May 22, 2006

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

Gentlemen:

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

BROWNS FERRY NUCLEAR PLANT (BFN) - STATUS OF UNIT 1 RESTART ISSUES, REVISION 6

This letter updates the status of the Unit 1 Bulletins, Generic Letters, Nuclear Performance Plan Special Programs, and TMI Action Items identified in TVA's regulatory framework letters to NRC (References 1 and 2). As documented in the NRC's approval of TVA's regulatory framework (References 3 and 4), the staff requested and TVA agreed to provide formal notification of the completion of each generic communication within 90 days of its internal commitment completion. This letter is part of the process that is being used to satisfy this request. Additional items from the NRC's Browns Ferry Unit 1 Recovery Issues List (Reference 5) have also been included.

Enclosure 1 to this letter provides background information regarding the regulatory framework for the restart of Unit 1, lists the individual issues cited in the framework letters and the NRC's Recovery Issues List, describes TVA's commitment or outstanding action for each issue, references key correspondence, discusses the background of the issue, and describes the completion or status of each issue, as appropriate. A summary of the issues that will be completed after restart for Unit 1 is provided as Enclosure 2.

TVA intends to update this submittal on at least a quarterly basis until the restart of Unit 1. The first status of these generic communications was provided in Reference 6. The quarterly updates will provide the formal notification of the completion of each Unit 1 Bulletin,

Generic Letter, Nuclear Performance Plan Special Program, and TMI Action Item required for restart. Changes to the completion status and newly added issues are bolded in the table of contents. Changes to the completion status are also bolded in the text which describes each item. Other changes are noted by revision bars on the right hand side of the page.

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

Sincerely,

Original signed by:

William D. Crouch
Manager of Licensing
and Industry Affairs

References:
1. TVA letter, T.E. Abney to NRC, dated December 13, 2002, Browns Ferry Nuclear Plant (BFN) - Unit 1 - Regulatory Framework for the Restart of Unit 1.
2. TVA letter, T.E. Abney to NRC, dated February 28, 2003, Browns Ferry Nuclear Plant (BFN) - Unit 1 - Regulatory Framework for the Restart of Unit 1.
3. NRC memorandum from K.N. Jabbour, dated May 13, 2003, Summary of April 24, 2003, Meeting Regarding the Regulatory Framework for Browns Ferry Unit 1 Restart Project (TAC No. MB7679)
4. NRC letter, K.N. Jabbour to J.A. Scalice, dated August 14, 2003, Regulatory Framework for the Restart of Browns Ferry Nuclear Plan, Unit 1 (TAC MB7679)
5. NRC letter, J.W. Shea to K.W. Singer, dated January 6, 2006, Meeting Summaries: 1.) Category 1 Public Meeting with Tennessee Valley Authority (TVA) RE. Browns Ferry Unit 1 Recovery Status; 2.) Meeting of the NRC Restart Panel for the Browns Ferry Unit 1 Recovery - Docket No. 50-259.

6. TVA letter, T.E. Abney to NRC, dated November 19, 2004, Browns Ferry Nuclear Plant (BFN) - Status of Unit 1 Restart Issues.

Enclosures
cc (Enclosures):
(Via NRC Electronic Distribution)

U.S. Nuclear Regulatory Commission
Region II
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW, Suite 23T85
Atlanta, Georgia 30303-3415

Mr. Malcolm T. Widmann, Branch Chief
U.S. Nuclear Regulatory Commission
Region II
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW, Suite 23T85
Atlanta, Georgia 30303-8931

NRC Senior Resident Inspector
Browns Ferry Nuclear Plant
10833 Shaw Road
Athens, AL 35611-6970

Ms. Margaret Chernoff, Senior Project Manager
U.S. Nuclear Regulatory Commission
(MS 08G9)
One White Flint, North
11555 Rockville Pike
Rockville, Maryland 20852-2739

Ms. Eva A. Brown, Project Manager
U.S. Nuclear Regulatory Commission
(MS 08G9)
One White Flint, North
11555 Rockville Pike
Rockville, Maryland 20852-2739

JEM:SMK:BAB
Enclosures
cc (Enclosures):
B. M. Aukland, POB 2C-BFN
M. Bajestani, NAB 1A-BFN
A. S. Bhatnagar, LP 6A-C
J. C. Fornicola, LP 6A-C
R. G. Jones, NAB 1A-BFN
R. F. Marks, PAB 1C-BFN
G. W. Morris, BR 4X-C
B. J. O'Grady, PAB 1E-BFN
K. W. Singer, LP 6A-C
J. Valente, NAB 1E-BFN
E. J. Vigluicci, ET 11A-K
NSRB Support, LP 5M-C
EDMS WT CA - K

S:lic/submit/subs/Status of Unit 1 Restart Issues.doc

INDEX TO ENCLOSURE 1
TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN)

STATUS OF UNIT 1 ISSUES

TOPIC	PAGE	STATUS FOR RESTART
Background	E1-1	-
Bulletin 79-02, Pipe Support Base Plate Designs Using Concrete Expansion Anchor Bolts	E1-5	Open
Bulletin 79-12, Short Period Scrams at BWR Facilities	E1-5	Open
Bulletin 79-14, Seismic Analysis for As-Built Safety-Related Piping Systems	E1-7	Open
Bulletin 80-06, Engineered Safety Feature (ESF) Reset Controls	E1-8	Open
Bulletin 84-02, Failures of General Electric Type HFA Relays in Use in Class 1E Safety Systems	E1-9	Closed
Bulletin 86-02, Static "O" Ring (SOR) Differential Pressure Switches	E1-10	Closed
Bulletin 88-03, Inadequate Latch Engagement in HFA Type Relays Manufactured by General Electric Company	E1-12	Closed
Bulletin 88-04, Potential Safety-Related Pump Loss	E1-13	Closed
Bulletin 88-07, Power Oscillations in Boiling Water Reactors, and Supplement 1	E1-15	Complete
Bulletin 88-10, Nonconforming Molded Case Circuit Breakers	E1-16	Closed
Bulletin 90-01, Loss of Fill Oil in Rosemount Transmitters	E1-17	Closed

Open - TVA committed actions not complete.
Complete - TVA committed actions completed.
Closed - Issue closed by NRC Inspection Report.

TOPIC	PAGE	STATUS FOR RESTART
Bulletin 93-02, Debris Plugging of Emergency Core Cooling Suction Strainers, and Supplement 1	E1-19	Complete
Bulletin 93-03, Resolution of Issues Related to Reactor Vessel Water Level Instrumentation in BWRs	E1-21	Open
Bulletin 95-02, Unexpected Clogging of a Residual Heat Removal (RHR) Pump Strainer While Operating in Suppression Pool Cooling Mode	E1-22	**Closed**
Bulletin 96-03, Potential Plugging of Emergency Core Cooling Suction Strainers by Debris in Boiling Water Reactors	E1-23	Complete
Cable Ampacity	E1-24	Open
Cable Installation Issue Number 1, Brand Rex Cable Issues	E1-25	Open
Cable Installation Issue Number 2, Cable Separations Issues	E1-26	Open
Cable Installation Issue Number 3, Low Voltage Vertical Cable Supports	E1-29	Open
Cable Installation Issue Number 4, Medium Voltage Cable Bend Radius	E1-30	Open
Cable Installation Issue Number 5, Missing Conduit Bushings	E1-32	Open
Cable Installation Issue Number 6, Sidewall Pressure, Cable Pullbys, Cable Jamming, Pulling Around 90 Degree Condulets and thru Mid-Run Flex Conduit Issues	E1-33	Open
Cable Installation Issue Number 7, Use of Condulets as Pull Points	E1-35	Open
Cable Installation Issue Number 8, Medium Voltage Vertical Cable Supports	E1-36	Open
Cable Splices	E1-37	Open

Open - TVA committed actions not complete.
Complete - TVA committed actions completed.
Closed - Issue closed by NRC Inspection Report.

TOPIC	PAGE	STATUS FOR RESTART
Cable Tray Supports	E1-38	Complete
Component and Piece Part Qualification	E1-40	Open
Conduit Supports	E1-41	Complete
Configuration Management/Design Baseline	E1-43	Complete
Containment Coatings	E1-44	Open
Control Rod Drive (CRD) Insert and Withdrawal Piping	E1-45	Open
Design Calculation Review	E1-46	Complete
Environmental Qualification	E1-47	Open
Fire Protection/10 CFR 50, Appendix R	E1-48	Open
Flexible Conduits	E1-50	Open
Fuses	E1-52	Open
Generic Letter 82-33, Instrumentation to Follow the Course of an Accident - Regulatory Guide 1.97	E1-53	Closed
Generic Letter 83-08, Modification of Vacuum Breakers on Mark 1 Containments	E1-57	Closed
Generic Letter 83-28, Salem ATWS, Item 1.2, Post Trip Review (Data and Information Capability)	E1-58	Open
Generic Letter 83-28, Salem ATWS, Item 4.5.2, Periodic On-Line Testing	E1-59	Open
Generic Letter 83-28, Salem ATWS, Item 4.5.3, Intervals for On-Line Testing	E1-60	Open
Generic Letter 87-02, Verification of Seismic Adequacy of Mechanical and Electrical Equipment In Operating Reactors	E1-61	Open
Generic Letter 88-01, NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping	E1-63	Open

Open - TVA committed actions not complete.
Complete - TVA committed actions completed.
Closed - Issue closed by NRC Inspection Report.

TOPIC	PAGE	STATUS FOR RESTART
Generic Letter 88-11, Radiation Embrittlement of Reactor Vessel Materials and its Impact on Plant Operations	E1-64	Complete
Generic Letter 88-14, Instrument Air Supply System Problems Affecting Safety-Related Equipment	E1-66	Closed
Generic Letter 88-20, Individual Plant Examination for Severe Accident Vulnerabilities	E1-67	Complete
Generic Letter 88-20, Supplement 4, Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities	E1-69	Open
Generic Letter 89-06, Safety Parameter Display System	E1-71	Open
Generic Letter 89-08, Erosion/Corrosion-Induced Pipe Wall Thinning	E1-73	Closed
Generic Letter 89-10, Safety-Related Motor-Operated Valve Testing and Surveillance	E1-74	Open
Generic Letter 89-13, Service Water Systems Problems Affecting Safety-Related Equipment	E1-76	Complete
Generic Letter 89-16, Installation of a Hardened Wetwell Vent	E1-77	Closed
Generic Letter 92-01, Reactor Vessel Structural Integrity, Revision 1, and Revision 1 Supplement 1	E1-78	Complete
Generic Letter 92-04, Resolution of the Issues Related to Reactor Vessel Water Level Instrumentation in BWRs	E1-81	Complete
Generic Letter 94-02, Long-Term Solutions and Upgrade of Interim Operating Recommendations for Thermal-Hydraulic Instabilities in Boiling Water Reactors	E1-82	Open

Open - TVA committed actions not complete.
Complete - TVA committed actions completed.
Closed - Issue closed by NRC Inspection Report.

TOPIC	PAGE	STATUS FOR RESTART
Generic Letter 94-03, Intergranular Stress Corrosion Cracking of Core Shrouds in Boiling Water Reactors	E1-83	Closed
Generic Letter 95-07, Pressure Locking and Thermal Binding of Safety-Related and Power-Operated Gate Valves	E1-84	**Closed**
Generic Letter 96-01, Testing of Safety-Related Logic Circuits	E1-87	Open
Generic Letter 96-05, Periodic Verification of Design Basis Capability of Motor Operated Valves	E1-88	Closed
Generic Letter 96-06, Assurance of Equipment Operability and Containment Integrity During Design Basis Accident Conditions	E1-90	Closed
Generic Letter 97-04, Assurance of Sufficient Net Positive Suction for Emergency Core Cooling and Containment Heat Removal Pumps	E1-92	Complete
Generic Letter 98-01, Readiness of Computer Systems at Nuclear Power Plants	E1-93	Closed
Generic Letter 98-04, Potential for Degradation of the Emergency Core Cooling System and the Containment Spray System After a Loss of Coolant Accident Because of Construction and Protective Coating Deficiencies and Foreign Material in Containment	E1-94	Complete
Generic Safety Issue 75 / Multi-Plant Action B085, Generic Letter 83-28, Item 1.2, Post-Trip Review - Data and Information Capability	E1-95	Open
HVAC Duct Supports	E1-96	Open
Instrument Sensing Lines	E1-97	Open
Instrument Tubing	E1-98	Open
Intergranular Stress Corrosion Cracking (IGSCC) ...	E1-99	Open

Open - TVA committed actions not complete.
Complete - TVA committed actions completed.
Closed - Issue closed by NRC Inspection Report.

