



Tennessee Valley Authority, Post Office Box 2000, Decatur, Alabama 35609-2000

December 13, 2002

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop: OWFN, P1-35
Washington, D.C. 20555-0001

Gentlemen:

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

**BROWNS FERRY NUCLEAR PLANT (BFN) - UNIT 1 - REGULATORY
FRAMEWORK FOR THE RESTART OF UNIT 1**

- References:
1. TVA letter dated July 10, 1991, Regulatory Framework for the Restart of Units 1 and 3
 2. NRC letter dated April 1, 1992, Return To Service of Browns Ferry Nuclear Plant, Units 1 and 3

This letter provides, as Enclosure 1, TVA's proposed regulatory framework for the restart of Unit 1. TVA provided in Reference 1 a regulatory framework for the restart of both Units 1 and 3. NRC approved the proposed regulatory framework in April 1992 (Reference 2). Following restart plan completion and NRC restart approval, Unit 3 restarted on November 19, 1995. Since restart of Unit 3 in 1995, there have been changes in regulations, TVA's processes, and NRC's processes which warrant revision to the regulatory framework for restart of Unit 1. This proposed

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regulatory framework replaces the Unit 1 framework submitted in the July 10, 1991 letter.

TVA's successful restart and operation of Units 2 and 3 and the proposed Unit 1 restart program 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 are 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. Details for each of these categories are presented in Enclosure 1. The major points of TVA's proposed regulatory framework are:

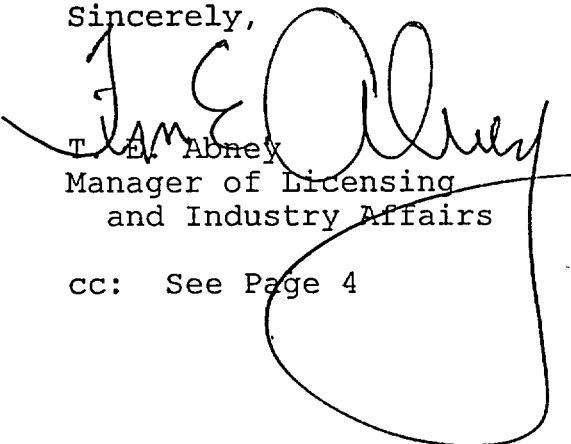
- TVA will not restart BFN Unit 1 without prior NRC approval.
- It is TVA's intent to implement the remaining special programs in accordance with the implementation precedent and criteria used to restart Unit 3. TVA may, at its discretion, modify the implementation precedent to incorporate efficiencies or experience gained from use of those precedents in restarting Unit 3 or from changes in TVA internal processes.
- If the need for changes in implementation criteria arise, TVA will perform an evaluation in accordance with 10 CFR 50.59. Changes which require a license amendment will be submitted for NRC review and approval, as required by 10 CFR 50.59.

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TVA requests expeditious NRC review and concurrence with this proposed regulatory framework and identification of any other action required for Unit 1 restart.

No new commitments are contained in this submittal. If you have any questions, please telephone me at (256) 729-2636.

Sincerely,



T. E. Abney
Manager of Licensing
and Industry Affairs

cc: See Page 4

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Enclosure

cc (Enclosure):

(Via NRC Electronic Distribution)

Mr. Stephen J. Cahill, 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 Resident Inspector
Browns Ferry Nuclear Plant
10833 Shaw Road
Athens, Alabama 35611-6970

Mr. Kahtan N. Jabbour, Senior Project Manager
U.S. Nuclear Regulatory Commission
One White Flint, North
(MS 08G9)
11555 Rockville Pike
Rockville, Maryland 20852-2739

ENCLOSURE 1

TENNESSEE VALLEY AUTHORITY BROWNS FERRY NUCLEAR PLANT (BFN) REGULATORY FRAMEWORK OF THE RESTART OF UNIT 1

This enclosure represents the regulatory framework for the restart of Browns Ferry Unit 1.

