 reactor vessel internals were found to be aggressive and satisfactory. Based on this review, no IGSCC issues were found that would negatively impact Unit 3 restart. This is documented in Reference 3.

References: 1. TVA letter to NRC, dated August 23, 1994, Response to NRC Generic Letter (GL) 94-03 - Intergranular Stress Corrosion Cracking (IGSCC) of Shrouds in Boiling Water Reactors

2. NRC letter to TVA, dated January 13, 1995, Browns Ferry Nuclear Plant Units 1, 2, and 3 Safety Evaluation of Response to Generic Letter 94-03 (IGSCC of Core Shroud in BWRs)

3. NRC letter to TVA, dated August 30, 1995, NRC Inspection Report 95-44 [Section 3.b., page 6]

Generic Safety Issue 40 (MPA B-065) - Safety Concerns Associated with Pipe Breaks in the BWR Scram System [TAC M43736]

Commitment: TVA will complete Generic Safety Issue (GSI) 40 (MPA B-065) - Safety Concerns Associated with Pipe Breaks in the BWR Scram System.

Discussion: NRC closure of this GSI was documented in Generic Letter 86-01, Safety Concerns Associated with Pipe Breaks in the BWR Scram System. During the preparation of BFN's response to Generic Letter 90-04, Request for Information on the Status of Licensee Implementation of Generic Safety Issues Resolved with Impositions of Requirements or Corrective Actions, TVA identified a discrepancy between TVA's programs and the NRC assumptions which were the basis for the closure of GSI 40. Specifically, NRC cited leak testing recommended by the Boiling Water Reactor Owners Group (BWROG) in BWROG-8420. In order to resolve this issue, TVA revised the Abnormal Operating Instruction (AOI) for Reactor Scram to require the scram discharge volume be visually inspected for leaks within 30 minutes of the first reactor scram, following a refueling outage, from rated temperature and pressure (Reference 1).

Status: Complete. TVA has revised the Unit 3 AOI for Reactor Scram to require this walkdown. However, TVA is currently pursuing a revision to this commitment to allow leak inspection of the scram discharge volume piping during refueling outages in lieu of the post-scram walkdown. This method, if utilized, will include justification of adequacy based upon NRC's assumptions in Generic Letter 86-01.

References: 1. TVA letter to NRC, dated October 1, 1990, Browns Ferry Nuclear Plant (BFN) - Safety Concerns Associated with Pipe Breaks in the Boiling Water Reactor (BWR) Scram System (GSI 40 and Generic Letter 86-01)

Generic Safety Issue 41 (MPA B-058) - BWR Scram Discharge Volume System [TAC M51014]

Commitment: TVA will complete Generic Safety Issue (GSI) 41 (MPA B-058) - BWR Scram Discharge Volume System.

Discussion: The NRC Staff's Generic Safety Evaluation regarding the BWR Scram Discharge System was issued by Reference 1. TVA provided a description of the long term scram discharge volume modifications in Reference 2. NRC issued an Order to TVA on June 24, 1983 (Reference 3),

to require the installation of the long term modifications.

TVA's previous analysis of the Unit 2 scram discharge system indicated that a successful scram would be achieved without the scram pilot air header low pressure switches, provided that the Control Rod Drive (CRD) stall flow rate and the scram discharge volume water level instrumentation response characteristics remain within acceptable limits. TVA has noted higher CRD stall flow rates during the first part of the operating cycle following a refueling outage, which preclude conformance with these acceptance limits.

Therefore, a revision to the long term modifications was provided by Reference 4. TVA determined that a design change notice would be implemented on Unit 3 to install a qualified scram pilot air header low pressure switch scram function prior to restart. However, TVA continues to pursue the overall reactor protection system design issue and the long-term need for the scram pilot air header low pressure trip function. In addition, TVA would also submit a proposed Unit 3 Technical Specification amendment that adds the scram pilot air header low pressure switch scram function. The associated Technical Specification changes were requested by Reference 5 and supplemented by Reference 6. NRC approval of the proposed Technical Specification was provided in Reference 7.

Status: Complete. TVA has performed the required modifications.

References:

1. NRC letter to All BWR Licensees, dated December 9, 1980, BWR Scram Discharge System

2. TVA letter to NRC, dated October 6, 1982, in regards to the Scram Discharge System Long Term Modifications

3. NRC letter to TVA, dated June 24, 1983, in regards to Confirmatory Order for the Scram Discharge System Long Term Modifications

4. TVA letter to NRC, dated April 28, 1995, Description of BWR Scram Discharge Volume Long-Term Modifications and Withdrawal of Technical Specification (TS) No. 312

5. TVA letter to NRC, dated May 11, 1995, Technical Specification (TS) No. 359 - Scram Pilot Air Header Low Pressure Trip

6. TVA letter to NRC, dated June 30, 1995, Supplemental Information for Proposed Technical Specification (TS) No. 359 - Scram Pilot Air Header Low Pressure Trip

7. NRC letter to TVA, dated August 29, 1995, Issuance of Technical Specification Amendments for the Browns Ferry Nuclear Plant Units 1, 2, and 3 (TAC Nos. M92315, 92316, and 92317) (TS) 359.

Generic Safety Issue 43 (MPA B-107) - Reliability of Air Systems [TAC M71633]

Commitment: TVA will complete Generic Safety Issue (GSI) 43 (MPA B-107) - Reliability of Air Systems.

Discussion: The resolution of GSI 43 was addressed as part of Generic Letter 88-14. Refer to the previous topic entitled Generic Letter 88-14 - Instrument Air Supply System Problems Affecting Safety-Related Equipment for the additional discussion of this item.

Status: Refer to the previous topic entitled Generic Letter 88-14 - Instrument Air Supply System Problems Affecting Safety-Related Equipment.

References: None.

Generic Safety Issue 51 (MPA L-913) - Improving the Reliability of Open-Cycle Service Water Systems [TAC M73972]

Commitment: TVA will complete Generic Safety Issue (GSI) 51 (MPA L-913) - Improving the Reliability of Open-Cycle Service Water Systems.

Discussion: The resolution of GSI 51 was addressed as part of Generic Letter 89-13. Refer to the previous topic entitled Generic Letter 89-13 - Service Water Systems Problems Affecting Safety-Related Equipment.

Status: Refer to the previous topic entitled Generic Letter 89-13 - Service Water Systems Problems Affecting Safety-Related Equipment.

References: None.

HVAC Duct Supports [TAC M82127 and R00300]

Commitment: The HVAC Duct Supports program will be implemented in accordance with the Unit 2 precedent.

Discussion: The approval of the program for the seismic qualification of HVAC duct supports is contained in NUREG-1232 (Reference 1). The design criteria for the seismic qualification of the HVAC and supports was submitted in Reference 2. The NRC staff's Safety Evaluation Report (SER) on the criteria was included in Reference 3.

Status: Complete. For Unit 3, a review was performed to identify the areas of Class I HVAC ductwork that were not previously qualified for Unit 2 operation. The only areas specific to Unit 3 thus identified were the ductwork associated with the pump motor coolers for the Unit 3 Residual Heat Removal system and Core Spray system. Based upon the seismic qualification calculations, modifications were completed as necessary to ensure that this ductwork was qualified to the long term requirements of the design criteria.

NRC has reviewed design change notices and performed walkdown inspections of the HVAC duct supports that were modified on Unit 3. Based on the results of this review, the inspector concluded that this issue is resolved for Unit 3 restart. This is documented in Reference 4.

References:

1. NRC letter to TVA, dated January 23, 1991, NUREG-1232, Volume 3, Supplement 2 - Browns Ferry, Unit 2, Section 2.2.2.4 (Page 2-5)
2. TVA letter to NRC, dated November 15, 1991, Heating, Ventilation and Air Conditioning (HVAC) Seismic Design Criteria
3. NRC letter to TVA, dated July 16, 1992, Evaluation of Seismic Design Criteria for Heating Ventilation and Air Conditioning
4. NRC letter to TVA, dated October 12, 1995, NRC Inspection Report 95-52 [Section 3.3, page 4]

Instrument Sensing Lines [TAC M80017]

Commitments:
1. The H_2O_2 analyzers will be modified in accordance with the Unit 2 precedent.
2. Where satisfactory operation can not be justified, the sensing lines will be reworked.
3. The 10 CFR 50, Appendix R, FSAR Appendix M, and Generic Evaluation of Internally Generated Missiles programs will require evaluations to maintain the integrity of instrument sense line separation.

Discussion: The action plan for dispositioning instrument sensing line issues, including a discussion of lessons learned from the Unit 2 precedent, was provided in Reference 1. Additional information regarding the similarity of the routing of instrument sensing lines between Unit 2 and Unit 3 was provided in Reference 2. In Reference 3, NRC concluded that the program to address concerns related to instrument sensing lines was adequate.

Status: Open. Sense lines were evaluated and either justified for use-as-is, or modified as required. The remaining issues will be completed prior to restart.

References:
1. TVA letter to NRC, dated February 13, 1991, Action Plan to Disposition Concerns Related to Instrument Sensing Lines for Units 1 and 3
2. TVA letter to NRC, dated November 8, 1991, Physical Separation of Instrument Sensing Lines in Units 1 and 3
3. NRC letter to TVA, dated December 10, 1991, Safety Evaluation - TVA Action Plan to Resolve Concerns Related to Instrument Sensing Lines for the Browns Ferry Nuclear Plant, Units 1 and 3

Instrument Tubing [TAC M80036]

Commitment: Safety related instrument tubing will be seismically qualified to meet the final design criteria.

Discussion: The action plan for dispositioning concerns regarding the seismic qualification of instrument

tubing, including a discussion of lessons learned from the Unit 2 precedent, was provided in Reference 1. Additional information regarding inspection attributes and sampling sizes was provided in Reference 2. In Reference 3, NRC concluded that the program was an acceptable basis for restart of Unit 3 provided that the licensee also evaluates the instrument tubing populations in all units for any new attributes which may be identified during the implementation of the revised program.