TOPIC	PAGE	STATUS FOR RESTART
Large Bore Piping Supports	E1-100	Open
Long Term Torus Integrity Program	E1-101	Open
Lower Drywell Platforms and Miscellaneous Steel ...	E1-103	Open
Moderate Energy Line Break (MELB)	E1-105	Complete
NUREG-0737 (TMI Action Plan), Action Item I.D.1, Control Room Design Review	E1-106	Open
NUREG-0737 (TMI Action Plan), Action Item I.D.2, Safety Parameter Display Console	E1-108	Open
NUREG-0737 (TMI Action Plan), Action Item II.B.3, Post-Accident Sampling System	E1-109	**Closed**
NUREG-0737 (TMI Action Plan), Action Item II.E.4.2.1-4, Containment Isolation Dependability – Implement Diverse Isolation	E1-111	Open
NUREG-0737 (TMI Action Plan), Action Item II.F.1.2.C, Accident - Monitoring - Containment High Range Radiation	E1-112	**Closed**
NUREG-0737 (TMI Action Plan), Action Item II.F.1.2.D, Accident - Monitoring - Containment Pressure	E1-113	Closed
NUREG-0737 (TMI Action Plan), Action Item II.F.1.2.E, Accident - Monitoring - Containment Water Level	E1-115	Closed
NUREG-0737 (TMI Action Plan), Action Item II.F.2.4 (Generic Letter 84-23), Instrumentation for Detection of Inadequate Core Cooling	E1-117	Closed
NUREG-0737 (TMI Action Plan), Action Item II.K.3.13, HPCI/RCIC Initiation Levels	E1-119	Closed
NUREG-0737 (TMI Action Plan), Action Item II.K.3.18, ADS Actuation Modifications	E1-121	Closed

Open - TVA committed actions not complete.
Complete - TVA committed actions completed.
Closed - Issue closed by NRC Inspection Report.

TOPIC	PAGE	STATUS FOR RESTART
NUREG-0737 (TMI Action Plan), Action Item II.K.3.27, Common Reference Level for Vessel Level Instrumentation	E1-122	Open
NUREG-0737 (TMI Action Plan), Action Item II.K.3.28, Qualification of ADS Accumulators	E1-123	Closed
Platform Thermal Growth	E1-125	Open
Q-List	E1-126	Open
Restart Test Program	E1-127	Open
Seismic Class II Over I/Spacial Systems Interactions and Water Spray	E1-128	Open
Small Bore Piping	E1-129	Open
Thermal Overload	E1-130	Open
Unresolved Safety Issue A-7, Mark I Long-Term Program	E1-132	Open
Unresolved Safety Issue A-9, Anticipated Transients Without Scram	E1-133	Open
Unresolved Safety Issue A-24, Qualification of Class 1E Safety Related Equipment	E1-134	Open
Unresolved Safety Issue A-26, Reactor Vessel Pressure Transient Protection	E1-135	Complete
Unresolved Safety Issue A-44, Station Blackout	E1-136	Open
Unresolved Safety Issue A-46, Seismic Qualification of Equipment in Operating Plants	E1-137	Open

Open - TVA committed actions not complete.
Complete - TVA committed actions completed.
Closed - Issue closed by NRC Inspection Report.

ENCLOSURE 1

TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN)

STATUS OF UNIT 1 ISSUES

BACKGROUND

The Browns Ferry Nuclear Plant (BFN) consists of three units. Units 1 and 3 were voluntarily shut down by the Tennessee Valley Authority (TVA) in March 1985 because of questions about the primary containment isolation leak rate testing for Unit 1 and reactor water level instrumentation for Unit 3. Unit 2 was in a refueling outage at the time. Additional questions and concerns were subsequently raised about the overall adequacy of TVA's nuclear program, and Browns Ferry remained shut down until adequate corrective actions were defined to address the root causes of TVA's nuclear program problems.

On September 17, 1985, NRC requested, pursuant to 10 CFR 50.54(f), that TVA submit information about its plans for correcting Browns Ferry problems and for correcting problems in the overall management of its nuclear program. NRC also requested that this information be submitted before TVA restarted Browns Ferry. In response to this request, TVA prepared a Corporate Nuclear Performance Plan (CNPP) Volume 1 which identified the root causes of the problems in the management of TVA's nuclear program and described TVA's plans for correcting those problems.

Additionally, TVA prepared a Browns Ferry Nuclear Performance Plan (BFNPP) Volume 3 which identified the root causes of problems specifically related to Browns Ferry, defined plans for correcting those problems, and responded to the NRC's request for Browns Ferry specific information. Taken together, these two plans provided a complete account of the actions which TVA undertook to improve its nuclear program for Browns Ferry.

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 for 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. NRC evaluation of the BFNPP special programs was documented by the issuance of issue specific Safety Evaluation Reports (SERs) or in NUREG-1232, Volume 3, Safety Evaluation Report on the Browns Ferry Nuclear Performance Plan, and its supplements. Following implementation of these recovery programs, Unit 2 returned to service on May 24, 1991 and was removed from the Problem Plant List in June 1992.

TVA’s proposed regulatory framework for the restart of Units 1 and 3 (Reference 1) was more consistent with normal industry practice. The proposed programs were established to provide a high degree of confidence that the facility and personnel were ready to restart and operate Units 1 and 3 in a safe and reliable manner, and promote the efficient utilization of TVA and NRC resources. TVA's plans for the restart of Units 1 and 3 were based on the regulatory requirements, corrective action programs, commitments, technical specification improvements, and internally identified deficiencies and concerns that were resolved prior to the restart of Unit 2. NRC approval of the framework for the restart of Units 1 and 3 was documented in Reference 2. Changes to the implementation of BFNPP special programs on Unit 3 was documented by the issuance of issue specific SERs. The NRC Staff’s request that the Commission authorize the Region II Administrator to allow restart of Unit 3 was forwarded by SECY 95-264. Following restart plan completion and NRC restart approval, Unit 3 restarted on November 19, 1995. Units 1 and 3 were removed from the Watch List in June 1996.

Since restart of Unit 3, there were changes in regulations, TVA’s processes, and NRC’s processes which warranted revision to the regulatory framework for restart of Unit 1. TVA’s successful restart and operation of Units 2 and 3 and the proposed revision to the Unit 1 restart program (References 3 and 4) will establish a high degree of confidence that the facility and personnel are ready to restart and operate Unit 1 in a safe and reliable manner, and promote the efficient utilization of TVA and NRC resources. TVA’s plans for the restart of Unit 1 continue to be based on the regulatory requirements, corrective action special programs, commitments, technical specification improvements, and internally identified deficiencies and concerns that were resolved prior to Units 2 and 3 restart. TVA proposed that, at its discretion, it could modify the implementation precedent for BFNPP Special Programs to incorporate efficiencies or experience gained from use of those precedents in restarting Unit 3 or from

changes in TVA internal processes.

As documented in the NRC's approval of TVA's proposed regulatory framework (References 5 and 6), the staff requested and TVA agreed to provide formal notification of the completion of each generic communication within 90 days of its internal commitment completion. This letter provides the process that will be used to satisfy this request. Additional items for restart were also identified in the NRC's Browns Ferry Unit 1 Recovery Issues List (Reference 7).

This enclosure lists the individual issues cited in the framework letters and the NRC's Recovery Issues List, describes TVA's commitment or outstanding action for each issue, references key correspondence, discusses the background of the issue, and describes the completion or status of each issue, as appropriate. A summary of the issues that will be completed after restart for Unit 1 is provided as Enclosure 2.

TVA intends to update this submittal on at least a quarterly basis until the restart of Unit 1. Changes to the completion status and newly added issues are bolded in the table of contents. Changes to the completion status are also bolded in the text which describes each item. In addition, the bottom of each page will contain a stamp that will show the submittal date. Other changes are noted by revision bars on the right hand side of the page. These at least quarterly updates will provide the formal notification of the completion of each Unit 1 Bulletin, Generic Letter, Nuclear Performance Plan Special Program, and TMI Action Item required for restart and listed in the Regulatory Framework letters.

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 April 1, 1992, Return to Service of Browns Ferry, Units 1 and 3.

3. TVA letter to NRC, dated December 13, 2002, Regulatory Framework for the Restart of Unit 1.

4. TVA letter to NRC, dated February 28, 2003, Regulatory Framework for the Restart of Unit 1.

5. NRC memorandum from K.N. Jabbour, dated May 13, 2003, Summary of April 24, 2003, Meeting Regarding the Regulatory Framework for Browns Ferry Unit 1 Restart Project (TAC No. MB7679).

6. NRC letter to TVA, dated August 14, 2003, Regulatory Framework for the Restart of Browns Ferry Nuclear Plant, Unit 1.

7. NRC letter, J.W. Shea to K.W. Singer, dated January 6, 2006, Meeting Summaries: 1.) Category 1 Public Meeting with Tennessee Valley Authority (TVA) RE. Browns Ferry Unit 1 Recovery Status; 2.) Meeting of the NRC Restart Panel for the Browns Ferry Unit 1 Recovery - Docket No. 50-259.

Bulletin 79-02, Pipe Support Base Plate Designs Using Concrete Expansion Anchor Bolts

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 1 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 are 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.

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).

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: Open. The Banked Position Withdrawal Sequence and Reduced Notch Worth Procedures will be incorporated into plant procedures.

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.

Bulletin 79-14, Seismic Analysis for As-Built Safety-Related Piping Systems

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 1 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.

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).

Bulletin 80-06, Engineered Safety Feature (ESF) Reset Controls

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. In Reference 2, TVA committed to perform the modification to the TIP system prior to restart.

Status: Open.

References:

1. TVA letter to NRC, dated December 4, 1981, in regards to Bulletin 80-06.
2. TVA letter to NRC, dated April 28, 1988, IE Bulletin No. 80-06 - Engineered Safety Feature (ESF) Reset Control.

Bulletin 84-02, Failures of General Electric Type HFA Relays in Use in Class 1E Safety Systems

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. This item was closed by NRC in Inspection Report 2004-009 (Reference 2).

Status: Closed.

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 February 11, 2005, Browns Ferry Nuclear Plant Unit 1 Recovery - NRC Integrated Inspection Report 05000259/2004009.

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 SOR 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: Closed. TVA will install two Static "O" Ring differential pressure switches in the Unit 1 RHR system and the RHR Pump Surveillance Instruction will be 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 will be revised.

This item was closed by NRC in Inspection Report 2005-06 (Reference 3).

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 May 16, 2005, Browns Ferry Nuclear Plant Unit 1 Recovery - NRC Integrated Inspection Report 05000259/2005006.

Bulletin 88-03, Inadequate Latch Engagement in HFA Type Relays Manufactured by General Electric Company

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. In Reference 2, NRC closed Bulletin 88-03. However, TVA was still required to notify the NRC of inspection results for Unit 1.

Status: Closed. NRC closed this item in Inspection Report 2004-009 (Reference 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. NRC letter to TVA, dated February 11, 2005, Browns Ferry Nuclear Plant Unit 1 Recovery - NRC Integrated Inspection Report 05000259/2004009.

Bulletin 88-04, Potential Safety-Related Pump Loss

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. Reference 4 documents NRR closure of this issue for Unit 1. NRC addressed this issue for Unit 1 in Inspection Report 95-31 (Reference 5). TVA notified NRC that its actions were complete in Reference 6. NRC closed this item in Inspection Report 2004-009 (Reference 7).

Status: Closed.

