

Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402

CNL-19-027

February 13, 2019

10 CFR 50.90 10 CFR 50.4 10 CFR 50.48(c)(3)

ATTN: Document Control Desk U.S. Nuclear Regulatory Commission Washington, D.C. 20555-0001

> Browns Ferry Nuclear Plant, Units 1, 2, and 3 Renewed Facility Operating License Nos. DPR-33, DPR-52, and DPR-68

NRC Docket Nos. 50-259, 50-260, and 50-296

Subject: Supplement to TVA Request for Revision of Modifications 85, 102, and 106

Related to NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants for the Browns Ferry Nuclear

Plant, Units 1, 2, and 3 - Tables S-2 and B-1

References: 1. TVA Letter to NRC, CNL-18-100, "TVA Request for Revision of

Modifications 85, 102, and 106 Related to NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants for the Browns Ferry Nuclear Plant, Units 1, 2, and 3 - Tables S-2 and

B-1," dated October 18, 2018 (ML18295A109)

In Reference 1, Tennessee Valley Authority (TVA) requested a license amendment to modify the licensing basis regarding the National Fire Protection Association (NFPA) 805 program, Table S-2 "Plant Modifications Committed." The change, in part, extended the Modification 102 implementation due date to August 14, 2019. Modification 102 modifies the actuation for the Main, Unit Station Service Transformer (USST) and Common Station Service Transformer (CSST) water spray systems such that the circuits are supervised per NFPA 15, 2001 Edition, 6.5.3.1.1.

Modification 102 is divided into 10 separate modification stages in order to cover five sets of transformers and the plant conditions required to implement the modifications. Three of the modification stages require a unit outage. Two of the outage stages are complete (BFN Units 1 and 3) and the remaining is scheduled for the upcoming outage in spring 2019 (BFN Unit 2). The remaining on-line stages impact the common fire alarm and detection equipment and common station service transformers.

The original Table S-2 designated Modification 102 as applicable to Units "1,2,3." The modification was originally envisioned to be three individual modifications specific to each unit. However, the scope of the final design involves a significant amount of common equipment and the modification designation should be changed to "Common."

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This supplement requests a change to Table S-2, Modification 102 unit applicability from "1,2,3" to "Common" as found in the entry for Table S-2 "Plant Modifications Committed," which was previously submitted In Reference 1.

Modification 102 is not credited in the BFN Fire PRA (FPRA). Therefore, the FPRA will remain unaffected by the approval of the requested proposed changes.

Attachment 1 provides a markup of the revised BFN NFPA 805 Table S-2 page for Modification 102. Attachment 2 provides a clean typed version of the revised BFN NFPA 805 Table S-2 page for Modification 102. Attachment 3 provides a markup of the affected pages of the BFN Units 1, 2, and 3 Renewed Facility Operating Licenses (RFOLs). Attachment 4 provides clean typed pages of the affected pages of the BFN Units 1, 2, and 3 RFOLs. The RFOLs are revised to include reference to this letter.

TVA has determined that there are no significant hazards consideration associated with the proposed change and that the change to the RFOLs qualify for a categorical exclusion from environmental review pursuant to the provisions of 10 CFR 51.22(c)(9).

Attachments 1 and 2 contain security-related information and TVA requests that these attachments be withheld from public disclosure under 10 CFR 2.390.

In accordance with 10 CFR 50.91(b)(1), TVA is sending a copy of this letter, to the Alabama State Department of Public Health.

TVA requests NRC approval of this change by the start of the BFN Unit 2 refueling outage (U2R20), which is currently scheduled to begin on March 2, 2019.

There are no new regulatory commitments contained in this submittal.

Please address any questions regarding this submittal to Michael A. Brown at (423) 751-3275.

I declare under penalty of perjury that the foregoing is true and correct. Executed on this 13th day of February 2019.

Respectfully,

E. K. Henderson

Director, Nuclear Regulatory Affairs

**Enclosures** 

cc: See Page 3

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## Enclosures

Attachment 1 - Revised Table S-2 - Markup Page for Modification 102

Attachment 2 - Revised Table S-2 for Modification 102 Clean Typed

Attachment 3 - Markups of BFN Units 1, 2, and 3 Renewed Facility Operating Licenses

Attachment 4 - Clean Typed Pages of BFN Units 1, 2, and 3 Renewed Facility Operating Licenses (for Information Only)

# cc (Enclosure):

NRC Regional Administrator – Region II

NRC Senior Resident Inspector – Browns Ferry Nuclear Plant

NRC Project Manager - Browns Ferry Nuclear Plant

State Health Officer, Alabama State Department of Health

Security-Related Information - Withhold from Public Disclosure in accordance with 10 CFR 2.390.