Status: Open. The affected systems/supports have been analyzed for Seismic Class I qualification and necessary modifications have been initiated. The majority of these modifications have been completed with the remainder to be completed prior to restart.

References:

1. TVA letter to NRC, dated February 27, 1991, Action Plan to Disposition Concerns Regarding the Seismic Qualification of Units 1 and 3 Instrument Tubing

2. TVA letter to NRC, dated December 12, 1991, Small Bore Piping Program, Tubing, and Conduit Support Plans for Units 1 and 3 - Additional Information.

3. NRC letter to TVA, dated February 4, 1992, Safety Evaluation of Small Bore Piping and Seismic Qualification of Instrument Tubing Programs for Browns Ferry Nuclear Plant, Units 1 and 3

Intergranular Stress Corrosion Cracking (IGSCC)

Commitment: The Intergranular Stress Corrosion Cracking (IGSCC) program will be implemented in accordance with the Unit 2 precedent.

Discussion: Refer to previous topic entitled Generic Letter 88-01 - NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping.

Status: Refer to previous topic entitled Generic Letter 88-01 - NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping.

References: None.

Long Term Torus Integrity Program [TAC M07391 and M80686]

Commitment: TVA committed to:

1. The resolution of torus attached piping support discrepancies will be implemented, in accordance with the Unit 2 criteria and will use the configurational attributes from the Unit 2 implementation precedent.

2. The inspection of safety-related torus and torus related structures will exclude the four attributes which did not result in modifications on Unit 2. With the exception of these four attributes, the resolution of discrepancies on the safety-related torus and torus related structures will be implemented, in accordance with the Unit 2 criteria and implementation precedent.

3. The inspection of the non-safety-related catwalk will be limited to welds and bolted connections associated with maintaining the integrity of the safety related structures. The resolution of catwalk discrepancies will be in accordance with the Unit 2 criteria.

Discussion: The action plan for dispositioning the long-term torus integrity issue was provided in Reference 1 and approved by NRC in Reference 2.

Status: Complete. TVA has performed modifications to resolve torus attached piping support discrepancies, safety-related torus and torus related structure discrepancies, and non safety-related catwalk discrepancies in accordance with the Unit 2 precedent.

NRC has reviewed design criteria, design calculations and completed modifications for torus attached piping and pipe supports. Based on this review, the inspector concluded that this issue is resolved for Unit 3 restart. This is documented in Reference 3.

References:

1. TVA letter to NRC, dated April 29, 1991, Program for Resolving Long-Term Torus Integrity Issue Prior to the Restart of Units 1 and 3

2. NRC letter to TVA, dated February 10, 1992, Evaluation of Long-Term Torus Integrity Program for Browns Ferry Nuclear Plant, Units 1 and 3

3. NRC letter to TVA, dated October 12, 1995, NRC Inspection Report 95-52 [Section 3.6, page 6]

Lower Drywell Platforms and Miscellaneous Steel [TAC M80620, R00297 and R00303]

Commitment: The lower drywell steel platforms and miscellaneous steel will be evaluated and modified, if required, to meet the design criteria.

Discussion: The action plan for dispositioning the Lower Drywell Platforms and Miscellaneous Steel issue was provided in Reference 1. Additional information requested by the Staff was provided in Reference 2. Additional information was requested by the Staff in Reference 3 and provided by TVA in Reference 4.

An NRC position regarding the design criteria was issued by Reference 5 and a subsequent Safety Evaluation and request for additional information was issued as Reference 6. This additional information was provided by TVA in Reference 7.

A supplemental Safety Evaluation was issued by NRC in Reference 8. Additional information was provided by TVA in References 9 and 10. The final Safety Evaluation was issued in Reference 11 and the issue closed after an audit of the design criteria implementation as documented in Reference 12.

Status: Complete.

References:

1. TVA letter to NRC, dated June 12, 1991, Corrective Action Plan and Design Criteria for Lower Drywell Steel Platforms and Miscellaneous Steel
2. TVA letter to NRC, dated November 8, 1991, Seismic Design Criteria for Lower Drywell Steel Platforms and Miscellaneous Steel
3. NRC letter to TVA, dated December 12, 1991, Request for Additional Information Regarding Browns Ferry Drywell and Miscellaneous Steel Design Criteria
4. TVA letter to NRC, dated February 6, 1992, Lower Drywell Platforms and Miscellaneous Steel Seismic Criteria

5. NRC letter to TVA, dated March 19, 1992, NRC Staff Position on Proposed Ductility Ratio Design Criteria

6. NRC letter to TVA, dated July 13, 1992, Safety Evaluation and Request for Additional Information Regarding Browns Ferry Nuclear Plant Units 1, 2, and 3 Design Criteria for Lower Drywell Steel Platforms and Miscellaneous Steel

7. TVA letter to NRC, dated July 31, 1992, Response to Request for Additional Information Regarding Design Criteria for Lower Drywell Steel Platforms and Miscellaneous Steel

8. NRC letter to TVA, dated October 29, 1992, Supplemental Safety Evaluation of Steel Design Criteria for the Browns Ferry Nuclear Power Plant

9. TVA letter to NRC, dated September 30, 1992, Resolution of the Thermal Growth Issue Outside Containment

10. TVA letter to NRC, dated June 29, 1993, Resolution of the Thermal Growth Issue

11. NRC letter to TVA, dated December 7, 1993, Supplemental Safety Evaluation of Structural Steel Thermal Growth Design Criteria

12. NRC letter to TVA, dated April 20, 1994, Audit of Structural Steel Design Criteria Implementation

Miscellaneous Steel Frames

Commitment: The lower drywell steel platforms and miscellaneous steel will be evaluated and modified, if required, to meet the design criteria.

Discussion: Refer to the item discussed above, entitled Lower Drywell Platforms and Miscellaneous Steel

Status: Refer to the item discussed above, entitled Lower Drywell Platforms and Miscellaneous Steel

References: None.

Moderate Energy Line Break (MELB)

Commitment: The Moderate Energy Line Break (MELB) program will be implemented in accordance with the Unit 2 precedent.

Discussion: As part of the restart effort on Unit 2, TVA committed to review the effects of flooding due to breaks in moderate energy lines outside primary containment.

Status: Complete. The critical plant features that are required to mitigate or limit the consequences of moderate energy piping failures exist in the current BFN design. The results of the evaluation concluded that Browns Ferry Unit 3 conforms to the original licensing basis for MELB flooding and that the existing flooding studies and protective measures are adequate to justify continued operations.

NRC has reviewed assumptions for MELB analysis, design methodology, design input data and design analysis. Based on this review, the inspector concluded that the MELB program is acceptable for Unit 3 restart. This is documented in Reference 1.

References: 1. NRC letter to TVA, dated October 12, 1995, NRC Inspection Report 95-52 [Section 3.2, page 3]

Multi-Plant Action Item A-01 - 10 CFR 50.55A(G) - Inservice Inspection

Commitment: TVA will complete Multi-Plant Action Item A-01 - 10 CFR 50.55A(G) - Inservice Inspection.

Discussion: 10 CFR 50.55a(g) requires that American Society of Mechanical Engineers (ASME) Code components meet the requirements of ASME Section XI, Rules for Inservice Inspection (ISI). A subsection of this regulation requires the ISI program be updated every 10 years to meet the requirements of the latest approved applicable edition and addenda of Section XI in effect 12 months before the start of the next 120-month inspection interval. The code also provides for an extension of the interval for extended periods of facility downtime.

As discussed in Reference 1, TVA proposed the extension of the first ten-year interval until

one year after restart. BFN will complete the first ten-year interval ISI examinations and pressure tests before startup from the current outage. The year following startup allows time for adoption of a new code, program preparation, preparation of implementing instructions, program submittal to NRC, and NRC review and approval. The NRC Staff found this proposal to be acceptable in Reference 2.

Status: Complete. The ISI Program is in place.

References:
1. TVA letter to NRC, dated March 1, 1988, Extension of Ten-Year Inservice Inspection Interval
2. NRC letter to TVA, dated October 20, 1993, Second 10-Year Interval Inservice Inspection Program Plan and Associated Requests for Relief

Multi-Plant Action Item A-04 - 10 CFR 50, Appendix J - Containment Leak Testing [TAC M08717]

Commitment: TVA will complete Multi-Plant Action Item A-04 - 10 CFR 50, Appendix J - Containment Leak Testing.

Discussion: In Reference 1, NRC requested additional information regarding Units 1 and 3 conformance with NUREG-0737, Item II.E.4.2 and 10 CFR 50, Appendix J. In order to minimize the number and scope of updates that would have to be provided to NRC on this issue, TVA replied in Reference 2 using the anticipated configuration at the time of the restart of Unit 3. NRC approval of the Unit 3 containment isolation design is provided in Reference 3. Changes to the preliminary information, including corrections to information previously provided on Unit 2, was provided by TVA in Reference 4. NRC requested additional information in Reference 5, which was provided by TVA in Reference 6 and approved by NRC in Reference 7.

Status: Complete.

References:
1. NRC letter to TVA, dated May 5, 1992, Request for Additional Information to Review Browns Ferry Nuclear Plant Units 1 and 3 Compliance with NUREG-0737 Item II.E.4.2 and 10 CFR 50, Appendix J
2. TVA letter to NRC, dated September 1, 1992, Response to NRC Request for Additional Information Regarding Units 1 and 3 Conformance

with NUREG-0737, Item II.E.4.2 and 10 CFR 50, Appendix J

3. NRC letter to TVA, dated January 6, 1995, Browns Ferry Nuclear Plant Units 1 and 3 - NUREG-0737, Item II.E.4.2, Containment Isolation Dependability

4. TVA letter to NRC, dated August 3, 1995, Supplemental Information for Conformance With NUREG-0737, Item II.E.4.2 And 10 CFR 50, Appendix J (TAC NOS. M74615 And M74616).