Generic Communications

TVA has compiled a list of those NUREG-0737 Action Items, Bulletins, Generic Letters and any other regulatory requirements which TVA is committed to implement prior to the restart of Unit 1. These items have been categorized into three groups of such generic communications:

1. Those to which TVA has responded, and has committed to implement actions as part of the response. TVA will track and close these items in accordance with the TVA Commitment Management Process.
2. Those to which TVA responded by committing to provide submittals specifying actions prior to Unit 1 start-up. These commitments are tied to specific Unit 1 engineering or maintenance activities and TVA will provide submittals at the appropriate time during these activities. TVA will notify NRC of submittal dates in advance via established project communications. These items will also be tracked and closed in accordance with TVA's Commitment Management Program.
3. Those to which TVA has responded and committed to providing submittals specifying actions prior to startup, but the original NRC communication required notification within a specified period after the actions are complete. Given the elapsed time between generation of the initial response and schedule of the restart effort, these response periods do not carry the significance they did at the time of the initial NRC transmittals. In these cases, TVA will strive to meet the dates identified in the commitments, but will schedule these submittals in a manner consistent with execution of restart activities. Both the committed actions and the subsequent notifications of completion will be tracked in TVA's Commitment Management Program.

For convenience, a list of the items in each group has been included as Table 1 to this enclosure.

New generic communications issued during the Unit 1 restart effort will be resolved for Unit 1 in accordance with their schedule requirements.

TVA will review all of the requirements and identify those issues whose closure for Unit 2 or Unit 3 was predicated on the assumption that Unit 1 was shut down and defueled. TVA will reevaluate these issues to assume the operation of Unit 1 prior to its return to service.

TVA will provide notification to NRC when the regulatory issues identified in Table 1 are implemented on Unit 1. This is expected to occur prior to fuel load except for those issues which require fuel load to complete the actions.

Special Programs

The Unit 3 regulatory framework addressed the special programs initiated as part of the Nuclear Performance Plan for Browns Ferry and approved by NRC in NUREG-1232 using specific SERs for each program, and subsequent SERs written for specific programs where the criteria used for Unit 3 deviated from that used for the Unit 2 restart effort.

There are five special programs which were completed for all three units prior to, or as part of, Unit 3 restart. These are:

- Heat Code Traceability
- Secondary Containment Penetrations
- Thinning of Pipe Welds in Nuclear Power Plants (Bulletin 87-01)
- Welding
- Probabilistic Safety Assessment

No further action is required on these five programs.

The programs that have not been completed for all three units are listed in Table 3 together with a brief summary of their evolution since the original submittal of the regulatory framework document for Units 1 and 3.

It is TVA's intent to implement the remaining special programs in accordance with the implementation precedent and criteria used to restart Unit 3. Implementation precedent is the general process or technical approach used to

implement a given program and reestablish compliance with the plant licensing and design bases. Criteria are the allowable parameters, or the parameters themselves, such as allowable stress, strain, deformation or the computer codes described in the FSAR.

TVA may, at its discretion, modify the implementation precedent to incorporate efficiencies or experience gained from use of those precedents in restarting Unit 3 or from changes in TVA internal processes.

If the need for changes in implementation criteria arise, TVA will perform an evaluation in accordance with 10 CFR 50.59. In accordance with 10 CFR 50.59, TVA will submit an annual summary of changes made under the provisions of this section. Changes which require a license amendment will be submitted for NRC review and approval, as required by 10 CFR 50.59.

TVA will provide notification to NRC when these special programs are implemented for Unit 1. TVA expects closure of these issues to be accomplished as part of ongoing oversight of Browns Ferry facilities.

Commitments

TVA has maintained tracking of all commitments made for regulatory requirements associated with Unit 1 restart, and the efforts associated with these are already incorporated into the Unit 1 restart scope. In accordance with precedent for Unit 3 restart and normal industry practice, TVA does not intend to formally notify NRC upon completion of each restart commitment. TVA is obligated to notify NRC in the event of significant changes to the commitment or its schedule for implementation. TVA's commitment control procedures and pre-start checks will ensure that Unit 1 restart commitments are completed prior to restart of the unit. TVA does not believe that specific NRC action regarding the verification of completion of each specific TVA restart commitment is necessary.