Attachments 1 and 2 to this letter contain Security-Related Information.

Upon removal of these Attachments, this letter is uncontrolled.

Attachment 1
Tennessee Valley Authority
Browns Ferry Nuclear Plant, Units 1, 2, and 3
Revised Table S-2 - Markup Page for Modification 102

Security-Related Information - Withhold from Public Disclosure in accordance with 10 CFR 2.390.

Attachments 1 and 2 to this letter contain Security-Related Information.

Upon removal of these Attachments, this letter is uncontrolled.

Attachment 2
Tennessee Valley Authority
Browns Ferry Nuclear Plant, Units 1, 2, and 3
Revised Table S-2 for Modification 102 Clean Typed

# Attachment 3 Tennessee Valley Authority Browns Ferry Nuclear Plant, Units 1, 2, and 3

Markups of BFN Units 1, 2, and 3 Renewed Facility Operating Licenses

- (8) Deleted.
- (9) Deleted.
- (10) Deleted.
- (11)(a) The licensee shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans, which contains Safeguards Information protected under 10 CFR 73.21, is entitled: "Browns Ferry Nuclear Plant Physical Security Plan, Training and Qualification Plan, and Contingency Plan," submitted by letter dated April 28, 2006.
  - (b) The licensee shall fully implement and maintain in effect all provisions of the Commission-approved cyber security plan (CSP), including changes made pursuant to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The licensee CSP was approved by License Amendment No. 279, as amended by changes approved by License Amendment Nos. 286 and 297.
- ; and February 13,
- TVA Browns Ferry/Nuclear Frank Snair Implement and maintain in effect (13)all provisions of the approved fire protection program that comply with 10 CFR 50.48(a) and 10 CFR 50.48(c), as specified in the license amendment request dated March 27, 2013, June 7, 2017, May 3, 2018, and October 18, 2018 as supplemented by letters dated May 16, 2013; December 20, 2013; January 10, 2014; January 14, 2014; February 13, 2014; March 14, 2014; May 30, 2014; June 13, 2014; July 10, 2014; August 29, 2014; September 16, 2014; October 6, 2014; December 17, 2014; March 26, 2015; April 9, 2015; June 19, 2015; August 18, 2015; September 8, 2015; October 20, 2015; September 18, 2017; and October 23, 2017, as approved in the Safety Evaluation dated October 28, 2015; December 19, 2017; October 9, 2018; and [[INSERT DATE SE]]. Except where NRC approval for changes or deviations is required by 10 CFR 50.48(c), and provided no other regulation, technical specification, license condition or requirement would require prior NRC approval, the licensee may make changes to the fire protection program without prior approval of the Commission if those changes satisfy the provisions set forth in 10 CFR 50.48(a) and 10 CFR 50.48(c), the change does not require a change to a technical specification or a license condition, and the criteria listed below are satisfied.

## Risk-Informed Changes that May Be Made Without Prior NRC Approval

A risk assessment of the change must demonstrate that the acceptance criteria below are met. The risk assessment approach, methods, and data shall be acceptable to the NRC and shall be appropriate for the nature and scope of the change being evaluated; be based on the as-built, as-operated, and maintained plant; and reflect the operating experience at the plant. Acceptable methods to assess the risk of the change may include methods that have been used in the

2. Fire Protection Program Changes that Have No More than Minimal Risk Impact

Prior NRC review and approval are not required for changes to the licensee's fire protection program that have been demonstrated to have no more than a minimal risk impact. The licensee may use its screening process as approved in the NRC Safety Evaluation dated October 28, 2015, to determine that certain fire protection program changes meet the minimal criterion. The licensee shall ensure that fire protection defense-in-depth and safety margins are maintained when changes are made to the fire protection program.

### **Transition License Conditions**

1. Before achieving full compliance with 10 CFR 50.48(c), informed changes to the licensee's fire protection progression prior NRC review and approval unless the change has to have no more than a minimal risk impact, as described in (2) above.