5. NRC letter to TVA, dated October 3, 1995, Browns Ferry Nuclear Plant Units 2 and 3 - Request for Additional Information: Conformance with NUREG-0737 Item II.E.4.2 and 10 CFR 50, Appendix J (TAC NOS. M74615 and M74616)

6. TVA letter to NRC, dated October 4, 1995, Browns Ferry Nuclear Plant (BFN) - Units 2 and 3 - Supplemental Information for Conformance with NUREG-0737, Item II.E.4.2 and 10 CFR 50, Appendix J (TAC NOS. M74615 and M74616)

7. NRC letter to TVA, dated October 18, 1995, Browns Ferry Nuclear Plant Units 2 and 3 - Supplemental Information: Conformance with NUREG-0737 Item II.E.4.2 and 10 CFR 50, Appendix J (TAC NOS. M74615 and 74616)

Multi-Plant Action Item B-41 - 10 CFR 50, Appendix R - Fire Protection [TAC M48136]

Commitment: TVA will complete Multi-Plant Action Item B-41 - 10 CFR 50, Appendix R - Fire Protection.

Discussion: Refer to the previous topic entitled Fire Protection/10 CFR 50, Appendix R.

Status: Refer to the previous topic entitled Fire Protection/10 CFR 50, Appendix R.

References: None.

Multi-Plant Action Item C-10 - Control of Heavy Loads - Phase I (NUREG-0612) [TAC M08348]

Commitment: TVA will complete Multi-Plant Action Item C-10.

Discussion: In December 1980 (Reference 1), NRC issued a Generic Letter which disseminated NUREG-0612, Control of Heavy Loads at Nuclear Power Plants, and requested utilities provide additional information. TVA's responses to this request included References 2 and 3. NRC's closure of Control of Heavy Loads (Phase I) was contained in Reference 4. The generic closure of Phase II of Control of Heavy Loads was issued by NRC in Reference 5.

Status: Complete. TVA has performed the required modifications.

NRC has reviewed the program for handling critical loads and considers this issue closed for Unit 3. The results are documented in Reference 6.

References:

1. NRC letter to All Licensees of Operating Plants ad Applicants for Operating Licenses and Holders of Construction Permits, dated December 22, 1980, Control of Heavy Loads
2. TVA letter to NRC, dated January 6, 1984, in regards to NUREG-0612
3. TVA letter to NRC, dated April 4, 1984, in regards to NUREG-0612
4. NRC letter to TVA, dated June 6, 1984, Control of Heavy Loads (Phase I)
5. NRC letter to All Licensees for Operating Reactors, dated June 26, 1985, Completion of Phase II of "Control of Heavy Loads at Nuclear Power Plants", NUREG-0612 (Generic Letter 85-11)
6. NRC letter to TVA, dated August 7, 1995, NRC Inspection Report 95-38 [Section 6.f., page 16]

Multi-Plant Action Item C-11 - Reactor Protection System Power Supply [TAC M08931]

Commitment: TVA will replace the General Electric (GE) molded case circuit breakers that are used on the output of the reactor protection system (RPS) motor-generator (MG) sets. The replacement breakers provide undervoltage, overvoltage and underfrequency protection by utilizing a combination of contactors and relays.

Discussion: In Reference 1, NRC informed TVA of deficiencies identified in the design of the voltage regulator system of the motor generator sets which supply power to the reactor protection system at another facility. TVA responded in Reference 2. In Reference 3, the NRC Staff recommended that TVA implement modifications similar to those performed at the Hatch facility. In response, TVA committed to install a Class IE RPS power supply in Reference 4.

NRC requested additional information and proposed Technical Specification changes in Reference 5. The requested information and proposed Technical Specifications for Unit 1 were provided by TVA in Reference 6. Additional information was requested by the NRC Staff in Reference 7 and provided by TVA in Reference 8. Additional information was requested by the NRC Staff in Reference 9 and provided by TVA in Reference 10. NRC Staff acceptance of TVA's modifications was documented in Reference 11.

The associated Technical Specifications were proposed by TVA in Reference 12. NRC requested additional information in Reference 13, which TVA provided in Reference 14. The proposed Technical Specifications were approved in Reference 15.

Status: Complete. TVA installed two Class 1E detection and isolation assemblies in each of the three sources of power to the RPS. Each assembly includes a circuit breaker and a monitoring module consisting of an undervoltage, an overvoltage and an underfrequency sensing relay. The protective assembly relays operate to disconnect the abnormal source of supply from the RPS bus.

NRC has reviewed related documentation and the Unit 3 modifications to the RPS power supply. Based on this review, the inspector considers this issue is closed for Unit 3. This is documented in Reference 16.

References:

1. NRC letter to TVA, dated August 7, 1978, in regards to Reactor Protection System Power Supply Deficiencies

2. TVA letter to NRC, dated December 13, 1978, in regards to Reactor Protection System Power Supplies

3. NRC letter to TVA, dated September 24, 1980, in regards to Reactor Protection System Power Supply Deficiencies

4. TVA letter to NRC, dated December 4, 1980, in regards to Reactor Protection System Power Supplies

5. NRC letter to TVA, dated October 30, 1981, Reactor Protection System (RPS) Power Monitoring System Design Modifications

6. TVA letter to NRC, dated July 13, 1983, in regards to Unit 1 Cycle 6 Technical Specifications

7. NRC letter to TVA, dated October 12, 1983, Reactor Protection System (RPS) Power Monitoring System Design Modifications

8. TVA letter to NRC, dated August 9, 1984, in regards to Reactor Protection System (RPS) Power Monitoring System Design Modifications

9. NRC letter to TVA, dated October 31, 1984, Reactor Protection System (RPS) Power Monitoring System Design Modifications

10. TVA letter to NRC, dated March 1, 1985, in regards to Reactor Protection System (RPS) Power Monitoring System Design Modifications

11. NRC letter to TVA, dated June 27, 1985, Reactor Protection System (RPS) Power Monitoring System Design Modifications

12. TVA letter to NRC, dated June 4, 1990, TVA BFN Technical Specification (TS) No. 286 - Reactor Protection System (RPS) Circuit Protector Trip Level Setpoint

13. NRC letter to TVA, dated September 27, 1990, Request for Additional Information - Browns Ferry Technical Specification Amendment (TS 286) Regarding Reactor Protection System Circuit Protection Trip Level Setpoints

14. TVA letter to NRC, dated October 24, 1990, TVA BFN Technical Specification (TS) No. 286 - Reactor Protection System (RPS) Circuit Protector Trip Level Setpoint - Response to Request for Additional Information

15. NRC letter to TVA, dated January 3, 1991, Issuance of Amendments (TS 286)

16. NRC letter to TVA, dated October 13, 1995, NRC Inspection Report 95-51 [Section 5.4, page 30]

Multi-Plant Action Item D-25 - Relocation of Radiological Effluent Technical Specifications

Commitment: TVA will complete MPA D-25 - Relocation of Radiological Effluent Technical Specifications (RETS).

Discussion: In accordance with the guidelines provided in Generic Letter 89-01, TVA submitted a proposed Technical Specification amendment for the relocation of the RETS in Reference 2. Additional information was provided by TVA in References 3 and 4.

Status: Complete. NRC approval of the relocation of RETS is contained in Reference 5.

References:

1. NRC letter to All Power Reactor Licensees and Applicants, dated January 31, 1989, Implementation of Programmatic Controls for Radiological Effluent Technical Specifications in the Administrative Controls Section of the Technical Specifications and the Relocation of Procedural Details of RETS to the Offsite Dose Calculation Manual or to the Process Control Program (Generic Letter 89-01)

2. TVA letter to NRC, dated March 25, 1992, TVA BFN Technical Specification (TS) No. 301, Implementation of the Guidance of GL 89-01

3. TVA letter to NRC, dated January 29, 1993, Technical Specification (TS) No. 301 - Supplement 1, Implementation of the Guidance of Generic Letter (GL) 89-01 - Units 1, 2, and 3

4. TVA letter to NRC, dated August 27, 1993, Clarifications for Proposed Technical Specification No. 301

5. NRC letter to TVA, dated September 22, 1993, Issuance of Amendments (TS 301)

NUREG-0737 (TMI Action Plan), Action Item I.D.1 - Control Room Design Review [TAC M45778 & M56106]

Commitment: TVA will complete NUREG-0737 (TMI Action Plan) Action Item I.D.1 - Control Room Design Review.

Discussion: Pursuant to NUREG-0737 (TMI Action Plan) and Supplement 1, TVA provided its Control Room Design Review (CRDR) corrective action plan and commitments to NRC by letter, dated December 30, 1986, and supplemented by letter, dated November 9, 1988 (References 1 and 2). In Reference 3, TVA also committed to complete all safety and non-safety significant Human Engineering Discrepancies (HEDs) prior to the restart of Units 1 and 3. The final Safety Evaluation Report (SER) for the BFN CRDR was provided in Reference 4.

As part of the BFN Operating and Maintenance Cost Reduction Program, TVA submitted a Cost Beneficial Licensing Action to discontinue the cost-benefit analysis of non-safety significant HEDs (Reference 5). NRC approval of this request was contained in Reference 6.

Status: Open. TVA will complete this item prior to restart.

References:

1. TVA letter to NRC, dated December 30, 1986, Detailed Control Room Design Review (DCRDR) - NUREG-0737, Item I.D.1

2. TVA letter to NRC, dated November 9, 1988, Response to NRC Safety Evaluation for the BFN Detailed Control Room Design Review (DCRDR)

3. TVA letter to NRC, dated August 22, 1991, Supplemental Response to NRC Safety Evaluation for the BFN Detailed Control Room Design Review (DCRDR)

4. NRC letter to TVA, dated October 29, 1991, Safety Evaluation of the Browns Ferry Nuclear Plant Detailed Control Room Design Review

5. TVA letter to NRC, dated December 15, 1993, Operating & Maintenance (O&M) Cost Reduction Program - Cost Beneficial Licensing Action - Revision of Detailed Control Room Design Review (DCRDR) Program to Discontinue Cost-Benefit Analysis of Non-Safety Significant Human Engineering Discrepancies (HEDs)

6. NRC letter to TVA, dated February 4, 1994, Revision of Detailed Control Room Design Review Program to Discontinue Cost-Benefit Analysis of Non-Safety Significant Human Engineering Discrepancies

NUREG-0737 (TMI Action Plan), Action Item I.D.2 - Safety Parameter Display Console [TAC M51225 & M74612]

Commitment: TVA will complete NUREG-0737 (TMI Action Plan) Action Item I.D.2 - Safety Parameter Display Console.