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

6. TVA letter to NRC, dated May 7, 2004, Browns Ferry Nuclear Plant (BFN) Unit 1 - Completion of NRC Bulletin 88-04, Potential Safety-Related Pump Loss.

7. NRC letter to TVA, dated February 11, 2005, Browns Ferry Nuclear Plant Unit 1 Recovery - NRC Integrated Inspection Report 05000259/2004009.

Bulletin 88-07, Power Oscillations in Boiling Water Reactors, and Supplement 1

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. 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 88-10, Nonconforming Molded Case Circuit Breakers

Commitment: TVA will complete Bulletin 88-10.

Discussion: TVA provided a revised response to the Bulletin in Reference 1. TVA stated that it had completed its Bulletin 88-10 effort for Units 1, 2 and 3. TVA had removed the Class 1E Molded Case Circuit Breakers without adequate traceability from installed service and the warehouse. NRC closed this Bulletin for Unit 1 in Reference 2. This item was closed by NRC in Inspection Report 2005-009 (Reference 3).

Status: Closed.

References:

1. TVA letter to NRC, dated November 29, 1990, Browns Ferry Nuclear Plant (BFN) - Revised Response and Notification of Implementation of NRC Bulletin 88-10 Nonconforming Molded Case Circuit Breakers (MCCBs).

2. NRC letter to TVA, dated March 10, 1992, NRC Inspection Report Nos. 50-259/92-03, 50-260/92-03, and 50-296/92-03).

3. NRC letter to TVA, dated February 13, 2006, Browns Ferry Nuclear Plant Unit 1 Recovery - NRC Integrated Inspection Report 05000259/2005009.

Bulletin 90-01, Loss of Fill Oil in Rosemount Transmitters

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 stated that it would formally notify the NRC of the proposed resolution of the Rosemount transmitter issue for Unit 1 prior to Unit 1 startup. NRC's Safety Evaluation (Reference 3) applied to all three units but stated additional information would be required on Unit 1.

In Reference 4, TVA notified NRC of its plan to replace the BFN Unit 1 Rosemount transmitters that meet the criteria specified in NRC Bulletin 90-01, Supplement 1 with new or refurbished transmitters prior to Unit 1 restart. NRC found TVA's response acceptable in Reference 5. This item was closed by NRC in Inspection Report 2005-009 (Reference 6).

Status: Closed.

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 April 4, 1995, NRC Bulletin 90-01, Supplement 1, Loss of Fill-Oil in Transmitters Manufactured by Rosemount - Browns Ferry Nuclear Plant Units 1, 2, and 3 (TAC Nos. M85361, M85362, and M85363).

4. TVA letter to NRC, dated June 7, 2004, Browns Ferry Nuclear Plant (BFN) - Unit 1 - Response to NRC Bulletin no. 90-01, Supplement 1 - Loss of Fill Oil in Transmitters Manufactured by Rosemount.

5. NRC letter to TVA, dated February 7, 2005, Browns Ferry Nuclear Plant, Unit 1 - Closeout of Bulletin 90-01, Supplement 1, Loss of Fill-oil in Transmitters Manufactured by Rosemount (TAC No. MC3381).

6. NRC letter to TVA, dated February 13, 2006, Browns Ferry Nuclear Plant Unit 1 Recovery - NRC Integrated Inspection Report 05000259/2005009.

Bulletin 93-02, Debris Plugging of Emergency Core Cooling Suction Strainers, and Supplement 1

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

Discussion: TVA responded to Bulletin 93-02 in Reference 1 and committed to:

1. Evaluate Unit 1 for permanent fibrous material.

2. Inspect Unit 1 and remove temporary fibrous material.

3. Confirming completion of the above listed activities before startup.

In TVA's response to Supplement 1 of Bulletin 93-02 (Reference 2), TVA committed to augment the operator's required reading program, conduct classroom and/or simulator training, revise appendices in the BFN Emergency Operating Instructions (EOIs) to include caution statements and actions for monitoring net positive suction head, and change the applicable design control procedure to require evaluation of fibrous material being introduced into the drywell.

In Reference 3, NRC stated that TVA's response to Supplement 1 adequately addressed the actions TVA would take to assure continued Emergency Core Cooling System (ECCS) suction capability. TVA notified NRC of the completion of the commitments made in response to Supplement 1 of Bulletin 93-02 for all three units in Reference 4.

TVA updated its response to the Bulletin for Unit 1 in Reference 5.

Status: Complete. TVA has evaluated the drywell for permanent fibrous material. The results were similar to Units 2 and 3. Limited amounts of fibrous material is permanently installed in several containment penetrations. Also in accordance with the Units 2 and 3 precedent, TVA has revised its Unit 1 General Operating

Instruction on Drywell Closeout to ensure temporary fibrous air filters or other temporary sources of fibrous material are removed.

References:

1. TVA letter to NRC, dated May 23, 1993, NRC Bulletin No. 93-02, Debris Plugging of Emergency Core Cooling Suction Strainers.

2. TVA letter to NRC, dated April 18, 1994, NRC Bulletin 93-02, Supplement 1 - Debris Plugging of Emergency Core Cooling System (ECCS) Suction Strainers.

3. NRC letter to TVA, dated July 19, 1994, Response to NRC Bulletin 93-02 - Supplement 1, Debris Plugging of Emergency Core Cooling Suction Strainers.

4. TVA letter to NRC, dated July 29, 1994, NRC Bulletin 93-02, Supplement 1 - Debris Plugging of Emergency Core Cooling System (ECCS) Suction Strainers - Commitment Completion.

5. TVA letter to NRC, dated May 6, 2004, Browns Ferry Nuclear Plant (BFN) Unit 1 - Update to TVA Response to NRC bulletin no. 93-02, Debris Plugging of Emergency Core Cooling Suction Strainers.

Bulletin 93-03, Resolution of Issues Related to Reactor Vessel Water Level Instrumentation in BWRs

Commitment: TVA intends to complete a modification which will prevent the buildup of noncondensables in water level reference legs by injecting CRD system charging water into the reference legs.

Discussion: TVA's response to Bulletin 93-03 was provided by Reference 1. TVA committed to perform modifications on Unit 1 prior to restart. NRC accepted TVA’s response to the Bulletin in Reference 2. A detailed description of the modification installed on Unit 2 was provided in Reference 3.

Status: Open.

References:

1. TVA letter to NRC, dated July 30, 1993, Response to NRC Bulletin (NRCB) 93-03, Resolution of Issues Related to Reactor Vessel Water Level Instrumentation in Boiling Water Reactors.

2. NRC letter to TVA, dated April 20, 1994, Browns Ferry Nuclear Plant Units 1, 2, and 3 - Response To NRC Bulletin 93-03, "Resolution of Issues Related to Reactor Vessel Water Level Instrumentation in BWRs," (TAC Nos. M86882, M86883, and M86884).

3. TVA letter to NRC, dated December 14, 1994, Hardware Modification Completion and Description in Response to Bulletin 93-03, Resolution of Issues Related to Reactor Vessel Water Level Instrumentation in Boiling Water Reactors.

Bulletin 95-02, Unexpected Clogging of a Residual Heat Removal (RHR) Pump Strainer While Operating in Suppression Pool Cooling Mode

Commitment: Appropriate actions will be taken prior to Unit 1 restart.

Discussion: TVA's response to Bulletin 95-02 was provided in Reference 1. For Units 2 and 3, TVA committed to clean the suppression pool and perform confirmatory inspection and test prior to restart. TVA also committed to perform a visual inspection of the Emergency Core Cooling System pump suction strainers during each refueling outage and a program for suppression pool cleaning will be developed prior to restart. TVA stated that the programs established to ensure Emergency Core Cooling System pump operability on Units 2 and 3 would apply to Unit 1 when it was returned to service. NRC found TVA's response acceptable in Reference 2.

Status: **Closed**. The Unit 1 suppression pool was drained, cleaned, inspected and recoated as necessary. Program to ensure suppression pool cleanliness and control of foreign material have been implemented. This item was closed by NRC in Inspection Report 2006-006 (Reference 3).

References:

1. TVA letter to NRC, dated November 15, 1995, Browns Ferry Nuclear Plant (BFN) - NRC Bulletin 95-02, Unexpected Clogging of a Residual Heat Removal (RHR) Pump Strainer While Operating In Suppression Pool Cooling Mode.

2. NRC letter to TVA, dated March 14, 1996, Browns Ferry Nuclear Plant Units 1, 2, and 3 - Response to Bulletin 95-02 (TAC Nos. M93876, M93877, and M93878).

3. NRC letter to TVA, dated May 15, 2006, Browns Ferry Nuclear Plant Unit 1 Recovery - NRC Integrated Inspection Report 05000259/2006006.

Bulletin 96-03, Potential Plugging of Emergency Core Cooling Suction Strainers By Debris In Boiling Water Reactors

Commitment: Appropriate modifications to address Bulletin 96-03 will be implemented an Unit 1 prior to its restart.

Discussion: TVA originally responded to the Bulletin in Reference 1 and committed to describing planned actions and schedules to be utilized to resolve the Bulletin within 90 days following the approval of the Utility Resolution Guidelines. TVA described its plans for resolution of the Bulletin in Reference 2 and committed to resolve the Bulletin prior to restart for Unit 1.

Status: Complete. TVA has install new, high capacity passive strainers on Unit 1, which are of the same design as on Units 2 and 3.

References:

1. TVA letter to NRC, dated November 4, 1996, Browns Ferry Nuclear Plant (BFN) - NRC Bulletin No. 96-03, Potential Plugging of Emergency Core Cooling Suction Strainers by Debris in Boiling-Water Reactors (TAC Nos. M96135, M96136, M96137).

2. TVA letter to NRC, dated July 25, 1997, Browns Ferry Nuclear Plant (BFN) - NRC Bulletin No. 96-03, Potential Plugging of Emergency Core Cooling Suction (ECCS) Strainers by Debris in Boiling Water Reactors (TAC Nos. M96135, M96136, M96137).

Cable Ampacity

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

Discussion: TVA developed a new electrical design standard to address ampacities for cables in conduits, cable trays, and duct banks, as well as derating factors for cable coatings, fire wraps, cable tray covers, and cable tray bottoms. Approval of this program is contained in NUREG-1232 (Reference 1).

Status: Open.

References: 1. NRC letter to TVA, dated January 23, 1991, NUREG-1232, Volume 3, Supplement 2 - Browns Ferry Unit 2 [Section 3.11.3, Page 3-9].

Cable Installation Issue Number 1, Brand Rex Cable Issues

Commitment: To resolve the Brand Rex cable issue, corrective actions will be implemented prior to the restart of Unit 1 in accordance with the Unit 2 precedent.

Discussion: The action plan to disposition concerns related to cable installation issues, including Brand Rex, was provided in Reference 1. The Safety Evaluation on this program was provided by Reference 2. In summary, the Staff found implementing the corrective actions for the Brand Rex cable issue in accordance with the Unit 2 precedent to be acceptable pending the results of additional qualification testing being performed by TVA.

TVA has identified contract number 80K6-825419 as the source of the Brand Rex cables issue for BFN. Additional testing demonstrated the ability of the cables to perform their intended safety function for a qualified life of 40 years. TVA has removed all non-installed Brand Rex cable furnished on contract 80K6-825419. Administrative controls are in place to prevent future applications of this cable type and manufacturer from being installed at BFN.

Status: Open.

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 2, Cable Separations Issues

Commitments: TVA committed to the following:

1. Prior to fuel load of Unit 1, TVA will implement all corrective actions in accordance with the Unit 2 criteria and implementation precedent for the following cable separations issues:

   - V4 and V5 cables which originate from safety-related power supplies,
   - Nondivisional V4 and V5 cables which originate from nonsafety-related power supplies,
   - V3 cables which originate from safety-related and from nonsafety-related power supplies,
   - Nondivisional V1 and V2 cables which originate from both safety-related and nonsafety-related power supplies,
   - Divisional and nondivisional cables designated with an IE and IES suffix, and
   - Divisional V1 and V2 cables.