- 2. With the exception of Modifications 102 and 106, the licensee shall implement modifications to its facility, as described in Table S-2, "Plant Modifications," of Tennessee Valley Authority letter CNL-18-100, dated October 18, 2018, to complete the transition to full compliance with 10 CFR 50.48(c) no later than the end of the second refueling outage (for each unit) following issuance of the NFPA 805 License Amendment dated October 28, 2015. Modifications 102 and 106 as described in Table S-2, shall be implemented no later than August 14, 2019, and October 14, 2019, respectively. The licensee shall maintain appropriate compensatory measures in place until completion of these modifications.
- 3. The licensee shall complete implementation items 09, 32, 33, and the second part of Implementation Item 47 as listed in Table S-3, "Implementation Items," of TVA letter CNL-17-130 dated October 23, 2017. Implementation Item 09 shall be completed by June 29, 2018. Implementation Items 32, 33, and the second part of Implementation Item 47, i.e., resolving Finding level Facts and Observations, are associated with modifications and will be completed after all procedure updates, modifications, and training are complete.
- (14) The licensee shall maintain the Augmented Quality Program for the Standby Liquid Control System to provide quality control elements to ensure component reliability for the required alternative source term function defined in the Updated Final Safety Analyses Report (UFSAR).
- (15) The licensee is required to confirm that the conclusions made in TVA's letter dated September 17, 2004, for the turbine building remain acceptable using seismic demand accelerations based on dynamic seismic analysis prior to the restart of Unit 1.
- (16) Upon implementation of Amendment No. 275, adopting TSTF-448, Revision 3, the determination of control room envelope (CRE) unfiltered air inleakage as required by SR 3.7.3.4, in accordance with TS 5.5.13.c(i), the assessment of the CRE habitability as required by TS 5.5.13.c(ii), and the measure of CRE pressure as required by TS 5.5.13.d, shall be considered met.

; as supplemented

- (h) The results of the visual inspections of the steam dryer shall be submitted to the NRC staff in a report in accordance with 10 CFR 50.4. The report shall be submitted to the NRC within 90 days following startup from each of the first two respective refueling outages.
- (i) Within 6 months following completion of the second refueling outage, after the implementation of the EPU, the licensee shall submit a long-term steam dryer inspection plan based on industry operating experience along with the baseline inspection results.

The license condition described above shall expire: (1) upon satisfaction of the requirements in items (g) and (h), provided that a visual inspection of the steam dryer does not reveal any new unacceptable flaw(s) or unacceptable flaw growth that is due to fatigue, and; (2) upon satisfaction of the requirements specified in item (i).

- (19) Neutron Absorber Monitoring Program

  The licensee shall, at least once every ten years, withdraw a neutron absorber coupon from the spent fuel pool and perform Boron-10 (B-10) areal density measurement on the coupon. Based on the results of the B-10 areal density measurement, the licensee shall perform any technical evaluations that may be necessary and take appropriate actions using relevant regulatory and licensing processes.
- Radiological Consequences Analyses Using Alternative Source Terms
  TVA shall perform facility and licensing basis modifications to resolve the
  non-conforming/degraded condition associated with the Alternate Leakage
  Treatment pathway such that the current licensing basis
  (approved in License Amendment Nos. 251/282 (Unit 1)
  and 249/267 (Unit 3)) would remain valid. These facility
  modifications shall be complete prior to initial power asc
  3458 MWt.
- (21) Prior to extending the frequency for the Integral Leakage Rate Testing described in TS 5.5.12, the licensee shall implement the modifications, that are modeled in the Fire PRA and described in Table S-2, Plant Modifications," of Tennessee Valley Authority letter CNL-18-100, dated October 18, 2018.
- D. The UFSAR supplement, as revised, submitted pursuant to 10 CFR 54.21(d), shall be included in the next scheduled update to the UFSAR required by 10 CFR 50.71(e)(4) following the issuance of this renewed operating license. Until that update is complete, TVA may make changes to the programs and activities described in the supplement without prior Commission approval, provided that TVA evaluates such changes pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.
- E. The UFSAR supplement, as revised, describes certain future activities to be completed prior to the period of extended operation. TVA shall complete these activities no later than December 20, 2013, and shall notify the NRC in writing when implementation of these activities is complete and can be verified by NRC inspection.