Discussion: Refer to the previous item entitled Generic Letter 89-06 - Safety Parameter Display System - 10 CFR 50.54(f).

Status: Refer to the previous item entitled Generic Letter 89-06 - Safety Parameter Display System - 10 CFR 50.54(f).

References: None.

NUREG-0737 (TMI Action Plan), Action Item II.B.3 - Post-Accident Sampling System [TAC M44425, M74613, M74614 & M74617]

Commitment: TVA will complete NUREG-0737 (TMI Action Plan) Action Item II.B.3 - Post-Accident Sampling System (PASS)

Discussion: A description on the BFN PASS design was provided in References 1 and 2. The Safety Evaluation Report for this system was provided by Reference 3.

Status: Open. The PASS has been installed. The testing of the system, with the exception of the containment atmosphere, was completed. Testing of the containment atmosphere will be accomplished during power ascension testing.

References:

1. TVA letter to NRC, dated December 19, 1986, NUREG-0737, Item II.B.3 - Postaccident Sampling System
2. TVA letter to NRC, dated April 1, 1987, NUREG-0737, Item II.B.3 - Postaccident Sampling System
3. NRC letter to TVA, dated May 27, 1987, Post Accident Sampling System

NUREG-0737, (TMI Action Plan), Action Item II.E.4.2.1-4 - Containment Isolation Dependability - Implement Diverse Isolation [TAC M74615]

Commitment: TVA will complete NUREG-0737 (TMI Action Plan) Action Item II.E.4.2.1-4 - Containment Isolation Dependability - Implement Diverse Isolation

Discussion: In Reference 1, NRC requested additional information regarding Units 1 and 3 conformance with NUREG-0737, Item II.E.4.2 and 10 CFR 50, Appendix J. In order to minimize the number and scope of updates that would have to be provided to NRC on this issue, TVA replied in Reference 2 using the anticipated configuration at the time of the restart of Unit 3. NRC approval of the Unit 3 containment isolation design is provided in Reference 3. Changes to the preliminary information was provided by TVA in Reference 4 and approved by NRC in Reference 5.

Status: Complete. The modifications to ensure containment isolation dependability have been installed.

References:

1. NRC letter to TVA, dated May 5, 1992, Request for Additional Information to Review Browns Ferry Nuclear Plant Units 1 and 3 Compliance with NUREG-0737 Item II.E.4.2 and 10CFR50, Appendix J
2. TVA letter to NRC, dated September 1, 1992, Response to NRC Request for Additional Information Regarding Units 1 and 3 Conformance with NUREG-0737, Item II.E.4.2 and 10CFR50, Appendix J
3. NRC letter to TVA, dated January 6, 1995, Browns Ferry Nuclear Plant Units 1 and 3 - NUREG-0737, Item II.E.4.2, Containment Isolation Dependability
4. TVA letter to NRC, dated August 3, 1995, Browns Ferry Nuclear Plant Units 2 and 3 - Supplemental Information For Conformance with NUREG-0737, Item II.E.4.2 and 10CFR50, Appendix J
5. NRC letter to TVA, dated October 18, 1995, Browns Ferry Nuclear Plant Units 2 and 3 - Supplemental Information: Conformance with NUREG-0737 Item II.E.4.2 and 10 CFR 50, Appendix J (TAC NOS. M74615 and M74616)

NUREG-0737 (TMI Action Plan), Action Item II.E.4.2.6 - Containment Isolation Dependability - Containment Purge Valves [TAC M74616]

Commitment: TVA will complete NUREG-0737 (TMI Action Plan) Action Item II.E.4.2.6 - Containment Isolation Dependability - Containment Purge Valves

Discussion: TVA addressed the issue of containment purge valve dependability in References 1 through 4. The NRC Staffs determination that the requirements of Item II.E.4.2.6 have been met is contained in Reference 5.

Status: Complete. The containment purge isolation valves were replaced, debris screens installed on the containment purge lines, and calculations were performed that determined the Reactor Building ductwork, Secondary Containment, and Standby Gas Treatment systems would not be adversely affected by a loss of coolant accident occurring during containment purge operations.

References:

1. TVA letter to NRC, dated June 12, 1979, in regards to Primary Containment Purge System Design
2. TVA letter to NRC, dated December 10, 1979, in regards to Containment Purging and Venting During Normal Operation
3. TVA letter to NRC, dated June 2, 1981, in regards to Containment Purge Valve Operability and Purge Operations
4. TVA letter to NRC, dated January 25, 1985, in regards to Structural Adequacy of Containment Vent and Purge Valves
5. NRC letter to TVA, dated July 1, 1985, Completion of Review of NUREG-0737, Items II.E.4.2.6 and II.E.4.2.7

NUREG-0737 (TMI Action Plan), Action Item II.F.1.2.A - Accident - Monitoring - Noble Gas Monitor [TAC M44905]

Commitment: TVA will complete NUREG-0737 (TMI Action Plan) Action Item II.F.1.2.A - Accident - Monitoring - Noble Gas Monitor

Discussion: In response to NUREG-0737 (TMI Action Plan) Action Item II.F.1.1 - Noble Gas Monitor, TVA

committed to provide a system to monitor the Browns Ferry stack for high-range noble gas (Reference 1). In response to an NRC request for additional information (Reference 2), TVA stated that the monitoring equipment, which is common to all three units, would be operable with local readout and have instrumentation installed in the Unit 1 control room (Reference 3).

In Reference 4, TVA was directed to:

1. Install noble gas effluent monitors with local readout capability by December 31, 1984, and

2. Install control room instrumentation prior to start-up in Cycle 7.

TVA requested an extension to the December 31, 1984 completion date in Reference 5. Technical Specification Amendment Number 85, dated February 12, 1985 (Reference 6), revised the completion date for the March 25, 1983 Order for installation of noble gas monitors with local readout capability from December 31, 1984 to prior to startup of Unit 2 from the current refueling and modification outage. An explanation as to how this license condition was satisfied was provided in Reference 7.

Status: Complete. The Wide Range Gaseous Effluent Radiation Monitoring System (WRGERMS), installed at the stack, provides the high-range monitoring capability. This system was installed prior to the restart of Unit 2, and is common to all Units. In addition, TVA has installed an annunciator in the Unit 3 control room as well as connection to the plant integrated computer system which allows Unit 3 operators to obtain WRGERMS information.

References:

1. TVA letter to NRC, dated June 17, 1982, in regards to NUREG-0737, Action Items II.B.2, II.F.1.1 and II.F.1.2

2. NRC letter to TVA, dated February 1, 1983, Schedules on NUREG-0737 Items

3. TVA letter to NRC, dated February 28, 1983, in regards to NUREG-0737, Items II.F.1.1 and II.F.1.2

4. NRC letter to TVA, dated March 25, 1983, in regards to post-TMI Confirmatory Orders

5. TVA letter to NRC, dated December 13, 1984, in regards to NUREG-0737, Items II.F.1.1 and II.F.1.2

6. NRC letter to TVA, dated February 12, 1985, in regards to Amendment Nos. 110 and 85 for Units 2 and 3

7. TVA letter to NRC, dated August 27, 1993, Completion of Unit 3 License Condition Regarding NUREG-0737 (TMI Action Plan) Action Items II.F.1.1 - Noble Gas Monitor and II.F.1.2 - Iodine/particulate Monitor

NUREG-0737 (TMI Action Plan), Action Item II.F.1.2.B - Accident - Monitoring - Iodine/Particulate Monitor [TAC M44976]

Commitment: TVA will complete NUREG-0737 (TMI Action Plan) Action Item II.F.1.2.B - Accident - Monitoring - Iodine/Particulate Monitor

Discussion: In response to NUREG-0737 (TMI Action Plan) Action Item II.F.1.2 - Iodine/Particulate Monitor, TVA committed to provide a system to monitor the Browns Ferry stack with particulate and iodine collection on appropriate adsorption media (Reference 1). In response to an NRC request for additional information (Reference 2), TVA stated that the monitoring equipment, which is common to all three units, would be operable with local readout and have instrumentation installed in the Unit 1 control room (Reference 3).

In Reference 4, TVA was directed to:

1. Provide capability for effluent monitoring of iodine with local readout capability by December 31, 1984, and

2. Install control room instrumentation prior to start-up in Cycle 7.

TVA requested an extension to the December 31, 1984 completion date in Reference 5. Technical Specification Amendment Number 85, dated February 12, 1985 (Reference 6), revised the completion date for the March 25, 1983 Order for installation of iodine effluent monitors with local readout capability from December 31, 1984 to prior to startup of Unit 2 from the current refueling and modification outage. An

explanation as to how this license condition was satisfied was provided in Reference 7.

Status: Complete. The Wide Range Gaseous Effluent Radiation Monitoring System (WRGERMS), installed at the stack, provides the high-range monitoring capability. This system was installed prior to the restart of Unit 2, and is common to all Units. In addition, TVA has installed an annunciator in the Unit 3 control room as well as connection to the plant integrated computer system which allows Unit 3 operators to obtain WRGERMS information.