TVA's process for commitment management is governed by SPP-3.3, "NRC Commitment Management" and is consistent with NEI 99-04, "Guidelines for Managing NRC Commitments", which is endorsed by NRC in Regulatory Issue Summary 00-17, Managing Regulatory Commitments Made by Power Reactor Licensees to the NRC Staff". All new commitments made for Unit 1 during the course of the restart effort will be initiated, documented, maintained and tracked to completion in accordance with this procedure.

TVA is currently tracking some 270 commitments previously made to address regulatory requirements and special programs on BFN Unit 1. Seventy of those commitments were made in response to Notices of Violation or Licensee Event Reports and would not be commitments under today's definition of a commitment. These items will not be dispositioned administratively as NRC commitments. However, they will be dispositioned or implemented as appropriate using the pertinent plant process. The remaining Unit 1 commitments will be reviewed for current applicability, given the intervening time and other plant regulatory changes, and processed in accordance with SPP-3.3.

Operational Readiness Review

The overall goal of the operational readiness assessment program for Unit 3 was to establish a high degree of confidence that the plant and personnel were ready to restart and operate the unit in a safe and reliable manner. Since the restart of Unit 2 in 1991 and Unit 3 in 1995, TVA has shown the ability to safely and reliably operate the two units. With this as a consideration, the Unit 1 Operational Readiness Program will be specifically scoped to consider the changes associated with operating a three-unit site. It will consist of the following elements:

- Self Assessments for Operational Readiness

Self assessments for operational readiness of Unit 1 will utilize the Unit 1 self assessment program. For Unit 1 this program will focus on the implementation of the special programs, the additional resources required for the operation of Unit 1, and completion of restart prerequisites. The self assessments will be conducted using the BFN self assessment program.

- Independent Review

Input from independent reviews of Unit 1 restart effort will be used to provide a measurement of the effectiveness of working level self-assessments. The normal independent reviews by NSRB and Nuclear Assurance will be used to assess readiness for restart. In addition, there will be an assessment by INPO which will focus on the operation of a three-unit site using industry peers with experience at three-unit sites.

Communications Protocol

TVA intends to keep NRC well informed of the status of the Unit 1 restart project. Periodic meetings between TVA and NRC management will be held to discuss status, schedules, and issues. TVA anticipates that these meetings will be held approximately every six to nine months in the early stages of the project and will be held more frequently in the later stages. These meetings will be held at NRC Headquarters, NRC Region II offices, or BFN. In addition, issue specific meetings will be held as needed. The schedule, location, and meeting content for each meeting will be determined by TVA and NRC.

Technical Specifications (TS)

Table 2 lists those TS changes made for Units 2 and 3 since Unit 3 restart which have not been submitted for Unit 1 and new TS changes that will be required for Unit 1 restart. These changes will be submitted to NRC on a schedule consistent with the restart plan and after their supporting analyses are completed. This schedule will be communicated with the staff via established project communications.

On September 6, 1996, TVA submitted Units 1, 2, and 3 Technical Specifications Change-362 - Improved Technical Specifications (ITS). TS-362 was TVA's conversion package from Custom Technical Specifications to ITS.

On December 27, 1997 TVA pointed out that Unit 1 was defueled and would require extensive analyses and modifications to be completed prior to its restart and that when TVA performed these tasks, the Unit 1 plant configuration would be the same or similar to those of Units 2 and 3. Thus, in TS-362 the proposed changes for Units 2 and 3 were proposed for Unit 1, as well. The changes were made by License Amendment 234.

In recognition of this approach, as part of License Amendment number 234, NRC imposed license condition 2.C.4, which states:

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

implemented prior to entering the mode for which the TS applies."