2. As documented in References 1-6, Unit 2 validated the use of the cable schedule drawings (45C800 series) in determining the installed configuration of cables in the plant. Unit 1 cables were included in the population of cables that were used in the validation process during the Unit 2 restart effort. As documented in Reference 7, the Unit 1 cables have always been routed manually. The Unit 1 circuit schedule was not an electronic database. Therefore, TVA will use the 45C800 series drawings as the document of record in the determination of acceptable routing for Unit 1

3. The Unit 1 Master Equipment List (MEL) will establish the list of equipment and device IDs for safety-related and quality-related systems. For nondivisional V1, V2, V3, V4 and V5 cables identified in the MEL as safety-related for Unit 1, cable separation issues will be resolved by analyzing design drawings to identify cables required to

support the safety-related and quality-related devices. The resulting list will be compared against the 45C800 drawings to determine if cables are correctly identified as divisional. If it is determined that a change in divisional status is required, the respective cables will be evaluated against separations criteria. Corrective actions will be completed prior to fuel load.

4. For cables contained in divisional and nondivisional cable trays that physically connect on Unit 1, corrective actions will be implemented prior to Unit 1 fuel load.

Discussion: TVA had identified instances where the electrical separation requirements had not been met at BFN. The Units 1 and 3 specific 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. Additional information was requested regarding the corrective actions to be implemented for discrepancies associated with the two cables contained in divisional and nondivisional cable trays that physically connect. This additional information was provided by TVA in Reference 3. The NRC Staff accepted this information in Reference 4.

Status: Open.

References:

1. TVA letter to NRC, dated January 6, 1989, Browns Ferry Nuclear Plant (BFN) - Electrical Cable Separation.

2. TVA letter to NRC, dated June 9, 1989, Browns Ferry Nuclear Plant (BFN) - Electrical Cable Separation.

3. TVA letter to NRC, dated October 23, 1989, Browns Ferry Nuclear Plant (BFN) - Electrical Cable Separation.

4. TVA letter to NRC, dated December 14, 1989, Browns Ferry Nuclear Plant (BFN) - Electrical Cable Separation.

5. NRC letter to TVA, dated February 23, 1990, NRC Inspection Report No. 50-260/89-59.

6. NRC letter to TVA, dated August 10, 1990, NRC Inspection Report No. 50-260/90-13.

7. 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.

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 vertical cable supports, 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 walkdown and evaluation of Unit 1 safety-related low voltage power, control and instrumentation cable is adequate to satisfactorily resolve the vertical support issue.

Status: Open.

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

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 medium voltage cable bend radius, 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: Open.

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 missing conduit bushings, 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 1 10 CFR 50.49 circuits was considered adequate to resolve this issue.

Status: Open.

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: The cables identified in the Master Equipment List (MEL) as safety-related cables for Unit 1, which are not replaced by other programs, will be reviewed to determine the configuration of their associated raceway. If the design of the raceway meets the criteria for sidewall pressure, jamming, pullbys, mid-run flex or pulling around 90 degree condulet concerns, a walkdown will be performed to confirm the installed configuration. Corrective actions will be implemented prior to Unit 1 fuel load.

Discussion: The action plan to disposition concerns related to cable installation issues, including sidewall pressure, cable pullbys, cable jamming, pulling around 90 degree condulets and thru mid-run flex conduit issues, 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/nondivisional 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.

Status: Open.

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 resolved in accordance with the Unit 2 precedent.

Discussion: The action plan to disposition concerns related to cable installation issues, including the use of condulets as pull points, 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 large 600 volt cables in three inch conduits. Therefore, TVA will review the Unit 1 600 volts cables installed in conduit in accordance with the Unit 2 program guidelines/ The required corrective actions will be completed prior to fuel load.

Status: Open.

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 medium voltage vertical cable supports, 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: Open.

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 Splices

Commitment: TVA will identify Class IE cable splices located in harsh environment and ensure they are qualified for their intended service during a design basis accident (DBA).

Discussion: TVA's program to resolve the splice issue was submitted in Reference 1. TVA will perform a field walkdown of safety-related conduits to identify and document Class 1E cable splices which are required to be environmentally qualified and to verify the installed splice configuration. The field data will be evaluated against construction specification requirements to determine which splices require rework. Actions will be taken to either rework the splice or rework both the splice and raceway system to accommodate a qualified splice.

Status: Open.

References: 1. TVA letter to NRC, dated April 28, 1988, Browns Ferry Nuclear Plant (BFN) - Electrical Issues (NRC TAC No. 62260).

Cable Tray Supports

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 1 cable tray supports was provided in Reference 1. However, due to the issuance of 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, BFN submitted a revised program in order to take advantage of the NRC approved process for resolving USI A-46 (Reference 2). NRC accepted the schedule for implementing the revised program for Unit 1 in Reference 3 and requested additional information regarding the revised methodology and criteria. This information was provided in Reference 4 and accepted by NRC in Reference 5.

Status: Complete. The Unit 1 cable tray supports have been evaluated utilizing the GIP in accordance with USI A-46. A summary report was provided to NRC in Reference 6. Necessary modifications and repairs have been completed.

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.

6. TVA letter to NRC, dated October 7, 2004, Browns Ferry Nuclear Plant (BFN) Unit 1 - Response to NRC Generic Letter (GL) 87-02, Supplement 1 that Transmits Supplemental Safety Evaluation Report No. 2 (SSER No. 2) on SQUG Generic Implementation Procedure, Revision 2, as corrected on February 14, 1992 (GIP-2).

Component and Piece Part Qualification

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 decided to perform a 100 percent verification as performed on Unit 2.

Status: Open. The Unit 1 component and piece part qualification program for safety-related components in 10 CFR 50.49 applications is being implemented.

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

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 1 conduits and conduit supports was provided in References 1 through 3 and approved in Reference 4. However, due to the issuance of 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, 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 1 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 1 restart in lieu of its prior restart commitments.

Status: Complete. The Unit 1 conduit supports have been evaluated utilizing the GIP in accordance with USI A-46. A summary report was provided to NRC in Reference 9. Necessary modifications and repairs have been completed.

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.

9. TVA letter to NRC, dated October 7, 2004, Browns Ferry Nuclear Plant (BFN) Unit 1 - Response to NRC Generic Letter (GL) 87-02, Supplement 1 that Transmits Supplemental Safety Evaluation Report No. 2 (SSER No. 2) on SQUG Generic Implementation Procedure, Revision 2, as corrected on February 14, 1992 (GIP-2).

Configuration Management/Design Baseline

Commitment: The Unit 1 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: Complete. Unit 1 satisfies its design basis, safety related structures, systems, and components are supported by engineering analysis and documentation, and the plant configuration is in conformance with TVA's commitments.

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: The containment coatings program was described in the Nuclear Performance Plan (Reference 1). 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. NRC approval of the program is documented in Reference 2.

Status: Open.

References:

1. TVA letter to NRC, dated October 24, 1988, Browns Ferry Nuclear Plant (BFN) - Nuclear Performance Plan, Revision 2.

2. NRC letter to TVA, dated January 23, 1991, NUREG-1232, Volume 3, Supplement 2 - Browns Ferry, Unit 2, Section 3.7 (Page 3-7).

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: Open.

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).

DESIGN CALCULATION REVIEW

Issue: Complete a design calculation review.

Discussion: The objective of the design calculation review was to:

a. Identify calculations considered to be essential;

b. Ensure that essential calculations support the plant licensing commitments and design basis requirements;

c. Ensure that essential calculations are technically adequate and consistent with the plant configuration; and

d. Ensure that essential calculations supporting the Design Baseline and Verification Program (DBVP) are consistent with the plant functional configuration.

The design calculation review was incorporated into the Configuration Management / Design Baseline Verification Program in Reference 1.

Status: Complete.

References: 1. TVA letter to NRC, dated June 13, 1991, Design Baseline Verification Program (DBVP).

Environmental Qualification

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.

References: None.

Fire Protection / 10 CFR 50, Appendix R

Commitment: TVA will comply with License Condition 2.C(13).

Discussion: License Condition 2.C(13) states:

> "Browns Ferry Nuclear Plant shall implement and maintain in effect all provisions of the approved Fire Protection Program as described in the Final Safety Analysis Report for BFN as approved in the SEs dated December 8, 1988, March 6, 1991, March 31, 1993, November 2, 1995 and Supplement dated November 3, 1989 subject to the following provision:
>
> > The licensee may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire."

The content of the cited Safety Evaluations is provided below. NRC issued its Safety Evaluation Report (SER) for the BFN Safe Shutdown Analysis in Reference 1 and approved the associated License Amendment in Reference 2. The SER for the BFN Fire Protection Plan and Fire Hazards Analysis was provided in Reference 3. The NRC staff issued a License amendment for the 10 CFR 50 Appendix R post-fire safe shutdown program in Reference 4 and issued a supplemental Safety Evaluation in Reference 5.

Status: Open.

References:

1. NRC letter to TVA, dated December 8, 1988, Units 1, 2 and 3 - Appendix R Safe Shutdown System Analysis (TAC 60627, 60628, 60629).

2. NRC letter to TVA, dated March 6, 1991, Issuance of Amendment (TAC No. 72965) (TS 268).

3. NRC letter to TVA, dated March 31, 1993, Fire Protection Program - Browns Ferry Nuclear Plant Units 1, 2 and 3 (TAC Nos. M82687, M82688 and M82689).

4. NRC letter to TVA, dated November 2, 1995, Safety Evaluation of Post-Fire Safe Shutdown Capability and Issuance of Technical Specification Amendments for the Browns Ferry Nuclear Plant Units 1, 2, and 3 (TAC Nos. M85254, N87900, M87901, and M87902) (TS 337).

5. NRC letter to TVA, dated November 3, 1989, Supplemental Safety Evaluation on Post-Fire Safe Shutdown Systems and Final Review of the National Fire Protection Association Code Deviations - Browns Ferry Nuclear Plant, Unit 2 (TAC NOS. 72908 and 00459).

Flexible Conduits

Commitment: Actions necessary to disposition flexible conduit concerns for the 10 CFR 50.49 equipment will be completed prior to restart. Flexible conduits attached to safety-related electrical equipment not covered by 10 CFR 50.49 and within the scope of USI A-46 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 1 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 1. 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) and within the scope of USI A-46 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.

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: Open.

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.

Generic Letter 82-33, Instrumentation to Follow the Course of an Accident - Regulatory Guide 1.97

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 Generic Letter 82-33 (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. As part of Reference 16, TVA committed to evaluate the neutron monitoring system cables, electrical penetrations and connectors for conformance to the criteria reference by the SER. This evaluation has been completed. Consistent with the conclusions reached for Units 2 and 3, the Unit 1 neutron monitoring system cables, electrical penetrations, and electrical connectors to be capable of operating throughout the one hour duration of the ATWS event. NRC acceptance of the deviation requested by TVA was documented in the May 3, 1994 SER (Reference 17).

Status: Closed. This item was closed by NRC in Inspection Report 2005-07 (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 15, 2005, Browns Ferry Nuclear Plant Unit 1 Recovery - NRC Integrated Inspection Report 05000259/2005007.

Generic Letter 83-08, Modification of Vacuum Breakers on Mark I Containments

Commitment: TVA will modify the torus vacuum breakers.

Discussion: TVA responded to the Generic Letter in Reference 1 and committed to modify the torus vacuum breakers. NRC requested additional information in Reference 2, which was provided by TVA in Reference 3. The NRC Safety Evaluation Report was issued in Reference 4. It concluded that TVA's actions would be adequate to restore the original design margin of safety for its vacuum breakers under the revised loadings in the Mark I containment.

Status: Closed. This item was closed by NRC in Inspection Report 2005-06 (Reference 5).

References:

1. TVA letter to NRC, dated November 5, 1984, in regards to Generic Letter 83-08.
2. NRC letter to TVA, dated January 17, 1986, Modification of Vacuum Breakers on Mark I Containments (Generic Letter 83-08).
3. TVA letter to NRC, dated April 7, 1986, in regards to Generic Letter 83-08.
4. NRC letter to TVA, dated November 25, 1986, Modification of Vacuum Breakers on Mark I Containments (Generic Letter 83-08); MPA D-20.
5. NRC letter to TVA, dated May 16, 2005, Browns Ferry Nuclear Plant Unit 1 Recovery - NRC Integrated Inspection Report 05000259/2005006.