- (8) Deleted.
- (9) Deleted.
- (10) Deleted.
- (11)(a) The licensee shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans, which contains Safeguards Information protected under 10 CFR 73.21, is entitled: "Browns Ferry Nuclear Plant Physical Security Plan, Training and Qualification Plan, and Contingency Plan," submitted by letter dated April 28, 2006.
  - (b) The licensee shall fully implement and maintain in effect all provisions of the Commission-approved cyber security plan (CSP), including changes made pursuant to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The licensee CSP was approved by License Amendment No. 306, as amended by changes approved by License Amendment Nos. 312 and 321.
- (12) Deleted.

; and February 13,

- (13) Deleted.
- TVA Browns Ferry Nuclear Plant shall implement and maintain in effect all (14)provisions of the approved fire protection program that comply with 10 CFR 50.48(a) and 10 CFR 50.48(c), as specified in the license amendment request dated March 27, 2013; June 7, 2017; May 3, 2018; and October 18, 2018, as supplemented by letters dated May 16, 2013; December 20, 2013; January 10, 2014; January 14, 2014; February 13, 2014; March 14, 2014; May 30, 2014; June 13, 2014; July 10, 2014; August 29, 2014; September 16. 2014; October 6, 2014; December 17, 2014; March 26, 2015; April 9, 2015; June 19, 2015; August 18, 2015; September 8, 2015; October 20, 2015; September 18, 2017; and October 23, 2017, as approved in the Safety Evaluations dated October 28, 2015; December 19, 2017; October 9, 2018; and [[INSERT DATE SE]]. Except where NRC approval for changes or deviations is required by 10 CFR 50.48(c), and provided no other regulation, technical specification, license condition or requirement would require prior NRC approval, the licensee may make changes to the fire protection program without prior approval of the Commission if those changes satisfy the provisions set forth in 10 CFR 50.48(a) and 10 CFR 50.48(c), the change does not require a change to a technical specification or a license condition, and the criteria listed below are satisfied.

Risk-Informed Changes that May Be Made Without Prior NRC Approval
A risk assessment of the change must demonstrate that the acceptance criteria
below are met. The risk assessment approach, methods, and data shall be

- Automatic and Manual Water-Based Fire Suppression Systems (Section 3.9);
- Gaseous Fire Suppression Systems (Section 3.10); and Passive Fire Protection Features (Section 3.11).

This License Condition does not apply to any demonstration of equivalency under Section 1.7 of NFPA 805.

1. Fire Protection Program Changes that Have No More than Minimal Risk Impact

Prior NRC review and approval are not required for changes to the licensee's fire protection program that have been demonstrated to have no more than a minimal risk impact. The licensee may use its screening process as approved in the NRC Safety Evaluation dated October 28, 2015, to determine that certain fire protection program changes meet the minimal criterion. The licensee shall ensure that fire protection defense-in-depth and safety margins are maintained when changes are made to the fire protection program.

#### **Transition License Conditions**

; as supplemented by CNL-19-027,

- 1. Before achieving full compliance with 10 CFR 50.48(c), as specified dated February 13. risk-informed changes to the licensee's fire protection program may 2019 without prior NRC review and approval unless the change has been demonstrated to have no more than a minimal risk impact, as described in (2) above.
- 2. With the exception of Modifications 102 and 106, the licensee shall implement modifications to its facility, as described in Table S-2, "Plant Modifications," of Tennessee Valley Authority letter CNL-18-100, dated October 18, 2018, to complete the transition to full compliance with 10 CFR 50.48(c) no later than the end of the second refueling outage (for each unit) following issuance of the NFPA 805 License Amendment dated October 28, 2015. Modifications 102 and 106 as described in Table S-2, shall be implemented no later than August 14, 2019, and October 14, 2019, respectively. The licensee shall maintain appropriate compensatory measures in place until completion of these modifications.
- 3. The licensee shall complete Implementation Items 09, 32, 33, and the second part of Implementation Items 47 as listed in Table S-3, "Implementation Items," of TVA letter CNL-17-130 dated October 23, 2017. Implementation Item 09 shall be completed by June 29, 2018. Implementation Items 32, 33, and the second part of Implementation Item 47, i.e., resolving Finding level Facts and Observations, are associated with modifications and will be completed after all procedure updates, modifications, and training are complete.
- (15)The licensee shall maintain the Augmented Quality Program for the Standby Liquid Control System to provide quality control elements to ensure component reliability for the required alternative source term function defined in the Updated Final Safety Analyses Report (UFSAR).
- (16)Upon implementation of Amendment No. 275, adopting TSTF-448, Revision 3, the determination of control room envelope (CRE) unfiltered air inleakage as required by SR 3.7.3.4, in accordance with TS 5.5.13.c(i), the assessment of the CRE habitability as required by TS 5.5.13.c(ii), and the measure of CRE pressure as required by TS 5.5.13.d, shall be considered met.