To meet this condition, TVA will submit a list of those TS changes previously made on all three BFN units for which Unit 1 specific analyses had not been completed. That submittal will verify that the Unit 1 analyses and associated plant modifications for those TS changes have been completed. In the unlikely event that changes to Unit 1 TS are required, those changes will be requested under 10 CFR 50.90.

Table 1: Regulatory Issues

Open Commitments to Implement Actions

Bulletins:

79-02	Pipe Support Base Plate Designs Using Concrete Expansion Anchor Bolts
79-14	Seismic Analysis for As-Built Safety Related Piping Systems
80-06	Engineered Safety Feature Reset Controls
84-02	Failure of GE Type HFA Relays in Use in Class 1E Safety Systems
86-02	Static "O" Ring Differential Pressure Switches
88-07	Power Oscillation in Boiling Water Reactors
88-10	Nonconforming Molded-Case Circuit Breakers
93-03	Resolution of Issues Related to Reactor Vessel Water Level Instrumentation in BWRs
96-03	Potential Plugging of Emergency Core Cooling Suction Strainers by Debris in Boiling Water Reactors

Generic Letters:

82-33	Instrumentation to Follow the Course of an Accident - R.G. 1.97
83-08	Modification of Vacuum Breakers on Mark 1 Containments
83-28	Salem ATWS
88-11	Radiation Embrittlement of Reactor Vessel Materials and its Impact on Plant Operations
88-14	Instrument Air Supply System Problems Affecting Safety Related Equipment
89-06	Safety Parameter Display System
89-08	Erosion/Corrosion-Induced Pipe Wall Thinning
89-10	Safety-Related Motor-Operated Valve Testing and Surveillance
89-16	Installation of a Hardened Wetwell Vent
96-01	Testing of Safety-Related Logic Circuits
96-05	Periodic Verification of Design Basis Capability of Motor Operated Valves
98-01	Readiness of Computer Systems at Nuclear Power Plants

NUREG-0737 (TMI Action Plan) Action Items

I.D.1	Control Room Design Review
I.D.2	Safety Parameter Display Console
II.B.3	Post-Accident Sampling System
II.E.4.2.1 -4	Containment Isolation Dependability - Implement Diverse Isolation
II.F.1.2.C	Accident - Monitoring - Containment High Range Radiation
II.F.1.2.D	Accident - Monitoring - Containment Pressure
II.F.1.2.E	Accident - Monitoring - Containment Water Level
II.F.2.4	(Generic Letter 84-23) - Instrumentation for Detection of Inadequate Core Cooling
II.K.3.13	HPCI/RCIC Initiation Levels
II.K.3.18	ADS Actuation Modifications
II.K.3.28	Qualification of ADS Accumulators

Commitment to Provide Submittal

Bulletins:

90-01 Loss of Fill Oil in Rosemount Transmitters
93-02 Debris Plugging of Emergency Core Cooling Suction Strainers

Generic Letters:

87-02 Verification of Seismic Adequacy of Mechanical and Electrical
Equipment In Operating Reactors
88-20, S 4 Individual Plant Examination of External Events for Severe Accident
Vulnerabilities
92-04 Resolution of the Issues Related to Reactor Vessel Water Level
Instrumentation in BWRs
95-07 Pressure Locking and Thermal Binding of Safety-Related and Power-
Operated Gate Valves
96-06 Assurance of Equipment Operability and Containment Integrity During
Design Basis Accident Conditions
97-04 Assurance of Sufficient Net Positive Suction for Emergency Core
Cooling and Containment Heat Removal Pumps
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

Requirement for Submittal Within a Specified Period After Actions are Complete

Bulletins:

88-03 Inadequate Latch Engagement in HFA Type Relays Manufactured by GE
88-04 Potential Safety Related Pump Loss
95-02 Unexpected Clogging of a RHR Pump Strainer While Operating in
Suppression Pool Cooling Mode

Generic Letters:

88-01 NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping
89-13 Service Water System Problems Affecting Safety Related Equipment
92-01 Reactor Vessel Structural Integrity
94-02 Long-Term Solutions and Upgrade of Interim Operating Recommendations
for Thermal-Hydraulic Instabilities in BWRs
94-03 Intergranular Stress Corrosion Cracking of Core Shrouds in BWRs

Table 2: Technical Specifications Changes

- Power Range Neutron Monitor (PRNM) Upgrade With Implementation of Average Power Range Monitor (APRM) and Rod Block Monitor (RBM) TS ARTS/MELLL
- 14 Day Allowable Outage Time for Emergency Diesel Generators
- Extended Power Uprate Operation
- 24 Month Fuel Cycle
- Crediting of Containment Overpressure for Net Positive Suction Head Calculations for Emergency Core Cooling Pumps
- Change Setpoint of Scram Discharge Volume
- PT Curves
- Safety Limit Minimum Critical Power Ratio (SLMCPR)
- Allowable Value for Reactor Vessel Water Level - Low, Level 3
- Oscillation Power Range Monitor (OPRM)
- Main Steam Isolation Valve (MSIV) Leakage Rate Limits and Exemption from 10 CFR 50 Appendix J
- Excess Flow Check Valve Surveillance Intervals
- Containment Air Dilution (CAD) AOT
- Miscellaneous I & C Changes
- Revision to the RPV Material Surveillance Program
- RWCU Area Temperature Channel Calibration Frequency
- Revision in Number of ECCS Systems Required for a LOCA
- Deletion of LPCI MG Sets

Table 3: Special Programs

The summaries included below describe the Unit 3 programs as compared to the Unit 2 programs. In all but three cases, the completion of each program was documented by the staff in SECY 95-264. In the three cases where completion was not documented, it occurred after restart and was approved by NRC. These cases are identified in the summaries below.

Environmental Qualification of Electrical Equipment

TVA's program for environmental qualification of electrical equipment was completed for Unit 3 using the Unit 2 precedent.

Configuration Management / Design Baseline

TVA's program to re-establish the design basis for Unit 3 and evaluate plant configuration to ensure that it satisfies the design basis was consolidated from the two-phased (pre- and post-restart) approach used for Unit 2 and included the design calculation review program. The NRC determined that the commitment for Unit 3 was more comprehensive than that accepted by the staff for Unit 2.

Long Term Torus Integrity Program

TVA's program for the resolution of issues related to the Long Term Torus Integrity Program was completed for Unit 3 using the Unit 2 precedent with the following exceptions:

- Inspections of safety-related torus and torus related structures excluded four attributes which did not result in modifications to Unit 2
- Catwalk inspections were limited to welds and bolted connections associated with maintaining integrity of safety related structures
- Resolution of torus attached piping discrepancies was accomplished using configuration attributes from the Unit 2 program.

Large Bore Piping and Supports (Bulletins 79-02 and 79-14)

TVA's program for seismic qualification of large bore piping and supports was completed for Unit 3 using the Unit 2 precedent.

Small Bore Piping and Instrument Tubing

TVA's program for seismic qualification of small bore piping and instrument tubing was accomplished in two separate programs for Unit 2, but was combined into a single program for Unit 3. Additionally, generic attributes for walkdowns and system evaluations were based on Unit 2 results. Otherwise, the Unit 2 implementation precedent was used for both small bore piping and instrument tubing.

Control Rod Drive (CRD) Insert and Withdrawal Piping

TVA's program for seismic qualification of CRD insert and withdrawal piping was completed for Unit 3 using the Unit 2 precedent.

Drywell Steel Platforms and Upper Drywell Platforms

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.

Miscellaneous Steel Frames

TVA's program for seismic qualification of miscellaneous steel frames was incorporated into the program for lower drywell platforms and miscellaneous steel, discussed above.

Cable Tray Supports

TVA's program for the seismic qualification of cable tray supports was accomplished for Unit 3 using the Seismic Qualification Utility Group (SQUG) Generic Implementation Procedure (GIP).

Conduit Supports

TVA's program for the seismic qualification of conduit supports was accomplished for Unit 3 using the SQUG GIP.