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

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 Unit 2 equipment was 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.

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

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: Open.

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

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: Open.

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 87-02, Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors, Unresolved Safety Issue (USI) A-46

Commitment: TVA will resolve USI A-46.

Discussion: In Reference 1, TVA committed to use the Seismic Qualification Utility Group (SQUG) methodology as documented in the Generic Implementation Procedure (GIP) to resolve USI A-46 at Browns Ferry Nuclear Plant. NRC requested clarification regarding TVA's approach in Reference 2, which TVA supplied in Reference 3. In Reference 4, the staff considered TVA's commitment to comply with GIP-2 an acceptable method for resolving USI A-46 at BFN. TVA provided its response to Generic Letter 87-02 for Unit 1 in Reference 5.

Status: Open.

References:

1. TVA letter to NRC, dated September 21, 1992, Browns Ferry Nuclear Plant (BFN) - 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 (TAC Nos. M69430, M69431, and M69432).

3. TVA letter to NRC, dated January 19, 1993, Browns Ferry Nuclear Plant (BFN) - 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 (TAC Nos. M69430, M69431, and M69432).

5. TVA letter, T. E. Abney to NRC, dated October 7, 2004, Browns Ferry Nuclear Plant (BFN) Unit 1 - Response to NRC Generic Letter (GL) 87-02, Supplement 1 that Transmits Supplemental Safety Evaluation Report No. 2 (SSER No. 2) on SQUG Generic Implementation Procedure, Revision 2, as Corrected on February 14, 1992 (GIP-2).

Generic Letter 88-01, NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping

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. Supplemental information regarding Unit 1 was submitted in Reference 3.

Status: Open.

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 July 21, 2004, Browns Ferry Nuclear Plant (BFN) Unit 1 – Supplemental Response to Generic Letter 88-01, NRC Position on Intergranular Stress Corrosion Cracking In BWR Austentic Stainless Steel Piping.

Generic Letter 88-11, Radiation Embrittlement of Reactor Vessel Materials and its Impact on Plant Operations

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 for BFN Units 1, 2 and 3 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

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. NRC confirmed TVA's commitments in Reference 3.

Status: Closed. This item was closed by NRC in Inspection Report 2005-08 (Reference 4).

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.

3. NRC letter to TVA, dated May 9, 1989, Generic Letter 88-14 - Instrument Air Supply System Problems Affecting Safety-Related Equipment (TAC Nos. 71631/71632/71633).

4. NRC letter to TVA, dated November 14, 2005, Browns Ferry Nuclear Plant Unit 1 Recovery - NRC Integrated Inspection Report 05000259/2005008.

Generic Letter 88-20 - Individual Plant Examination (IPE) for Severe Accident Vulnerabilities

Issue: TVA will respond to Generic Letter 88-20.

Discussion: Generic Letter 88-20 requested licensees:

1. Perform a systematic examination to identify any plant specific vulnerabilities to severe accidents, and

2. Identify and review proposed plant improvements (design changes and changes to operating procedures, maintenance, surveillance, training, or staffing).

The Generic Letter did not request individual IPEs be performed for each unit at a multi-unit site.

The BFN facility has been extensively reviewed by the staff, beginning with an interim reliability evaluation in 1982. This was followed by the subsequent submittal of the November 20, 1986 BFN Unit 1 Probabilistic Risk Assessment (PRA) and its subsequent NRC audit. TVA subsequently submitted the BFN IPE in 1992 and the Multi-unit PRA (MUPRA) in 1995. Since then, TVA has performed individual Unit 2 and Unit 3 PRAs. Neither the MUPRA, nor the subsequently performed individual Unit 2 and Unit 3 PRAs have identified plant vulnerabilities when single or multiple units are in operation. These analyses have provided the staff with more than reasonable assurance that TVA has adequately analyzed the plant design and operations.

In Reference 1, NRC identified the specific information needed for the closeout of Generic Letter 88-20 for Browns Ferry Unit 1. This information was provided in Reference 2.

Status: Complete

References: 1. NRC letter to TVA, dated June 21, 2004, Browns Ferry Nuclear Plant, Unit 1 - Request for Additional Information Related to Generic Letter 88-20, Individual Plant Examination For Severe Accident Vulnerability.

2. TVA letter to NRC, dated August 17, 2004, Browns Ferry Nuclear Plant (BFN) - Unit 1 – Response to Request for Additional Information Related to Generic Letter 88-20, Individual Plant Examination for Severe Accident Vulnerability.

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

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.

NRC acceptance of the methods and schedules for the addressed portions of the IPEEE was documented in Reference 2.

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 6 for all three BFN units. The seismic IPEEE Report and the Fire Induced Vulnerability Evaluation were provided in Reference 7.

Status: Open. TVA will complete corrective actions to address the seismic-induced fire vulnerability associated with the emergency lighting battery racks located in the BFN Unit 1 cable spreading room prior to 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 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.

7. TVA letter to NRC, dated January 14, 2005, Browns Ferry Nuclear Plant (BFN) Unit 1 - Response to NRC Generic Letter (GL) 88-20, Supplement 4 - Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities - Submittal of Browns Ferry Nuclear Plant Unit 1 Seismic and Internal Fires IPEEE Reports.

Generic Letter 89-06, Safety Parameter Display System

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 1 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.

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 8, 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

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). NRC acceptance of the program was provided in Reference 2. This item was closed by NRC in Inspection Report 2005-009 (Reference 3).

Status: Closed.

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 August 21, 1989, Licensee Confirmation of its Response to NRC Generic Letter 89-08.
3. NRC letter to TVA, dated February 13, 2006, Browns Ferry Nuclear Plant Unit 1 Recovery - NRC Integrated Inspection Report 05000259/2005009.

Generic Letter 89-10, Safety-Related Motor-Operated Valve Testing and Surveillance

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 1. 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.

TVA's submitted a Unit 1 specific program description in Reference 8. The Generic Letter 89-10 program for BFN Unit 1 has been developed. TVA's review and documentation of the design basis for the operation of each Unit 1 MOV within the scope of the Generic Letter 89-10 program, the valves included in the program, the methods

for determining and adjusting switch settings, testing, surveillance, and maintenance are the same as with the Units 2 and 3 program.

Status: Open.

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 13, 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, Browns Ferry Nuclear Plant, Units 1, 2, and 3 - Implementation Schedule for Generic Letter 89-10 (TAC Nos. M75635, M75636 and M75637).

8. TVA letter to NRC, dated May 5, 2004, Browns Ferry Nuclear Plant (BFN) Unit 1 – Generic Letter 89-10 and Supplements 1 to 7, Safety-Related Motor-Operated Valve (MOV) Testing and Surveillance.

Generic Letter 89-13, Service Water Systems Problems Affecting Safety-Related Equipment

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 1 is to verify that the Unit 1 portions of the Residual Heat Removal Service Water (RHRSW) and Emergency Equipment Cooling Water (EECW) systems satisfy their design criteria. Completion of NRC's review is documented in Reference 4.

Status: Complete. The Unit 1 RHRSW and EECW systems ability to satisfy their design basis have been verified.

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.

4. NRC letter to TVA, dated April 23, 1990, Licensee's Response To Generic Letter 89-13 Regarding Service Water Systems (TAC Nos. 73970, 73971, and 73972).

Generic Letter 89-16, Installation of a Hardened Wetwell Vent

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: Closed. This item was closed by NRC in Inspection Report 2005-06 (Reference 3).

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.
3. NRC letter to TVA, dated May 16, 2005, Browns Ferry Nuclear Plant Unit 1 Recovery - NRC Integrated Inspection Report 05000259/2005006.

Generic Letter 92-01, Reactor Vessel Structural Integrity, Revision 1, and Revision 1 Supplement 1

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.

In Reference 9, NRC requested Licensees verify the completeness of the information previously submitted by November 15, 1995. TVA's response was provided in References 10 and 11.

As a result of new industry data, NRC again requested updated information in Reference 12. The requested information was provided by TVA in Reference 13 for Browns Ferry.

Status: Complete for restart. As committed in TVA's May 23, 1994 letter, TVA will inform NRC of the applicability of NEDO 32205 within 90 days of the final surveillance capsules analysis report.

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, NRC Generic Letter 92-01, Revision 1, Supplement 1: Reactor Vessel Structural Integrity.

10. TVA letter to NRC, dated August 7, 1995, in regards to Generic Letter 92-01.

11. TVA letter to NRC, dated November 7, 1995, Response to NRC Generic Letter (GL) 92-01, Revision 1, Supplement 1; Reactor Vessel Structural Integrity - Browns Ferry (BFN), Watts Bar (WBN), and Sequoyah (SQN) Nuclear Plants.

12. NRC letter to TVA, dated June 10, 1998, Request for Additional Information Regarding Pressure Vessel Integrity at Browns Ferry Nuclear Plant, Units 1, 2, and 3 (TAC Nos. MA1179, MA1180, and MA1181).

13. TVA letter to NRC, dated September 8, 1998, Browns Ferry Nuclear Plant (BFN) - Units 1, 2, and 3 - Generic Letter (GL) 92-01, Revision 1, Supplement 1, Reactor Vessel Structural Integrity - Response to NRC Request for Additional Information (TAC Nos. MA1179, MA1180, and MA1181).

Generic Letter 92-04, Resolution of the Issues Related to Reactor Vessel Water Level Instrumentation in BWRs

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. NRC approval of TVA's program for the resolution of Generic Letter 92-04 is documented in Reference 2. Interim training of the operators was provided as documented in Inspection Report 93-16 (Reference 3).

Long-term actions were addressed as part of the resolution of Bulletin 93-03 - Resolution of Issues Related to Reactor Vessel Water Level Instrumentation in BWRs

Status: Complete.

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.

2. NRC letter to TVA, dated March 25, 1993, Response to Generic Letter 92-04, Resolution of the Issues Related to Reactor Vessel Water Level Instrumentation in Boiling Water Reactors.

3. NRC letter to TVA, dated May 18, 1993, NRC Inspection Report No. 259/93-16, 260/93-16 and 296/93-16.

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.

Discussion: TVA responded to Generic Letter 94-02 in Reference 1. In Reference 2, TVA notified NRC that the Unit 1 procedure revisions would be completed prior to restart. In Reference 3, TVA stated its intent to implement the long-term stability solution on Unit 1 before the restart of that unit.

Status: Open.

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: TVA will inspect 100% of the accessible areas on core shroud welds Hl through H7. The inspections will be conducted using the best available technology (i.e., Smart-2000 system, suction cup scanners, Westinghouse 1250 camera, etc.) prior to restart.

Discussion: In Reference 1, TVA committed to inspect the accessible areas of the core shroud prior to Unit 1 restart. The NRC's Safety Evaluation is contained in Reference 2.

Status: Closed. This item was closed by NRC in Inspection Report 2005-08 (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 November 14, 2005, Browns Ferry Nuclear Plant Unit 1 Recovery - NRC Integrated Inspection Report 05000259/2005008.

Generic Letter 95-07, Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves

Commitment: Unit 1 will be evaluated for the requirements of Generic Letter 95-07 prior to restart.

Discussion: TVA provided response to NRC in References 1 through 5 for BFN Units 2 and 3, Sequoyah Units 1 and 2, and Watts Bar. The NRC's Safety Evaluation for Generic Letter 95-07 was provided in Reference 6.

TVA responded to Generic Letter 95-07 for BFN Unit 1 in Reference 7 and provided additional information in Reference 8. The review methodology used for Unit 1 is the same as that used for TVA's other operating nuclear plants.