- (h) The results of the visual inspections of the steam dryer shall be submitted to the NRC staff in a report in accordance with 10 CFR 50.4. The report shall be submitted to the NRC within 90 days following startup from each of the first two respective refueling outages.
- (i) Within 6 months following completion of the second refueling outage, after the implementation of the EPU, the licensee shall submit a long-term steam dryer inspection plan based on industry operating experience along with the baseline inspection results.

The license condition described above shall expire: (1) upon satisfaction of the requirements in items (g) and (h), provided that a visual inspection of the steam dryer does not reveal any new unacceptable flaw(s) or unacceptable flaw growth that is due to fatigue, and; (2) upon satisfaction of the requirements specified in Item (i).

(19) Neutron Absorber Monitoring Program

The licensee shall, at least once every ten years, withdraw a neutron absorber coupon from the spent fuel pool and perform Boron-10 (B-10) areal density measurement on the coupon. Based on the results of the B-10 areal density measurement, the licensee shall perform any technical evaluations that may be necessary and take appropriate actions using relevant regulatory and licensing processes.

(20) Radiological Consequences Analyses Using Alternative Source Terms

TVA shall perform facility and licensing basis modifications to resolve the non-conforming/degraded condition associated with the Alternate Leakage Treatment pathway such that the current licensing basis dose calculations (approved in License Amendment Nos. 251/282 (Unit 1), 290/308 (Unit 2) and 249/267 (Unit 3)) would remain valid. These facility and licensing basis modifications shall be complete prior to initial power ascension above 3458 MWt.

- (21) Prior to extending the frequency for the Integral Leakage Rate Testing described in TS 5.5.12, the licensee shall implement the modifications, that are modeled in the Fire PRA and described in Table S-2, "Plant Modifications," of Tennessee Valley Authority letter CNL-18-100, dated October 18, 2018.
- D. The UFSAR supplement, as revised, submitted pursuant to 10 CFR 5; as supplemented shall be included in the next scheduled update to the UFSAR required by CNL-19-027, Until that update is complete, TVA may make changes to the program activities described in the supplement without prior Commission appropriate that TVA evaluates such changes pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.
- E. The UFSAR supplement, as revised, describes certain future activities to be completed prior to the period of extended operation. TVA shall complete these activities no later than June 28, 2014, and shall notify the NRC in writing when implementation of these activities is complete and can be verified by NRC inspection.