References:

1. TVA letter to NRC, dated June 17, 1982, in regards to NUREG-0737, Action Items II.B.2, II.F.1.1 and II.F.1.2
2. NRC letter to TVA, dated February 1, 1983, Schedules on NUREG-0737 Items
3. TVA letter to NRC, dated February 28, 1983, in regards to NUREG-0737, Items II.F.1.1 and II.F.1.2
4. NRC letter to TVA, dated March 25, 1983, in regards to post-TMI Confirmatory Orders
5. TVA letter to NRC, dated December 13, 1984, in regards to NUREG-0737, Items II.F.1.1 and II.F.1.2
6. NRC letter to TVA, dated February 12, 1985, in regards to Amendment Nos. 110 and 85 for Units 2 and 3
7. TVA letter to NRC, dated August 27, 1993, Completion of Unit 3 License Condition Regarding NUREG-0737 (TMI Action Plan) Action Items II.F.1.1 - Noble Gas Monitor and II.F.1.2 - Iodine/particulate Monitor

NUREG-0737 (TMI Action Plan), Action Item II.F.1.2.C - Accident - Monitoring - Containment High Range Radiation [TAC M45047]

Commitment: TVA will complete NUREG-0737 (TMI Action Plan) Action Item II.F.1.2.C - Accident - Monitoring - Containment High Range Radiation

Discussion: In Reference 1, TVA committed to install a containment high range radiation monitor. Reference 2 issued a Confirmatory Order for the

installation of the radiation monitors prior to start-up in Cycle 7.

Status: Complete. TVA has upgraded the two Unit 3 drywell radiation monitor loops to meet the requirements of NUREG-0737 for Containment High Range Radiation Monitors (CHRRM). The modifications ensure that the CHRRMs are capable of detecting and measuring the radiation level within the drywell during and following an accident.

References:
1. TVA letter to NRC, dated December 23, 1980, in regards to post-TMI requirements
2. NRC letter to TVA, dated March 25, 1983, in regards to Confirmatory Order for Post-TMI Related Items Set Forth in NUREG-0737

NUREG-0737 (TMI Action Plan), Action Item II.F.1.2.D - Accident - Monitoring - Containment Pressure [TAC M47584]

Commitment: TVA will complete NUREG-0737 (TMI Action Plan) Action Item II.F.1.2.D - Accident - Monitoring - Containment Pressure

Discussion: In Reference 1, TVA committed to install a containment pressure monitor. NRC requested additional information in Reference 2, which was provided by TVA in Reference 3. Reference 4 issued a Confirmatory Order for the installation of the pressure monitor prior to start-up in Cycle 6. The Safety Evaluation Report that closed this item was issued in Reference 5.

Status: Complete. In order to achieve compliance with the Drywell pressure monitoring requirements stipulated by NUREG-0737, various Design Change Notices (DCNs) and Engineering Change Notices (ECNs) have been implemented to upgrade the applicable instrumentation loops.

References:
1. TVA letter to NRC, dated December 23, 1980, in regards to post-TMI requirements
2. NRC letter to TVA, dated March 22, 1982, NUREG-0737, Items II.F.1.4, Containment Pressure Monitor; II.F.1.5, Containment Water Level Monitor, and II.F.1.6, Containment Hydrogen Monitor

3. TVA letter to NRC, dated April 26, 1982, in regards to NUREG-0737, Items II.F.1.4, II.F.1.5, and II.F.1.6

4. NRC letter to TVA, dated March 25, 1983, in regards to Confirmatory Order for Post-TMI Related Items Set Forth in NUREG-0737

5. NRC letter to TVA, dated June 16, 1983, NUREG-0737, Item II.F.1.4 Containment Pressure Monitor II.F.1.5 Containment Water Level Monitor II.F.1.6 Containment Hydrogen Monitor

NUREG-0737 (TMI Action Plan), Action Item II.F.1.2.E - Accident - Monitoring - Containment Water Level [TAC M47655]

Commitment: TVA will complete NUREG-0737 (TMI Action Plan) Action Item II.F.1.2.E - Accident - Monitoring - Containment Water Level

Discussion: In Reference 1, TVA committed to install a containment water level monitor. NRC requested additional information in Reference 2, which was provided by TVA in Reference 3. Reference 4 issued a Confirmatory Order for the installation of the water level monitor prior to start-up in Cycle 6. The Safety Evaluation Report that closed this item was issued in Reference 5.

Status: Complete. TVA has replaced the existing Drywell "Narrow Range" and "Wide Range" Torus Water Level Transmitters with new equipment. In addition, new scales were installed for Level Indicators located in the Unit 3 Control Room.

References: 1. TVA letter to NRC, dated December 23, 1980, in regards to post-TMI requirements

2. NRC letter to TVA, dated March 22, 1982, NUREG-0737, Items II.F.1.4, Containment Pressure Monitor; II.F.1.5, Containment Water Level Monitor, and II.F.1.6, Containment Hydrogen Monitor

3. TVA letter to NRC, dated April 26, 1982, in regards to NUREG-0737, Items II.F.1.4, II.F.1.5, and II.F.1.6

4. NRC letter to TVA, dated March 25, 1983, in regards to Confirmatory Order for Post-TMI Related Items Set Forth in NUREG-0737

5. NRC letter to TVA, dated June 16, 1983, NUREG-0737, Item II.F.1.4 Containment Pressure Monitor II.F.1.5 Containment Water Level Monitor II.F.1.6 Containment Hydrogen Monitor

NUREG-0737 (TMI Action Plan), Action Item II.F.2.4 (Generic Letter 84-23) - Instrumentation for Detection of Inadequate Core Cooling [TAC M45118]

Commitment: TVA committed to:

1. Convert level instruments which initiate the Reactor Protection System (RPS) and Emergency Core Cooling System (ECCS) and provide class 1E level indication in the control room to analog trip units.

2. Minimize the effects of high drywell temperature on level indications by limiting the vertical drop of the reference legs inside the drywell to no more than two feet.

Discussion: The long-term modifications to improve the reliability and accuracy of BWR water level measurement and instrumentation were requested by Generic Letter 84-23 (Reference 1). TVA committed in Reference 2 to replace the RPS and ECCS instruments with analog trip units. TVA committed in Reference 3 to minimize the vertical drop of the reference legs inside containment by bringing the reference legs outside the drywell at higher elevations. This commitment was modified in accordance with the commitment management process to limit the vertical drop inside the drywell to be no more than 2 feet 5 inches. The NRC was notified of this change by Reference 4.

Status: Complete. In order to comply with Generic Letter 84-23, TVA has performed modifications which include converting instruments in the control room to analog trip units, removing the Yarway Temperature Equalizing Columns, and rerouting the reactor vessel sense lines inside the drywell to minimize the vertical drop of the sense lines to 2 feet 5 inches.

References: 1. NRC letter to All Boiling Water Reactor (BWR) Licensees of Operating Reactors (Except LaCrosse, Big Rock Point, Humboldt Bay and Dresden-1), dated October 26, 1984, Reactor Vessel Water Level Instrumentation in BWRs (Generic Letter 84-23)

2. TVA letter to NRC, dated April 8, 1995, in regards to Generic Letter 84-23

3. TVA letter to NRC, dated March 12, 1986, in regards to Generic Letter 84-23

4. TVA letter to NRC, dated September 5, 1995, Browns Ferry Nuclear Plant (BFN) - Units 1 and 3 Revision to Commitments Concerning The Senior Management Assessment of Readiness Team (SMART) and The Vertical Drop of Reactor Vessel Reference Legs (Generic Letter 84-23)

NUREG-0737 (TMI Action Plan), Action Item II.K.3.13 - HPCI/RCIC Initiation Levels [TAC M45534]

Commitment: TVA will complete NUREG-0737 (TMI Action Plan) Action Item II.K.3.13 - HPCI/RCIC Initiation Levels

Discussion: In Reference 1, TVA states that it concurs with the BWR Owners' Group recommendation that separation of the HPCI/RCIC level setpoints had no substantial benefit and committed to implement an automatic restart of RCIC. In Reference 2, NRC concurred that no significant benefit would be gained by the separation of the HPCI/RCIC initiation levels and requested TVA evaluate the acceptance criteria provided for the RCIC automatic restart. One exception to the criteria was identified in Reference 3 and approved by NRC in Reference 4.

TVA clarified Technical Specification Bases Section 4.2 in Reference 5. The Bases were revised to state that the automatic restart feature is tested during the performance of logic system functional tests. The issuance of these Bases changes was documented in Reference 6.

Status: Complete. TVA has implemented a Design Change Notice (DCN) which modified the RCIC logic in order to automatic restart the RCIC system on vessel low water level (without operator action) following a vessel high water trip.

References: 1. TVA letter to NRC, dated December 23, 1980, in regards to Post-TMI Requirements

2. NRC letter to TVA, dated March 16, 1983, NUREG-0737, Item II.K.3.13, "RCIC Automatic Restart"

3. TVA letter to NRC, dated May 24, 1983, in regards to NUREG-0737, Item II.K.3.13

4. NRC letter to TVA, dated September 19, 1983, NUREG-0737, Item II.K.3.13, "RCIC Automatic Restart"

5. TVA letter to NRC, dated January 14, 1992, TVA BFN Technical Specification (TS) No. 300 Reactor Core Thermal-Hydraulic Stability

6. NRC letter to TVA, dated May 31, 1994, Issuance of Technical Specification Amendments for the Browns Ferry Nuclear Plant Units 1 and 3 (TS 300)

NUREG-0737 (TMI Action Plan), Action Item II.K.3.18 - ADS Actuation Modifications [TAC M45682]

Commitment: TVA will complete NUREG-0737 (TMI Action Plan) Action Item II.K.3.18 - ADS Actuation Modifications

Discussion: In response to Item II.K.3.18, the BWR Owners' Group performed an evaluation of options for compliance. Two of these options were found to be acceptable by the NRC Staff and TVA was requested in Reference 1 to commit to one of these options. TVA chose Option 2, to modify the ADS logic to allow the ADS to initiate vessel depressurization, automatically bypassing the high drywell pressure signal 10 minutes after a sustained lo-lo-lo reactor vessel water level signal (Reference 2).

Status: Complete. The modifications to the ADS logic which allows the ADS to initiate vessel depressurization has been completed.