The safety related power operated gate valves in Unit 1 have been reviewed for potential susceptibility to the pressure locking and thermal binding phenomenon. There is one High Pressure Coolant Injection valve in Unit 1 which is susceptible to thermal binding. Prior to restart, this valve will be replaced with a double disc valve of similar design as Unit 2 and 3. Two Core Spray minimum flow valves in Unit 1 will be replaced with double disc valves prior to Unit 1 restart. In addition, five safety related power operated gate valves will be modified prior to Unit 1 restart to preclude the potential for pressure locking. The reactor side disc face of these five valves will be modified by drilling a hole in the disc face into the cavity between the disc faces to avoid pressure locking. NRC found TVA's responses to be an acceptable resolution to the GL 95-07 concerns (Reference 9).

Status: **Closed**. The valves discussed above will be modified or replaced prior to restart. This item was closed by NRC in Inspection Report 2006-006 (Reference 10).

References: 1. TVA letter to NRC, dated October 16, 1995, Browns Ferry (BFN), Sequoyah (SQN), and Watts Bar (WBN) Nuclear Plants - Response to Generic Letter, Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves.

2. TVA letter to NRC, dated December 15, 1995, Browns Ferry (BFN), Sequoyah (SQN), and Watts Bar (WBN) Nuclear Plants - Supplemental Response to Generic Letter, Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves.

3. TVA letter to NRC, dated February 13, 1996, Browns Ferry (BFN), Sequoyah (SQN), and Watts Bar (WBN) Nuclear Plants - 180-Day Response to Generic Letter, Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves.

4. TVA letter to NRC, dated July 30, 1996, Browns Ferry Nuclear Plant (BFN) - Units 2 and 3, Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves – Response to Request for Additional Information (TAC Nos. M93437 and M93438).

5. TVA letter to NRC, dated February 19, 1999, Browns Ferry Nuclear Plant (BFN) - Units 2 and 3 - Generic Letter (GL) 95-07, Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves – Supplemental Response (TAC Nos. M93437 and M93438).

6. NRC letter to TVA, dated June 23, 1999, Safety Evaluation for Generic Letter, Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves, Browns Ferry Nuclear Plant (BFN) - (TAC Nos. M 93436, M93437 and M93438).

7. TVA letter to NRC, dated May 11, 2004, Browns Ferry Nuclear Plant (BFN) Unit 1 – Generic Letter 95-07, Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves.

8. TVA letter to NRC, dated July 29, 2004, Browns Ferry Nuclear Plant (BFN) Unit 1 – Response to Request for Additional Information Regarding Generic Letter 95-07, Pressure Locking and Thermal Binding of Safety-Related Power Operated Gate Valves.

9. NRC letter to TVA, dated January 28, 2005, Browns Ferry Nuclear Plant, Unit 1 - Closeout of Generic Letter 95-07, "Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves," Browns Ferry Nuclear Plant, Unit 1 (TAC No. MC3125).

10. NRC letter to TVA, dated May 15, 2006, Browns Ferry Nuclear Plant Unit 1 Recovery - NRC Integrated Inspection Report 05000259/2006006.

Generic Letter 96-01, Testing of Safety-Related Logic Circuits

Commitment: BFN Unit 1 will implement the recommendations of Generic Letter 96-01 prior to restart.

Discussion: TVA committed to implement the recommendations of Generic Letter 96-01 prior to restart in Reference 1.

Status: Open.

References:

1. TVA letter to NRC, dated April 18, 1996, Response to Generic Letter (GL) 96-01, Testing of Safety-Related Logic Circuits (TAC Nos. M94650, M94651, M95652, M94732, M94733, M94750).

Generic Letter 96-05, Periodic Verification of Design Basis Capability of Motor Operated Valves

Commitment: BFN Unit 1 will implement the Joint Owner's Group recommended GL 96-05 Periodic Verification Program, and begin testing during the first refueling outage after restart.

Discussion: TVA responded for all its nuclear facilities in Reference 1 and supplemented the response in Reference 2. TVA was a member of the Joint Owners' Group (JOG), which culminated in the dynamic testing of 176 Motor Operated Valves (MOVs) at 98 BWR and PWR plants. Each valve was tested three times over five years to address potential degradation in required thrust or torque. The final Topical Report and recommendations for periodic testing were submitted by Reference 3. No additional interim testing is required for Unit 1 since the industry program has been completed. This item was closed by NRC in Inspection Report 2005-009 (Reference 4).

Status: Closed.

References:

1. TVA letter to NRC, dated March 17, 1997, Browns Ferry Nuclear Plant (BFN) (TAC Nos. M97020, M97021, M97022), Sequoyah Nuclear Plant (SQN), Watts Bar Nuclear Plant (WBN), and Bellefonte Nuclear Plant (BLN) 180-Day Response to NRC Generic Letter (GL) 96-05, Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves, Dated September 18, 1996.

2. TVA letter to NRC, dated April 28, 1998, Browns Ferry Nuclear Plant (BFN) (TAC Nos. M97020, M97021, M97022), Sequoyah Nuclear Plant (SQN), Watts Bar Nuclear Plant (WBN), and Bellefonte Nuclear Plant (BLN) Response to NRC's Safety Evaluation Dated October 30, 1997, on Joint Owners Group's (JOG) Program for Generic Letter (Gl) 96-05, Periodic Verification (PV) of Motor-Operated Valves (MOV) Described in Topical Report MPR-1807 (Revision 2).

3. JOG letter to NRC, dated February 27, 2004, Joint Owners Group Program on Motor-Operated Valve Periodic Verification.

4. NRC letter to TVA, dated February 13, 2006, Browns Ferry Nuclear Plant Unit 1 Recovery - NRC Integrated Inspection Report 05000259/2005009.

Generic Letter 96-06, Assurance of Equipment Operability and Containment Integrity During Design Basis Accident Conditions.

Commitment: TVA will address Generic Letter 96-06 prior to restart.

Discussion: On September 30, 1996, NRC issued Generic Letter 96-06, which requested licensees address the susceptibility for waterhammer and two-phase flow in the containment air cooler system and over pressurization of piping that penetrates containment.

As described in Reference 1, TVA evaluated the Unit 1 containment air cooler cooling water systems to determine if they are susceptible to either water hammer or two-phase flow conditions during postulated accident conditions. TVA has also evaluated piping systems that penetrate containment to determine if they are susceptible to thermal expansion of fluid such that overpressurization of piping may occur. Two commitments resulted from this evaluation:

- The Drywell Floor and Equipment Drains system is acceptable based on leakage through valves which will avoid thermally induced pressure increases above the rated design pressure of the system. However, TVA will modify the system to provide a designed method of overpressure protection.

- The Demineralized Water system has the potential to be affected by overpressurization during a postulated LOCA if the piping is completely filled with water and isolated. In response, TVA will implement procedure changes to assure the system is sufficiently drained following use and is open to containment during power operation.

In Reference 2, NRC stated that TVA had provided an acceptable resolution to the concerns of the Generic Letter.

Status: Closed. This item was closed by NRC in Inspection Report 2005-08 (Reference 3).

References:

1. TVA letter to NRC, dated May 12, 2004, Browns Ferry Nuclear Plant (BFN) Unit 1 – Generic Letter 96-06, Assurance of Equipment Operability and Containment Integrity During Design Basis Accident Conditions.

2. NRC letter to TVA, dated February 7, 2005, Browns Ferry Nuclear Plant, Unit 1 - Closeout of Generic Letter 96-06, "Assurance of Equipment Operability and Containment Integrity During Design-basis Accident Conditions" (TAC No. MC3186).

3. NRC letter to TVA, dated November 14, 2005, Browns Ferry Nuclear Plant Unit 1 Recovery - NRC Integrated Inspection Report 05000259/2005008.

Generic Letter 97-04, Assurance Of Sufficient Net Positive Suction Head (NPSH) For Emergency Core Cooling and Containment Heat Removal Pumps

Commitment: TVA will address Generic Letter 97-04 prior to restart.

Discussion: On October 7, 1997, NRC issued NRC Generic Letter 97-04, which requested licensees review the current design-basis analyses used to determine the available NPSH for the emergency core cooling (including core spray and decay heat removal) and containment heat removal pumps.

TVA replied to Generic Letter 97-04 for BFN Unit 1 in Reference 1. TVA stated that it would request approval to credit containment overpressure as part of proposed Technical Specification (TS) 431, the BFN Unit 1 Extended Power Uprate application, which was submitted in Reference 2. Upon approval of the requested change, no additional information should be required to close Generic Letter 97-04 for BFN Unit 1.

Status: Complete.

References:

1. TVA letter to NRC, dated May 6, 2004, Browns Ferry Nuclear Plant (BFN) Unit 1 – Response to NRC Generic Letter (GL) 97-04, Assurance of Sufficient Net Positive Suction Head (NPSH) for Emergency Core Cooling and Containment Heat Removal Pumps.

2. TVA letter to NRC, "Browns Ferry Nuclear Plant (BFN) - Unit 1- Proposed Technical Specifications (TS) Change TS - 431 - Request For License Amendment - Extended Power Uprate (EPU) Operation," dated June 28, 2004.

Generic Letter 98-01, Year 2000 (Y2K) Readiness of Computer Systems at Nuclear Power Plants

Commitment: None

Discussion: Generic Letter 98-01 requested information regarding Y2K readiness at nuclear power plants. TVA certified the readiness of its nuclear facilities in Reference 1. In Reference 2, the NRC concluded that all requested information had been provided. Therefore, NRC considered GL 98-01 to be closed for TVA's nuclear facilities.

Status: Closed. This item was closed by NRC in Inspection Report 2005-06 (Reference 3).

References:

1. TVA letter to NRC, dated June 29, 1999, Browns Ferry Nuclear Plant (BFN) Units 1, 2, and 3, Sequoyah Nuclear Plant (SQN) Units 1 and 2, Watts Bar Nuclear Plant (WBN) Unit 1, Final Response to Generic Letter (GL) 98-01, Year 2000 (Y2K) Readiness of Computer Systems at Nuclear Power Plants.

2. NRC letter to TVA, dated October 18, 1999, Watts Bar, Browns Ferry and Sequoyah - Response to Generic Letter 98-01, "Year 2000 Readiness of Computer Systems at Nuclear Power Plants" (TAC Nos. MA1810, MA1811, MA1812, MA1888, MA1889 and MA1906).

3. NRC letter to TVA, dated May 16, 2005, Browns Ferry Nuclear Plant Unit 1 Recovery - NRC Integrated Inspection Report 05000259/2005006.

Generic Letter 98-04, Potential for Degradation of the Emergency Core Cooling System and the Containment Spray System after a Loss-Of-Coolant Accident because of Construction and Protective Coating Deficiencies and Foreign Material in Containment

Commitment: TVA will address Generic Letter 98-04 prior to restart.

Discussion: NRC issued GL 98-04 to alert licensees to with the material condition of Service Level 1 protective coatings inside the containment. GL 98-04 requested that licensees describe their programs for ensuring that Service Level 1 protective coatings inside containment do not detach from their substrate and adversely affect the ability of the Emergency Core Cooling Systems (ECCS) and the safety-related Containment Spray System from performing their function following a Design Basis Loss of Coolant Accident (LOCA).

TVA responded to GL 98-04 for Unit 1 in Reference 1. In summary, TVA has implemented controls for the procurement, application, and maintenance of Service Level 1 protective coatings used inside the primary containment in a manner that is consistent with the licensing basis and regulatory requirements applicable to BFN.

Status: Complete.

References:

1. TVA letter to NRC, dated May 11, 2004, Browns Ferry Nuclear Plant (BFN) Unit 1 - Response to NRC Generic Letter (GL) 98-04, Potential for Degradation of the Emergency Core Cooling System and the Containment Spray System after a Loss-Of-Coolant Accident because of Construction and Protective Coating Deficiencies and Foreign Material in Containment.

Generic Safety Issue 75 / Multi-Plant Action B085, Generic Letter 83-28, Item 1.2, Post-Trip Review - Data and Information Capability

Issue: This issue arose from the staff concerns resulting from analysis of events that occurred at the Salem Nuclear Power Plant of February 22 and 25, 1983. The study of these events resulted in the issuance of NUREG-1000 and Generic Letter 83-28. Item 1.2 of the Generic Letter requests licensees have the capability to record, recall, and display data and information to permit diagnosing the causes of unscheduled reactor shutdowns and the proper functioning of safety-related equipment during these events using systematic safety assessment procedures.