HVAC Duct Supports

TVA's program for the seismic qualification of HVAC duct supports was completed for Unit 3 using the Unit 2 precedent. The Civil/Seismic program on Unit 3 included an evaluation of the majority of the plant HVAC ductwork and supports, including those in the Unit 1 Control Bay. This program made use of the

TPIPE computer program for stress analysis of the ducts to provide duct stresses and support loads.

Seismic Class II Over Class I / Spatial System Interactions and Water Spray

TVA's program for Seismic Class II Over Class I and Spatial System Interactions for Unit 3 also included water spray and was completed in two phases. The first phase involved the evaluation of potential seismically-induced water spray effects of Class II systems on Class I systems. The second phase involved the evaluation of potential seismic-induced spatial interaction effects of Class II systems on Class I systems and, since it was incorporated into USI A-46, it was resolved after restart and so identified by NRC in SECY-95-264.

Fire Protection Improvement

TVA's program for resolution of issues associated with fire protection and the requirements of Appendix R were completed for Unit 3 using the Unit 2 precedent.

Intergranular Stress Corrosion Cracking (IGSCC)

TVA's program for the resolution of IGSCC was completed for Unit 3 using the Unit 2 precedent.

Restart Test

TVA's Restart Test Program for Unit 3 utilized normal surveillance testing procedures to a greater extent than was done during Unit 2 restart, added administrative controls to ensure that the status of the operating units at BFN was considered during planning and scheduling of restart testing, eliminated complete Loss of Off-site Power/LOCA test and drywell vibration testing (except for recirculation piping) and reduced the number of management assessment hold points during power ascension.

Instrument Sensing Lines

TVA's program for the resolution of issues associated with instrument sensing lines was performed on Unit 3 in accordance with Unit 2 precedent with the exception that physical separation and material quality were not included as attributes of the walkdown and evaluation process based on Unit 2 results.

Probabilistic Safety Assessment (PSA)

TVA's program for resolution of the probabilistic safety assessment issue was closed during Unit 3 restart with the submittal of the BFN Multi-Unit PSA on April 14, 1995.

Component and Piece Part Qualification

TVA's program for component and piece part qualification was completed for Unit 3 in accordance with Unit 2 precedent with exception of a single specific open item.

Cable Installation (Including Cable Separation)

TVA's program for resolution of cable installation issues for Unit 3 was consistent with the Unit 2 precedent, but departed in the following specific areas:

- For Unit 3, confirmatory walkdowns using Unit 2 evaluations and focused evaluations based on Unit 2 results were used instead of repeating evaluation performed on Unit 2.
- Unit 3 effort used analysis of random samples to verify routings using Unit 2 cable installation results which evaluated Unit 3 cable for separation.

Cable Ampacity

TVA's program for the resolution of the ampacity issue was completed during Unit 3 restart using the Unit 2 precedent.

Flexible Conduit

TVA's program for the resolution of the flexible conduit issue was addressed in two parts for Unit 3. The portion required for restart involved flexible conduit attached to electrical equipment covered by 10 CFR 50.49. The remaining scope involved flexible conduit attached to safety related equipment not covered by 10 CFR 50.49, which was addressed after restart as part of the resolution of USI A-46.

Thermal Overload

TVA's program for the resolution of thermal overload was completed for Unit 3 restart using the Unit 2 precedent.

Cable Splices

TVA's program for the resolution of the cable splice issue was completed for Unit 3 using the Unit 2 precedent.

Fuse Program

TVA's program for the resolution of the fuse issue was completed for Unit 3 using the Unit 2 precedent.

Q-List

TVA's program for the development of a Q-List was completed for Unit 3 using the Unit 2 precedent.

Moderate Energy Line Break

TVA's program for the resolution of the MELB issue was completed for Unit 3 using the Unit 2 precedent.

Containment Coatings

TVA's program for the resolution of the containment coating issue was completed for Unit 3 using the Unit 2 precedent.