References: 1. NRC letter to TVA, dated June 3, 1983, NUREG-0737, Item II.K.3.18, "ADS Logic Modifications"

2. TVA letter to NRC, dated March 5, 1987, Modifications to Automatic Depressurization System (ADS) Logic - NUREG-0737, Item II.K.3.18

NUREG-0737, Item II.K.3.27 - Common Reference Level for Vessel Level Instrumentation [TAC M45778]

Commitment: TVA will complete NUREG-0737 (TMI Action Plan) Action Item II.K.3.27 - Common Reference Level for Vessel Level Instrumentation

Discussion: In Reference 1, NRC informed TVA of an alternate approach to resolving this issue. This approach was to incorporate the requirement of this TMI Action Item into the control room design review to be performed per TMI Action Item I.D.1. The NRC stated that if TVA committed to utilize this alternate approach, it would provide sufficient bases for considering Item II.K.3.27 complete. TVA accepted this approach in Reference 2.

Status: Closed. NRC has reviewed the design change notices (DCN), has walked down the modifications and concluded that this item is closed for Unit 3. This is documented in Reference 3.

References:
1. NRC letter to TVA, dated October 28, 1982, NUREG-0737 Action Item II.K.3.27 (Common Reference Level)
2. TVA letter to NRC, dated December 3, 1982, in regards to NUREG-0737 Action Item II.K.3.27
3. NRC letter to TVA, dated April 11, 1995, NRC Inspection Report 95-16 [Section 6.i., page 24]

NUREG-0737 (TMI Action Plan), Action Item II.K.3.28 - Qualification of ADS Accumulators [TAC M48262]

Commitment: TVA will complete NUREG-0737 (TMI Action Plan) Action Item II.K.3.28 - Qualification of ADS Accumulators

Discussion: TVA responded to Item II.K.3.28 by Reference 1. The NRC Staff requested additional information in Reference 2, which was provided by TVA in Reference 3. Additional information was requested in Reference 4 and provided in Reference 5. TVA responded to a verbal request for additional information in Reference 6. The Safety Evaluation that documents the acceptability of TVA's plan to satisfy Item II.K.3.28 was provided in Reference 7.

Status: Complete. TVA has performed modifications to upgrade the ADS accumulator system. This was

accomplished by splitting the ring header into two sections, and providing an alternate nitrogen supply to the Drywell Control Air System.

References:

1. TVA letter to NRC, dated December 30, 1981, in regards to NUREG-0737, Items II.K.3.24, II.K.3.28 and II.B.4
2. NRC letter to TVA, dated May 11, 1983, Request for Additional Information - NUREG-0737, Item II.K.3.28, Qualification of ADS Accumulators
3. TVA letter to NRC, dated July 8, 1983, in regards to NUREG-0737, Item II.K.3.28
4. NRC letter to TVA, dated May 29, 194, Request for Additional Information - MPA F-55 (TMI II.K.3.28) "Qualification of ADS Accumulators"
5. TVA letter to NRC, dated July 12, 1984, in regards to NUREG-0737, Item II.K.3.28
6. TVA letter to NRC, dated July 11, 1985, in regards to NUREG-0737, Item II.K.3.28
7. NRC letter to TVA, dated July 24, 1985, NUREG-0737, Item II.K.3.28, Qualification of ADS Accumulators

Operational Readiness

Commitment: TVA will conduct an Operational Readiness Program to provide assurance that the required systems are operable, personnel are able to conduct operations safely, and the activities, programs, and commitments required for the restart of Unit 3 are complete.

Discussion: The Operational Readiness Program was submitted by TVA in Reference 1. Additional information was incorporated and the program plan was superseded by Reference 2. NRC review of the program is documented in Reference 3. NRC was notified in Reference 4 that the Senior Management Assessment of Readiness Team (SMART) review for Unit 3 will be conducted by the Nuclear Safety Review Board (NSRB).

Status: Open. The Operational Readiness Program is in progress and the final recommendations will be issued prior to restart.

References:
1. TVA letter to NRC, dated November 12, 1991, Units 1 and 3 Operational Readiness Program
2. TVA letter to NRC, dated July 6, 1992, Units 1 and 3 Operational Readiness Program and Employee Concerns
3. NRC letter to TVA, dated October 6, 1992, Browns Ferry Units 1 and 3 Operational Readiness Program
4. TVA letter to NRC, dated September 5, 1995, Browns Ferry Nuclear Plant (BFN) - Units 1 and 3 Revision to Commitments Concerning the Senior Management Assessment of Readiness Team (SMART) and the Vertical Drop of Reactor Vessel Level Reference Legs (Generic Letter 84-23)

Platform Thermal Growth

Commitment: The lower drywell steel platforms and miscellaneous steel will be evaluated and modified, if required, to meet the design criteria.

Discussion: The issue of platform thermal growth was resolved as part of the overall issue regarding the seismic qualification of the lower drywell platforms and miscellaneous steel. Refer to the item discussed above, entitled Lower Drywell Platforms and Miscellaneous Steel.

Status: Refer to the item discussed above, entitled Lower Drywell Platforms and Miscellaneous Steel.

References: None.

Probabilistic Risk Assessment for Multi-Unit Operation

Commitment: TVA will perform an expanded Probabilistic Risk Assessment (PRA), which addresses all three units in operation.

Discussion: In August of 1990 (Reference 1), NRC noted that the three units at BFN share many important safety systems. NRC expressed a concern with the potential safety implications of shared systems in the various operating modes of the BFN units (e.g., All three units operating, Units 1 and 2 operating with Unit 3 shutdown, etc.). NRC requested TVA provide expanded PRAs that evaluate the entire site as a whole, taking into account

the risk significant combinations of unit operational status. In June 1991 (Reference 2), NRC acknowledged that the performance of these expanded PRAs was not required to fulfil Generic Letter 88-20. However, the staff continued to encourage TVA to perform the expanded PRAs for BFN Units 1 and 3.

In February 1992 (Reference 3), TVA committed to perform an expanded PRA. TVA stated that it intended to submit a summary report to NRC prior to the restart of Unit 3. However, TVA did not consider completion of this work to be a restart prerequisite. NRC's review of the TVA approach for addressing multi-unit dependencies was provided in July 1992 (Reference 4). The Staff agreed that this report was not a prerequisite for the restart of Unit 3.

Status: Complete. The BFN Multi-Unit PRA was submitted for NRC review in Reference 5.

References:

1. NRC letter to TVA, dated August 13, 1990, PRA Concerns Regarding Operation of Browns Ferry, Units 1 and 3

2. NRC letter to TVA, dated June 28, 1991, Individual Plant Examination for Severe Accident Vulnerabilities (Generic Letter 88-20), Browns Ferry Nuclear Plant, Units 1, 2, and 3

3. TVA letter to NRC, dated February 7, 1992, Expanded Probabilistic Risk Assessment (PRA) Considering Operation of Browns Ferry, Units 1 and 3

4. NRC letter to TVA, dated July 22, 1992, TVA Approach for Addressing Inter-Unit Dependencies as part of the Individual Plant Examination for the Browns Ferry Nuclear Plant

5. TVA letter to NRC, dated April 14, 1995, Multi-Unit Probabilistic Risk Assessment (PRA)

Restart Test Program [TAC M81791]

Commitment: For those systems that support safe shutdown, administrative controls for the Restart Test Program will be implemented to insure that an assessment of the Unit 2 System Test Specifications, test procedures, and test results is performed. Administrative controls will be used to insure that the status of the operating

unit is considered during the planning and scheduling of restart tests.

Discussion: The restart test program was submitted in Reference 1 and supplemented by References 2 through 5. The NRC's Safety Evaluation of the restart test program was contained in Reference 6. TVA submitted changes to the Restart Test Program in Reference 7.

Status: Complete. Site Standard Practice 8.50, Restart Test Program, and 3-STM-001, Startup Test Manual, includes the committed administrative controls.

References:

1. TVA letter to NRC, dated September 27, 1991, Restart Test Program (RTP) Description for Units 1 and 3
2. TVA letter to NRC, dated February 18, 1992, Request for Additional Information Regarding the Restart Test Program for Units 1 and 3
3. TVA letter to NRC, dated December 28, 1992, Update of Restart Test Program (RTP) Submittal for Units 1 and 3
4. TVA letter to NRC, dated July 19, 1993, Restart Test Program (RTP) Update for Units 1 and 3
5. TVA letter to NRC, dated February 3, 1994, Restart Test Program (RTP) Update for Units 1 and 3
6. NRC letter to TVA, dated August 30, 1994, Browns Ferry Nuclear Plant Units 1 and 3 - Restart Test Program
7. TVA letter to NRC, dated October 19, 1995, Browns Ferry Nuclear Plant (BFN) - Unit 3 - Changes to Restart Test Program and Power Ascension Program

Seismic Class II Over I/Spacial Systems Interactions and Water Spray [TAC M80015]

Commitment: The Seismic Class II Over I/Spacial Systems Interactions and Water Spray program will be implemented in accordance with the Unit 2 precedent.

Discussion: TVA is utilizing a two phase program to address Class II systems. The action plan for Unit 3 was provided to the NRC in Reference 1. The first phase, to be completed before restart, involves

the evaluation of potential seismic-induced water spray effects of Class II systems on Class I systems. The second phase of the program involves the evaluation of potential seismic-induced, spatial interaction effects of Class II systems on Class I systems. The second phase has been incorporated into the resolution of Unresolved Safety Issue (USI) A-46. The approval of the Seismic Class II Over I/Spacial Systems Interactions and Water Spray program is contained in NUREG-1232 (Reference 2).

Status: Open. The first phase, encompassing the Unit 3 seismic induced water spray hazards program, has been completed. Areas where Class II seismic features could possibly interact with Class I seismic features have been evaluated. The results of the evaluation required minor modifications to piping support configurations in the plant. These modifications have been completed. This completes the restart portion of this commitment.

The second phase, involving spatial interaction effects of Class II systems on Class I systems has been incorporated into USI A-46 which will be completed prior to March 19, 1996.

References:
1. TVA letter to NRC dated February 27, 1991, Browns Ferry Nuclear Plant (BFN) - Action Plan to Disposition Concerns Related to Units 1 and 3 Seismic Class II Piping Over Class I Commodities
2. NRC letter to TVA, dated January 23, 1991, NUREG-1232, Volume 3, Supplement 2 - Browns Ferry, Unit 2, Section 2.2.4.2 (Page 2-10)

Small Bore Piping [TAC M80013 & R00306]

Commitment: The Seismic Class I small bore piping will be qualified to meet the final design criteria.