Discussion: Refer to previous topic entitled Generic Letter 83-28, Salem ATWS, Item 1.2, Post Trip Review (Data and Information Capability) (Page E1-58).

Status: Refer to previous topic entitled Generic Letter 83-28, Salem ATWS, Item 1.2, Post Trip Review (Data and Information Capability) (Page E1-58).

References: Refer to previous topic entitled Generic Letter 83-28, Salem ATWS, Item 1.2, Post Trip Review (Data and Information Capability) (Page E1-58).

HVAC Duct Supports

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 References 1 and 2). The design criteria for the seismic qualification of the HVAC and supports was submitted in Reference 3. The NRC staff's Safety Evaluation Report (SER) on the criteria was included in Reference 4.

Status: Open. For Unit 1, a review was performed to identify the areas of Class I HVAC ductwork that were not previously qualified for Units 2 and 3 operation. The only areas specific to Unit 1 thus identified were the ductwork associated with the pump motor coolers for the Unit 1 Residual Heat Removal system and Core Spray system. Based upon the seismic qualification calculations, modifications will be completed to ensure that this ductwork is qualified to the long term requirements of the design criteria.

References:

1. NRC letter to TVA, dated August 22, 1990, Safety Evaluation of Inspection Open Item Regarding HVAC Ductworks and Supports for Browns Ferry Nuclear Plant, Unit 2 (TAC No. 62259).

2. 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).

3. TVA letter to NRC, dated November 15, 1991, Heating, Ventilation and Air Conditioning (HVAC) Seismic Design Criteria.

4. NRC letter to TVA, dated July 16, 1992, Evaluation of Seismic Design Criteria for Heating Ventilation and Air Conditioning.

Instrument Sensing Lines

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. In Reference 2, NRC concluded that the program to address concerns related to instrument sensing lines was adequate.

Status: Open. The sample lines to the H_2O_2 analyzers will be modified to assure that there are no moisture traps which would block the air sample flow from the drywell/torus to the analyzers.

Safety-related sense lines have been evaluated in order to maintain the integrity of instrument sense line separation as required by the 10 CFR 50, Appendix R, FSAR Appendix M, and Generic Evaluation of Internally Generated Missiles programs. Sense lines will be either justified for use-as-is, or modified as required.

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. 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

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 1 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 will be analyzed for Seismic Class I qualification and necessary modifications completed.

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 (Page E1-63).

Status: Refer to previous topic entitled Generic Letter 88-01 - NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping (Page E1-63).

References: None.

Large Bore Piping Supports

Commitment: TVA will complete Bulletin 79-14.

Discussion: Refer to previous topic entitled Bulletin 79-14, Seismic Analysis for As-Built Safety-Related Piping Systems (Page E1-7).

Status: Refer to previous topic entitled Bulletin 79-14, Seismic Analysis for As-Built Safety-Related Piping Systems (Page E1-7).

References: None.

Long Term Torus Integrity Program

Commitment: TVA committed to resolve torus attached piping support discrepancies in accordance with the Unit 2 criteria precedent. The inspection of the nonsafety-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: On January 13, 1981 (Reference 1), the Commission issued an Order that required the reassessment of the containment design for suppression pool hydrodynamic loading conditions. In Reference 2, a subsequent Order extended the modification completion date until prior to the start of Cycle 6. NRC conducted a post-implementation audit review of the BFN Plant Unique Analysis Report for the Mark I containment long-term program (Reference 3). The staff determined that all but a few of the modifications made by TVA were in accordance with the generic acceptance criteria and the deviations from the acceptance criteria were found acceptable. Discrepancies were identified between design drawings and the actual modifications. The action plan for dispositioning the long-term torus integrity discrepancies was provided by TVA in Reference 4 and approved by NRC in Reference 5.

In Reference 6, NRC identified a Violation with regards to activities associated with the Unit 1 LTTIP corrective actions. TVA responded in Reference 7.

Status: Open. TVA is performing modifications to resolve torus attached piping support discrepancies, safety-related torus and torus related structure discrepancies, and nonsafety-related catwalk discrepancies in accordance with the Unit 2 precedent.

References: 1. NRC letter to TVA, dated January 13, 1981, in regards to Orders for Modification of Licenses and Grant of Extension of Exemptions.

2. NRC letter to TVA, dated January 19, 1982, in regards to Order Modifying the January 13, 1981 Order.

3. NRC letter to TVA, dated May 6, 1985, Mark I Containment Long Term Program.

4. 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.

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

6. NRC letter to TVA, dated May 12, 2004, Notice of Violation (Browns Ferry Nuclear Plant Unit 1 Recovery - NRC Inspection Report No. 5000259/2004011).

7. TVA letter to NRC, dated June 2, 2004, Browns Ferry Nuclear Plant (BFN) – NRC Inspection Report 50-259/2004-011 – Reply to Notice Of Violation (NOV) EA-04-063.

Lower Drywell Platforms and Miscellaneous Steel

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: Open.

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.

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 (Reference 1) NRC approval of the program was documented in Reference 2.

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 Unit 1 evaluation concluded that Browns Ferry conforms to the original licensing basis for MELB flooding and that the existing flooding studies and protective measures are adequate to justify continued operations (Reference 3).

Status: Complete.

References:

1. TVA letter to NRC, dated October 24, 1988, Browns Ferry Nuclear Plant (BFN) - Nuclear Performance Plan, Revision 2.

2. NRC letter to TVA, dated January 23, 1991, NUREG-1232, Volume 3, Supplement 2 - Browns Ferry, Unit 2, Section 3.8 (Page 3-8).

3. TVA letter to NRC, dated June 25, 2004, Browns Ferry Nuclear Plant (BFN) Unit 1 – Completion of the Program - Moderate Energy Line Break (MELB) Flooding Evaluation.

NUREG-0737 (TMI Action Plan), Action Item I.D.1, Control Room Design Review

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 in Reference 1. NRC's initial Safety Evaluation Report (SER) was issued as Reference 2. TVA provided additional information in References 3. In Reference 4, 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 SER for the BFN CRDR was provided in Reference 5.

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 6). NRC approval of this request was contained in Reference 7.

Status: Open. TVA is implementing its CRDR corrective action plan for Unit 1 and all safety significant HEDs will be corrected.

References:

1. TVA letter to NRC, dated December 30, 1986, Detailed Control Room Design Review (DCRDR) - NUREG-0737, Item I.D.1.
2. NRC letter to TVA, dated August 9, 1988, Safety Evaluation for the Detailed Control Room Design, Browns Ferry Nuclear Plant, Units 1, 2 and 3 (TACs 56104, 56105, 56106).
3. TVA letter to NRC, dated November 3, 1988, Response to NRC Safety Evaluation for the BFN Detailed Control Room Design Review (DCRDR).
4. TVA letter to NRC, dated August 22, 1991, Supplemental Response to NRC Safety Evaluation for the BFN Detailed Control Room Design Review (DCRDR).

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

6. 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).

7. 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

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). (Page E1-71)

Status: Refer to the previous item entitled Generic Letter 89-06 - Safety Parameter Display System - 10 CFR 50.54(f). (Page E1-71)

References: None.

NUREG-0737 (TMI Action Plan), Action Item II.B.3, Post-Accident Sampling System

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

Discussion: A description of the BFN PASS design was provided in References 1 and 2. The Safety Evaluation Report for this system was provided by Reference 3. TVA submitted a request to decommit to the requirement for a PASS in Reference 4. NRC approved this request in Reference 5.

Status: **Closed**. TVA committed to:

- Develop contingency plans for obtaining and analyzing highly radioactive samples of reactor coolant, the suppression pool, and containment atmosphere prior to Unit 1 fuel load; and

- Describe in emergency plan implementing procedures the capability for classifying fuel damage events at the Alert level threshold at radioactivity levels of 300 uCi/ml dose equivalent I-131 prior to Unit 1 fuel load.

This item was closed by NRC in Inspection Report 2006-006 (Reference 6).

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.

4. TVA letter to NRC, dated February 19, 2003, Browns Ferry Nuclear Plant (BFN) - Units 1, 2, and 3 - Technical Specifications (TS) Change 423 - Eliminate Requirements for Post Accident Sampling System (PASS) using the Consolidated Line Item Improvement Process and Delete Regulatory Commitment.

5. NRC letter to TVA, dated May 9, 2003, Browns Ferry Nuclear Plant, Units 1, 2 and 3, Re: Issuance of Amendments Eliminating Requirements for Postaccident Sampling (TAC Nos. MB7747, MB7748 and MB7749).

6. NRC letter to TVA, dated May 15, 2006, Browns Ferry Nuclear Plant Unit 1 Recovery - NRC Integrated Inspection Report 05000259/2006006.

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

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 1. NRC approval of the Unit 1 containment isolation design is provided in Reference 3. NRC was notified of subsequent changes to the containment isolation configuration, which were being made under the provisions of 10 CFR 50.59, in Reference 4.

Status: Open

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 June 24, 2004, Browns Ferry Nuclear Plant (BFN) Unit 1 – Supplemental Information for Conformance with NUREG-0737, Item II.E.4.2, and 10 CFR 50, Appendix J.

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

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. In Reference 2, NRC stated no deviations from NRC requirements had been identified; hence no NRC review was required. Reference 3 issued a Confirmatory Order for the installation of the radiation monitors prior to start-up in Cycle 6.

Status: **Closed**. TVA will upgraded the two Unit 1 drywell radiation monitor loops to meet the requirements of NUREG-0737 for Containment High Range Radiation Monitors (CHRRM). The modifications will ensure that the CHRRMs are capable of detecting and measuring the radiation level within the drywell during and following an accident. This item was closed by NRC in Inspection Report 2006-006 (Reference 4).

References:

1. TVA letter to NRC, dated December 23, 1980, in regards to post-TMI requirements.
2. NRC letter to TVA, dated January 8, 1982, Re: Status of NUREG-0737 Item II.F.1.3 at Browns Ferry Unit Nos. 1, 2 and 3.
3. NRC letter to TVA, dated March 25, 1983, in regards to Confirmatory Order for Post-TMI Related Items Set Forth in NUREG-0737.
4. NRC letter to TVA, dated May 15, 2006, Browns Ferry Nuclear Plant Unit 1 Recovery - NRC Integrated Inspection Report 05000259/2006006.

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

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 for this item was issued in Reference 5. This item was closed by NRC in Inspection Report 90-29 (Reference 6).

Status: Closed. This item was closed by NRC in Inspection Report 2005-06 (Reference 7).

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, and II.F.1.6 Containment Hydrogen Monitor.

6. NRC letter to TVA, dated November 8, 1990, Notice of Violation (NRC Inspection Report Nos. 50-259/90-29, 50-260/90-29, and 50-296/90-29).

7. NRC letter to TVA, dated May 16, 2005, Browns Ferry Nuclear Plant Unit 1 Recovery - NRC Integrated Inspection Report 05000259/2005006.

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

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. In Reference 4, NRC issued a Confirmatory Order for the installation of the water level monitor prior to start-up in Cycle 6 (July 1983). The Safety Evaluation Report for this item was issued in Reference 5. A Technical Specification amendment was issued to reflect the modifications performed during that outage (Reference 6).

Status: Closed. This item was closed by NRC in Inspection Report 2005-06 (Reference 7).

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.
6. NRC letter to TVA, dated December 12, 1983, in regards to Amendment 92 for Browns Ferry Unit 1.

7. NRC letter to TVA, dated May 16, 2005, Browns Ferry Nuclear Plant Unit 1 Recovery - NRC Integrated Inspection Report 05000259/2005006.

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

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. TVA committed in Reference 1 to replace the RPS and ECCS instruments with analog trip units. TVA committed in Reference 2 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. NRC found TVA's proposed modifications acceptable in Reference 3. The NRC was notified of this change by Reference 4.

Status: Closed. This item was closed by NRC in Inspection Report 2005-07 (Reference 5).

References:

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

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

3. NRC letter to TVA, dated November 18, 1986, NUREG-0731, Item II.F.2, Inadequate Core Cooling Instrumentation (Generic Letter 84-23); MPA-F-26.