Discussion: TVA's action plan to disposition concerns related to Units 1 and 3 small bore piping was provided in Reference 1 and augmented by Reference 2. NRC approval of this program is documented in the Safety Evaluation transmitted by Reference 3.

Status: Open. The affected systems/supports have been analyzed for Seismic Class I qualification and necessary modifications have been initiated: The majority of these modifications have been

completed with the remainder to be completed prior to restart.

References: 1. TVA letter to NRC, dated February 27, 1991, Action Plan to Disposition concerns Related to Units 1 and 3 Small Bore Piping

2. TVA letter to NRC, dated December 12, 1991, Small Bore Piping Program, Tubing, and Conduit Support Plans for Units 1 and 3 - Additional Information

3. NRC letter to TVA, dated February 4, 1992, Safety Evaluation of Small Bore Piping and Seismic Qualification of Instrument Tubing Programs for Browns Ferry Nuclear Plant, Units 1 and 3

Unresolved Safety Issue A-7 (MPA D-01) - Mark I Long-Term Program [TAC M80686 & M07931]

Commitment: TVA will complete Unresolved Safety Issue A-7 (MPA D-01) - Mark I Long-Term Program.

Discussion: Refer to the previous item entitled Long Term Torus Integrity Program.

Status: Refer to the previous item entitled Long Term Torus Integrity Program.

References: None.

Unresolved Safety Issue A-9 - Anticipated Transients Without Scram (ATWS) [10 CFR 50.62] [TAC M59074]

Commitment: TVA committed to:

1. Install an Alternate Rod Insertion (ARI) system,

2. Modify the Standby Liquid Control (SLC) system to ensure that the system will provide the equivalent of injecting a minimum of 86 gallons per minute of 13-weight percent sodium borate solution, and

3. Install an automatic Recirculation Pump Trip (RPT) under conditions of an ATWS.

Discussion: TVA endorsed the BWR Owners' Group recommendations regarding ATWS design in Reference 1. The NRC Staff requested additional information in Reference 2, which was provided by

TVA in Reference 3. The required Technical Specification changes were proposed in Reference 4 and approved in Reference 5.

NRC verification that TVA's design conformed to the ATWS rule, with the exception of the diversity issue, was provided in Reference 6. TVA committed to implement the diversity requirements in Reference 7.

Status: Complete. TVA has performed the required modifications to comply with 10 CFR 50.62, including the diversity requirements listed in Reference 7.

References:

1. TVA letter to NRC, dated March 1, 1988, Anticipated Transients Without Scram (ATWS) Rule (10 CFR 50.62) - Plant Specific Design

2. NRC letter to TVA, dated April 13, 1988, Anticipated Transients Without Scram (ATWS) Rule (10 CFR 50.62) - Plant Specific Submittal

3. TVA letter to NRC, dated July 15, 1988, Anticipated Transients Without Scram (ATWS) Rule (10 CFR 50.62) - Detailed Plant Specific Design

4. TVA letter to NRC, dated August 4, 1988, TVA BFN Technical Specification No. 252 - Anticipated Transients Without Scram (ATWS)- Recirculation Pump Trip (RPT) Section 3.2/4.2 L

5. NRC letter to TVA, dated January 26, 1989, Technical Specifications on Anticipated Transients Without Scram (ATWS) - Recirculation Pump Trip (RPT) (TS 252)

6. NRC letter to TVA, dated January 22, 1989, Compliance with Rule 10 CFR 50.62 Relating to Alternate Rod Injection and Reactor Pump Trip System

7. TVA letter to NRC, dated November 29, 1990, Anticipated Transients Without Scram (ATWS) - Response to NRC Followup Items Received During ATWS Inspection

Unresolved Safety Issue A-24 (MPA B-60) - Qualification of Class IE Safety-Related Equipment [TAC M42483]

Commitment:	TVA will complete Unresolved Safety Issue (USI) A-24 (MPA B-60) - Qualification of Class IE Safety-Related Equipment.
Discussion:	Refer to the previous issue entitled Environmental Qualification.
Status:	Refer to the previous issue entitled Environmental Qualification.
References:	None.

Unresolved Safety Issue A-36 (MPA C-10) - Control of Heavy Loads Near Spent Fuel Pool [TAC M08438]

Commitment:	TVA will complete Unresolved Safety Issue A-36 (MPA C-10) - Control of Heavy Loads Near Spent Fuel Pool.
Discussion:	Refer to previous item entitled Multi-Plant Action Item C-10 - Control of Heavy Loads - Phase I (NUREG-0612).
Status:	Refer to previous item entitled Multi-Plant Action Item C-10 - Control of Heavy Loads - Phase I (NUREG-0612).
References:	None.

Unresolved Safety Issue A-42 (MPA B-05) - Pipe Cracks in Boiling Water Reactors [TAC M43736]

Commitment:	TVA will complete Unresolved Safety Issue A-42 (MPA B-05) - Pipe Cracks in Boiling Water Reactors.
Discussion:	Refer to previous topic entitled Generic Letter 88-01 - NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping.
Status:	Refer to previous topic entitled Generic Letter 88-01 - NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping.
References:	None.

Unresolved Safety Issue A-44 - Station Blackout [10 CFR 50.63] [TAC M68519]

Commitment: TVA committed to the following:

1. The safety-related unit batteries 2 and 3 will be replaced with batteries having a higher number of plates per cell and containing a greater ampere hour capacity,

2. The existing Unit Preferred Motor-Motor-Generator (MMG) sets will either be transferred to a non safety-related battery or load shed during a Station Blackout (SBO) event, and

3. The 120VAC Reactor Core Isolation Cooling (RCIC) system controls, which are currently supplied from the MMG sets, will be transferred to an appropriate source.

Discussion: TVA provided information regarding conformance with the Station Blackout Rule for Unit 3 in Reference 1. Additional information was requested by the NRC Staff in Reference 2 and provided by TVA in Reference 3. A change in coping strategy and emergency AC group classification was proposed by TVA in Reference 4. In Reference 5, the NRC Staff issued a Safety Evaluation that documents conformance with 10 CFR 50.63 for BFN Units 1, 2, and 3. TVA provided the implementation schedules for conformance with the Station Blackout Rule in Reference 6.

Status: Complete. TVA has performed the required modifications to comply with 10 CFR 50.63. (Note: Unit 1 preferred MMG set normal and alternate feeds have been deenergized by maintaining their feeder breakers open.)

References:

1. TVA letter to NRC, dated December 2, 1991, Response to NRC Safety Evaluation (SE) on the Conformance of BFN Plant with the Station Blackout Rule (SBO) (10 CFR 50.63)

2. NRC letter to TVA, dated March 5, 1992, Request for Additional Information on Station Blackout for Browns Ferry

3. TVA letter to NRC, dated March 27, 1992, NRC Request for Additional Information Regarding TVA's Response to NRC's Safety Evaluation (SE) on

the Conformance of BFN Plant with the Station Blackout Rule (SBO) (10 CFR 50.62)

4. TVA letter to NRC, dated May 28, 1992, Proposed Change in Station Blackout (SBO) Coping Strategy and Emergency AC (EAC) Group Classification

5. NRC letter to TVA, dated September 16, 1992, Station Blackout - Browns Ferry Units 1, 2, and 3 (MPA-A022)

6. TVA letter to NRC, dated October 15, 1992, Response to NRC Supplemental Safety Evaluation on the Conformance of BFN with the Station Blackout (SBO) Rule

Unresolved Safety Issue A-46 - Seismic Qualification of Equipment in Operating Plants [TAC M69432]

Commitment: The seismic qualification of mechanical and electrical equipment will use the approach developed by the Seismic Qualification Utilities Group (SQUG).

Discussion: In Reference 1, the NRC staff stated that the issues relating to the seismic qualification of mechanical and electrical equipment would be resolved when the staff implemented its resolution of USI A-46. The status of this commitment was discussed in Reference 2.

Reference 3 transmitted the NRC staff's Supplemental Safety Evaluation Report (SER) of the SQUG's Generic Implementation Procedure for the resolution of USI A-46. As committed in Reference 4, a Seismic Evaluation Report summarizing the results of the USI A-46 and seismic Individual Plant Examination of External Events (IPEEE) programs for BFN Units 1, 2, and 3 will be submitted to NRC prior to the restart of Unit 1. This report will document the long-term seismic qualification of mechanical and electrical equipment. In Reference 5, NRC stated that TVA's proposed completion date for Units 2 and 3 was unacceptable.

Status: Open. In Reference 6, TVA committed to complete the seismic portion of the USI A-46 program prior to March 19, 1996. The NRC found this commitment to be acceptable as documented in Reference 7.

References:

1. NRC letter to TVA, dated January 23, 1991, NUREG-1232, Volume 3, Supplement 2 - Browns Ferry Unit 2 [Section 2.2.2.3, Page 2-10]

2. TVA letter to NRC, dated September 20, 1991, Status and Schedule for Completion of Unit 2 Post-Restart Issues [Section III.3.12, Page 21]

3. NRC letter to All Unresolved Safety Issue (USI) A-46 Plant Licensees who are Members of the Seismic Qualification Utility Group (SQUG), dated May 22, 1992, Supplement No. 1 to Generic Letter 87-02 that Transmits Supplemental Safety Evaluation Report No. 2 on SQUG Generic Implementation Procedure, Revision 2, as Corrected on February 14, 1992

4. TVA letter to NRC, dated September 21, 1992, Supplement 1 to Generic Letter 87-02, Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors, Unresolved Safety Issue (USI) A-46 and Supplement 4 to Generic Letter 88-20, Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities

5. NRC letter to TVA, dated November 19, 1992, Generic Letter 87-02, Supplement 1 Response - Browns Ferry Nuclear Plant

6. TVA letter to NRC, dated January 19, 1993, Generic Letter 87-02, Supplement 1, 120-Day Response, Request for Additional Information

7. NRC letter to TVA, dated March 19, 1993, Generic Letter 87-02, Supplement 1 Response - Browns Ferry Nuclear Plant

Unresolved Safety Issue A-48 (MPA A-19) - Hydrogen Control Measures and Effects of Hydrogen Burns [TAC M55955]

Commitment: TVA will complete Unresolved Safety Issue (USI) A-48 (MPA A-19) - Hydrogen Control Measures and Effects of Hydrogen Burns.