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).

5. NRC letter to TVA, dated August 15, 2005, Browns Ferry Nuclear Plant Unit 1 Recovery - NRC Integrated Inspection Report 05000259/2005007.

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

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. TVA will modify 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.

Status: Closed. This item was closed by NRC in Inspection Report 2005-07 (Reference 7).

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).

7. NRC letter to TVA, dated August 15, 2005, Browns Ferry Nuclear Plant Unit 1 Recovery - NRC Integrated Inspection Report 05000259/2005007.

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

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). TVA will perform modifications to the ADS logic that will allow the ADS to initiate vessel depressurization.

Status: Closed. This item was closed by NRC in Inspection Report 2005-07 (Reference 3).

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.

3. NRC letter to TVA, dated August 15, 2005, Browns Ferry Nuclear Plant Unit 1 Recovery - NRC Integrated Inspection Report 05000259/2005007.

NUREG-0737 (TMI Action Plan), Action Item II.K.3.27, Common Reference Level for Vessel Level Instrumentation

Issue: Provide level instruments that are referenced to the same point.

Discussion: In Reference 1, NRC proposed that TVA incorporate the requirements of Action Item II.K.3.27 into the control room design review to be performed per NUREG-0737 Action Item I.D.1. This approach eliminates the possibility of changing water level instrument scales twice; once per Item II.K.3.27 and then possibly again per Item I.D.1. TVA accepted this proposal in Reference 2.

Status: Refer to previous topic entitled NUREG-0737 (TMI Action Plan), Action Item I.D.1, Control Room Design Review (Page E1-106).

References:

1. NRC letter to TVA, dated October 28, 1982, Subject: NUREG-0737 Action Item II.K.3.27 (Common Reference Level).
2. TVA letter to NRC, dated December 3, 1982, in regards to of NUREG-0737, Item II.I.3.27 (Common Reference Level).

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

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. TVA will perform modifications to upgrade the ADS accumulator system. This will be accomplished by splitting the ring header into two sections, and providing an alternate nitrogen supply to the Drywell Control Air System.

Status: Closed. This item was closed by NRC in Inspection Report 2005-07 (Reference 8).

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, 1984, 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.

8. NRC letter to TVA, dated August 15, 2005, Browns Ferry Nuclear Plant Unit 1 Recovery - NRC Integrated Inspection Report 05000259/2005007.

Platform Thermal Growth

Issue: TVA will address thermal growth in drywell platforms and miscellaneous steel frames.

Discussion: In Reference 1, TVA informed NRC that TVA's program for the resolution of issues associated with drywell steel platforms for Unit 3 was incorporated into the program "Lower Drywell Platforms and Miscellaneous Steel". This program includes upper drywell platforms and platform thermal growth as well.

Status: Refer to previous topic entitled Lower Drywell Platforms and Miscellaneous Steel (Page E1-103).

References:

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

Q-List

Commitment: TVA will developing a Q-list which provides a list of safety-related systems, structures, and components necessary to ensure:

- The integrity of the reactor coolant pressure boundary.
- The capability to shut down the reactor and maintain it in a safe shutdown condition.
- The capability to prevent or mitigate the consequences of accidents which could result in potential offsite radiation exposures comparable to the 10 CFR 100 limits.

Discussion: The Q-List Program at BFN is described in Section III.14.1 of the Browns Ferry Nuclear Performance Plan (Reference 1).

Status: Open.

References:

1. TVA letter to NRC, dated October 24, 1988, Browns Ferry Nuclear Plant (BFN) - Nuclear Performance Plan, Revision 2.

Restart Test Program

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 3 System Test Specifications, test procedures, and test results is performed. Administrative controls will be used to insure that the status of the operating units are 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.

Status: Open.

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 2, 1994, Restart Test Program (RTP) Update for Units 1 and 3.

Seismic Class II Over I / Spacial Systems Interactions and Water Spray

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 1 was provided to the NRC in Reference 1. The first part involves the evaluation of potential seismic-induced water spray effects of Class II systems on Class I systems. The second part involves the evaluation of potential seismic-induced, spatial interaction effects of Class II systems on Class I systems. The approval of the Seismic Class II Over I/Spacial Systems Interactions and Water Spray program is contained in References 2 and 3.

Status: Open.

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).

3. NRC letter to TVA, dated November 19, 1992, Generic Letter 87-02, Supplement 1 Response - Browns Ferry Nuclear Plant (TAC Nos. M69430, M69431, and M69432).

Small Bore Piping

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.

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.

Thermal Overloads

Commitment: TVA will resolve the thermal overload issue on Unit 1 prior to restart.

Discussion: A review of BEN design drawings identified that thermal overload (TOL) heater sizes for 480 VAC and 250 VDC motor control centers (MCs) were not specified. Consequently, there was no documentation to verify that TOL heater installations are properly sized.

TVA's plan for addressing the TOL issue were submitted in Reference 1. NRC requested additional information in Reference 2, which TVA provided in Reference 3. Supplemental information was provided in References 4 and 5. NRC approval of the program is documented in Reference 6.

Status: Open. TVA will complete a walkdown program to document the nameplate data for each load and replace the TOLs with ones of the proper size. The criteria for sizing has been determined and documented. Calculations have been performed to ensure the TOL heaters are the proper size for their loads.

References:

1. TVA letter to NRC, dated April 28, 1988, Browns Ferry Nuclear Plant (BFN)- Electrical Issues (NRC TAC No. 62260).

2. NRC letter to TVA, dated August 10, 1988, Request For Additional Information - Browns Ferry Nuclear Plant, Unit 2.

3. TVA letter to NRC, dated September 21, 1988, Browns Ferry Nuclear Plant (BFN) - Response to Request for Additional Information - Electric Circuit Protection by Current Limiting Fuses (TAC No. 62260-F).

4. TVA letter to NRC, dated February 28, 1989, Browns Ferry Nuclear Plant (BFN) - Thermal Overload (TOL) Heaters (TAC No. 62260-F).

5. TVA letter to NRC, dated May 15, 1989, Browns Ferry Nuclear Plant (BFN) - Thermal Overload (TOL) Heaters - Sizing Criteria Clarification - (TAC No. 62260-F).

6. NRC letter to TVA, dated January 23, 1991, NUREG-1232, Volume 3, Supplement 2 - Browns Ferry, Unit 2, Section 3.11.1 (Page 3-8).

Unresolved Safety Issue A-7, Mark I Long-Term Program

Issue: This Unresolved Safety Issue was resolved in August 1982 with the publication of Supplement 1 to NUREG-0661, "Safety Evaluation Report, Mark I Containment Long-Term Program" and Standard Review Plan Section 6.2.1.1.C.

Discussion: Refer to previous topic entitled Long Term Torus Integrity Program (Page E1-101).

Status: Refer to previous topic entitled Long Term Torus Integrity Program (Page E1-101).

References: None.

Unresolved Safety Issue A-9, Anticipated Transients Without Scram

Issue: This Unresolved Safety Issue was resolved in June 1983 with the publication of a final rule (10 CFR 50.62) to require improvements in plants to reduce the likelihood of failure of the reactor protection system (RPS) to shut down the reactor following anticipated transients and to mitigate the consequences of an anticipated transient without scram (ATWS) event.

Discussion: TVA provided conceptual design information for conformance with the ATWS Rule in Reference 1. In Reference 2, the NRC found that TVA's design conformance with the ATWS Rule with exception that the Browns Ferry's Alternate Rod Injection and Reactor Pump Trip designs utilized the same analog trip units for both the ATWS system and the reactor trip system (RTS). TVA's response to the diversity issue was provided in Reference 3.

Status: Open.

References:

1. TVA letter to NRC, dated March 1, 1988, Browns Ferry Nuclear Plant (BFN) - Anticipated Transients Without Scram (ATWS) Rule (10 CFR 50.62) - Plant Specific Design.

2. NRC letter to TVA, dated January 22, 1989, Compliance with Rule 10 CFR 50.62 Relating to Alternate Rod Injection and Reactor Pump Trip Systems (TAC 59072, 59073 and 59074).

3. TVA letter to NRC, dated November 29, 1990, Browns Ferry Nuclear Plant (BFN) - Response to NRC Followup Items Received During ATWS Inspection.

Unresolved Safety Issue A-24, Qualification of Class 1E Safety Related Equipment

Issue: This Unresolved Safety Issue was resolved in July 1981 with the publication of NUREG-0588, Revision 1, "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment." In summary, the resolution of A-24 is embodied in 10 CFR 50.49.

Discussion: Refer to previous topic entitled Environmental Qualification (Page E1-47).

Status: Refer to previous topic entitled Environmental Qualification (Page E1-47).

References: Refer to previous topic entitled Environmental Qualification (Page E1-47).

Unresolved Safety Issue A-26,

Issue: This Unresolved Safety Issue was resolved in September 1978 with the publication of NUREG-0224, "Reactor Vessel Pressure Transient Protection for PWRs," and Standard Review Plan Section 5.2. NRC subsequently issued Generic Letter 88-11, "NRC Position on Radiation Embrittlement of Reactor Vessel Materials and its Impact on Plant Operations," which provided guidance regarding the review of pressure-temperature limits.

Discussion: Refer to previous topic entitled Generic Letter 88-11, Radiation Embrittlement of Reactor Vessel Materials and its Impact on Plant Operations (Page E1-64).

Status: Refer to previous topic entitled Generic Letter 88-11, Radiation Embrittlement of Reactor Vessel Materials and its Impact on Plant Operations (Page E1-64).

References: Refer to previous topic entitled Generic Letter 88-11, Radiation Embrittlement of Reactor Vessel Materials and its Impact on Plant Operations (Page E1-64).

Unresolved Safety Issue A-44, Station Blackout

Issue: This Unresolved Safety Issue was resolved in June 1988 with the publication of the Station Blackout Rule (10 CFR 50.63) and Regulatory Guide 1.155.

Discussion: In Reference 1, the staff Safety Evaluation concluded that TVA's proposed methodology for coping with a Station Blackout event at BFN, Units 1, 2, and 3 conforms with 10 CFR 50.63. As requested in the NRC's Safety Evaluation Report, TVA provided its implementation schedule in Reference 2. This letter included a commitment to complete the Unit 1 equipment and associated procedure modifications required for SBO rule compliance prior to restart.

Status: Open.

References:

1. NRC letter to TVA, dated September 16, 1992, Station Blackout - Browns Ferry Units 1, 2, and 3 (MPA-A022) (TAC Nos. M68517, M68518, and M68519).

2. TVA letter to NRC, dated October 15, 1992, Browns Ferry Nuclear Plant (BFN) - 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

Issue: This Unresolved Safety Issue was resolved with the issuance of Generic Letter 87-02 on February 19, 1987, which endorsed the approach of using the seismic and test experience data proposed by the Seismic Qualification Utility Group (SQUG) and Electric Power Research Institute (EPRI). This approach was endorsed by the Senior Seismic Review and Advisory Panel (SSRAP) and approved by the NRC staff.

Discussion: Refer to previous topic entitled Generic Letter 87-02, Verification of Seismic Adequacy of Mechanical and Electrical Equipment In Operating Reactors (Page E1-61).

Status: Refer to previous topic entitled Generic Letter 87-02, Verification of Seismic Adequacy of Mechanical and Electrical Equipment In Operating Reactors (Page E1-61).

References: Refer to previous topic entitled Generic Letter 87-02, Verification of Seismic Adequacy of Mechanical and Electrical Equipment In Operating Reactors (Page E1-61).

ENCLOSURE 2

TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN)
SUMMARY OF REMAINING UNIT 1 RESTART ISSUES

TOPIC	COMMITMENT	SCHEDULE	PAGE
Generic Letter 92-01, Reactor Vessel Structural Integrity, Revision 1, and Revision 1 Supplement 1	TVA has submitted the available data requested by NRC. TVA will inform NRC of the applicability of NEDO 32205 within 90 days of the final surveillance capsules analysis report.	Ninety days after the final surveillance capsules analysis report.	E1-78