Discussion USI A-48 is resolved by the implementation of 10 CFR 50.44, Standards for Combustible Gas Control System in Light Water-Cooled Power Reactors. Clarification of these requirements for Mark I BWR plants was provided by Generic Letter 84-09 (Reference 1). TVA's response to Generic Letter 84-09 was provided by Reference 2. The NRC Staff requested additional information in

Reference 3, which was provided by TVA in Reference 4.

The NRC issued an Evaluation of TVA's response to Generic Letter 84-09 and a request for Technical Specification changes in Reference 5. The requested Technical Specifications were proposed by Reference 6 and approved in Reference 7.

Status: Complete. TVA has performed modifications which provide an alternate supply of nitrogen to the Drywell Control Air System. This modification eliminates the need to use air as a pneumatic supply to valves for assuring primary containment integrity. The Technical Specifications changes which were approved in Reference 7 will ensure that the control air supply valve for the pneumatic control system is closed prior to reactor startup.

NRC has reviewed the correspondence related to Generic Letter 84-09 and the design change associated with the Control Air System modifications. Based on this review, the inspector considers this issue closed for Unit 3. This is documented in Reference 8.

References:

1. NRC letter to All Licensees of Operating Reactors, dated May 8, 1994, Recombiner Capability Requirements of 10 CFR 50.44(c)(3)(ii) (Generic Letter No. 84-09)

2. TVA letter to NRC, dated July 2, 1984, in regards to Generic Letter 84-09

3. NRC letter to TVA, dated March 10, 1986, Hydrogen Recombiner Relief

4. TVA letter to NRC, dated May 13, 1986, in regards to Hydrogen Recombiner Capability

5. NRC letter to TVA, dated September 9, 1986, Hydrogen Recombiner Capability

6. TVA letter to NRC, dated June 4, 1987, TVA BFN TS 233

7. NRC letter to TVA, dated February 12, 1988, Technical Specification Change Related to Generic Letter 84-09 Hydrogen Recombiner Capability

8. NRC letter to TVA, dated October 13, 1995, NRC Inspection Report 95-51 [Section 5.6, page 31]

ENCLOSURE 2

TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN)

SUMMARY OF REMAINING UNIT 3 ISSUES

TOPIC	COMMITMENT	SCHEDULE	PAGE
Bulletin 79-02 - Pipe Support Base Plate Designs Using Concrete Expansion Anchor Bolts [TAC R00017]	TVA will complete Bulletin 79-02	TVA will complete this item prior to restart.	E1-2
Bulletin 79-14 - Seismic Analysis for As-Built Safety-Related Piping Systems [TAC R00017]	TVA will complete Bulletin 79-14	TVA will complete this item prior to restart.	E1-4
Bulletin 93-02 - Debris Plugging of Emergency Core Cooling Suction Strainers, and Supplement 1 [TAC M86537 & M89279]	TVA will complete Bulletin 93-02	Unit 3 will be inspected and all temporary fibrous material removed prior to restart.	E1-13
Cable Tray Supports [TAC M80684]	TVA intends to utilize the Seismic Qualification Utility Group (SQUG) Generic Implementation Procedure (GIP) for seismic qualification of cable trays.	Necessary modifications and repairs have been initiated and will be completed prior to Unit 3 restart.	E1-29
Component and Piece Part Qualification [TAC M83828]	TVA will implement a component and piece part qualification program.	The Unit 3 component and piece part qualification for safety related components in 10 CFR 50.49 applications is in progress and will be completed prior to restart.	E1-30

TOPIC	COMMITMENT	SCHEDULE	PAGE
Conduit Supports [TAC M80690 & R00024]	TVA intends to utilize the Seismic Qualification Utility Group (SQUG) Generic Implementation Procedure (GIP) for seismic qualification of conduit supports.	Necessary modifications and repairs have been initiated and will be completed prior to Unit 3 restart.	E1-31
Configuration Management / Design Baseline [TAC M80688]	The Unit 3 Design Baseline Verification Program (DBVP) will consolidate the two-phase (pre- and post-restart) approach performed on Unit 2.	TVA will complete this item prior to restart.	E1-33
Containment Coatings	The containment coating program will be implemented in accordance with the Unit 2 precedent.	TVA will complete this item prior to restart.	E1-33
Environmental Qualification	TVA will complete the qualification of Class IE safety-related equipment.	TVA will certify compliance with 10 CFR 50.49 prior to restart.	E1-35
Fire Protection / 10 CFR 50, Appendix R [TAC M48136 & M85254]	TVA will implement a Fire Protection / 10 CFR 50, Appendix R program.	TVA will complete this item prior to restart.	E1-35
Flexible Conduits	Seismic qualification of flexible conduit, other than those connected to electrical equipment covered by 10 CFR 50.49 will be included as part of the resolution of USI A-46.	This evaluation will be incorporated as part of the resolution of Unresolved Safety Issue A-46.	E1-36
Generic Letter 83-28 - Salem ATWS, Item 1.2, Post Trip Review (Data and Information Capability) [TAC M53573	TVA will complete Generic Letter 83-28 - Salem ATWS, Item 1.2.	This item will be certified complete post-restart as part of SPDS certification.	E1-41
Generic Letter 88-01 - NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping [TAC M85296]	TVA will complete Generic Letter 88-01 - NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping.	This work is complete except for the inaccessible welds on the RHR system penetrations which will be inspected during the reactor vessel hydrostatic testing prior to restart.	E1-45

TOPIC	COMMITMENT	SCHEDULE	PAGE
Generic Letter 88-14 - Instrument Air Supply System Problems Affecting Safety-Related Equipment [TAC M71633]	TVA will complete Generic Letter 88-14 - Instrument Air Supply System Problems Affecting Safety-Related Equipment.	TVA will complete this item prior to restart.	E1-48
Generic Letter 88-20, Supplement 4, Individual Plant Examination of External Events (IPEEE)	TVA will complete the internal fires IPEEE and provide a summary report to NRC. A seismic IPEEE will be submitted prior to March 19, 1996	The summary report will be issued within one hundred twenty days after the restart of Unit 3 from its first refueling outage following restart. The seismic IPEEE will be submitted prior to March 19, 1996	E1-48
Generic Letter 89-06 - Safety Parameter Display System (SPDS)	TVA will install and make operational a SPDS.	TVA will certify its compliance with the requirements of NUREG-0737, Supplement 1, within two months after the SPDS is declared fully operational.	E1-51
Generic Letter 89-10, Safety-Related Motor-Operated Valve Testing and Surveillance	TVA will complete Generic Letter 89-10 - Safety-Related Motor-Operated Valve Testing and Surveillance during the power ascension test program.	TVA will complete the required testing within 30 days following the completion of the power ascension test program.	E1-53
Generic Letter 92-01 - Reactor Vessel Structural Integrity, Revision 1, Supplement 1	Revision 1, Supplement 1, requested Licensees verify the completeness of the information previously submitted by November 15, 1995.	TVA's response is scheduled for that date (November 15, 1995).	E1-58
Generic Letter 92-08 - Thermo-Lag 330-1 Fire Barriers	TVA committed to replace the Thermo-Lag material installed in the Intake Pumping Station.	TVA will complete this modification prior to restart.	E1-60
Generic Letter 94-02 - Long-Term Solutions and Upgrade of Interim Operating Recommendations for Thermal-Hydraulic Instabilities in Boiling Water Reactors.	TVA will implement the BWROG Option III methodology for the stability long-term solution.	TVA will confirm its installation schedule following NRC issuance of a Safety Evaluation Report that approves the generic topical report.	E1-62

TOPIC	COMMITMENT	SCHEDULE	PAGE
Instrument Sensing Lines [TAC M80017]	1. The H_2O_2 analyzers will be modified in accordance with the Unit 2 precedent. 2. Where satisfactory operation can not be justified, the sensing lines will be reworked. 3. The 10 CFR 50, Appendix R, FSAR Appendix M, and Generic Evaluation of Internally Generated Missiles programs will require evaluations to maintain the integrity of instrument sense line separation.	The sense lines have been evaluated and either justified for use-as-is, or modified as required. The remaining items will be completed prior to restart.	E1-68
Instrument Tubing [TAC M80036]	Safety related instrument tubing will be seismically qualified to meet the final design criteria.	TVA will complete this item prior to restart.	E1-68
NUREG-0737 (TMI Action Plan) Action Item I.D.1 - Control Room Design Review [TAC M45778 & M56106]	TVA will complete NUREG-0737 (TMI Action Plan) Action Item I.D.1 - Control Room Design Review.	TVA will complete this item prior to restart.	E1-79
NUREG-0737 (TMI Action Plan) Action Item II.B.3 - Post-Accident Sampling System (PASS)	TVA will install a PASS.	Testing of the containment atmosphere by the PASS will be accomplished during power ascension testing.	E1-81
Operational Readiness Program	TVA will conduct an Operational Readiness Program.	The Operational Readiness Program is in progress and the final recommendations will be issued prior to restart.	E1-93
Seismic Class II Over I / Spacial Systems Interactions and Water Spray	TVA will evaluate potential seismic-induced, spatial interaction effects of Class II systems on Class I systems.	This evaluation will be incorporated as part of the resolution of Unresolved Safety Issue A-46.	E1-96

TOPIC	COMMITMENT	SCHEDULE	PAGE
Small Bore Piping [TAC M80013 & R00306]	The Seismic Class I small bore piping will be qualified to meet the final design criteria.	TVA will complete this item prior to restart.	E1-97
Unresolved Safety Issue A-46 - Seismic Qualification of Equipment in Operating Plants	TVA will complete the seismic portion of the USI A-46 program.	This program will be completed prior to March 19, 1996	E1-102