- (3) The licensee is authorized to relocate certain requirements included in Appendix A and the former Appendix B to licensee-controlled documents. Implementation of this amendment shall include the relocation of these requirements to the appropriate documents, as described in the licensee's application dated September 6, 1996; as supplemented May 1, August 14, November 5 and 14, December 3, 4, 11, 22, 23, 29, and 30, 1997; January 23, March 12, April 16, 20, and 28, May 7, 14, 19, and 27, and June 2, 5, 10 and 19, 1998; evaluated in the NRC staff's Safety Evaluation enclosed with this amendment. This amendment is effective immediately and shall be implemented within 90 days of the date of this amendment.
- (4) Deleted.
- (5) Classroom and simulator training on all power uprate related changes that affect operator performance will be conducted prior to operating at uprated conditions. Simulator changes that are consistent with power uprate conditions will be made and simulator fidelity will be validated in accordance with ANSI/ANS 3.5-1985. Training and the plant simulator will be modified, as necessary, to incorporate changes identified during startup testing. This amendment is effective immediately.
- (6)(a) The licensee shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans, which contains Safeguards Information protected under 10 CFR 73.21, is entitled: "Browns Ferry Nuclear Plant Physical Security Plan, Training and Qualification Plan, and Contingency Plan," Revision 4, submitted by letter dated April 28, 2006.
  - (b) The licensee shall fully implement and maintain in effect all provisions of the Commission-approved cyber security plan (CSP), including changes made pursuant to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The licensee CSP was approved by License Amendment No. 265, as amended by changes approved by License Amendment Nos. 271 and 281.
- (7) TVA Browns Ferry Nuclear Plant shall implement and maintain in effect all provisions of the approved fire protection program that comply with 10 CFR 50.48(c), as specified in the license amendment requests 2013, June 7, 2017, May 3, 2018, and October 18, 2018, as supposed dated May 16, 2013; December 20, 2013; January 10, 2014; January 14, 2014; February 13, 2014; March 14, 2014; May 30, 2014; June 13, 2014; July 10, 2014; August 29, 2014; September 16, 2014; October 6, 2014; December 17, 2014; March 26, 2015; April 9, 2015; June 19, 2015; August 18, 2015; September 8, 2015; October 20, 2015; September 18, 2017; and October 23, 2017, as approved in the Safety Evaluations dated October 28, 2015; December 19, 2017; October 9, 2018; and [[INSERT DATE SE]]. Except where NRC approval for changes or deviations is required by10 CFR 50.48(c), and provided no other regulation, technical specification, license condition or requirement would require prior NRC approval, the licensee

The licensee may use an engineering evaluation to demonstrate that changes to certain NFPA 805, Chapter 3 elements are acceptable because the alternative is "adequate for the hazard." Prior NRC review and approval would not be required for alternatives to four specific sections of NFPA 805, Chapter 3, for which an engineering evaluation demonstrates that the alternative to the Chapter 3 element is adequate for the hazard. A qualified fire protection engineer shall perform the engineering evaluation and conclude that the change has not affected the functionality of the component, system, procedure, or physical arrangement, using a relevant technical requirement or standard. The four specific sections of NFPA 805, Chapter 3, are as follows:

- Fire Alarm and Detection Systems (Section 3.8);
- Automatic and Manual Water-Based Fire Suppression Systems (Section 3.9);
- Gaseous Fire Suppression Systems (Section 3.10); and
- Passive Fire Protection Features (Section 3.11).

This License Condition does not apply to any demonstration of equivalency under Section 1.7 of NFPA 805.

2. Fire Protection Program Changes that Have No More than Minimal Risk Impact

Prior NRC review and approval are not required for changes to the licensee's fire protection program that have been demonstrated to have no more than a minimal risk impact. The licensee may use its screening process as approved in the NRC Safety Evaluation dated October 28, 2015, to determine that certain fire protection program changes meet the minimal criterion. The licensee shall ensure that fire protection defense-in-depth and safety margins are maintained when changes are made to the fire protection program.

## **Transition License Conditions**

1. Before achieving full compliance with 10 CFR 50.48(c), as specified by (2) below, risk-informed changes to the licensee's fire protection program may not be made without prior NRC review and approval unless the change has been demonstrated to have no more than a minimum as supplemented above.

| Supplemented | Supple

2. With the exception of Modifications 102 a dated February 13, mall implement modifications to its facility, as described i 2019 diffications," of Tennessee Valley Authority letter CNL-18-100, dated October 18, 2018, to complete the transition to full compliance with 10 CFR 50.48(c) no later than the end of the second refueling outage (for each unit) following issuance of the NFPA 805 License Amendment dated October 28, 2015. Modifications 102 and 106 as described in Table S-2, shall be implemented no later than August 14, 2019, and October 14, 2019, respectively. The licensee shall maintain appropriate compensatory measures in place until completion of these modifications.

(16) Radiological Consequences Analyses Using Alternative Source Terms

TVA shall perform facility and licensing basis modifications to resolve the non-conforming/degraded condition associated with the Alternate Leakage Treatment pathway such that the current licensing basis dose calculations (approved in License Amendment Nos. 251/282 (Unit 1), 290/308 (Unit 2) and 249/267 (Unit 3)) would remain valid. These facility and licensing as supplemented modifications shall be complete prior to initial power ascension aby CNL-19-027, dated February 13,

- (17) Prior to extending the frequency for the Integral Leakage Rate Testing described in TS 5.5.12, the licensee shall implement the modifications, that are modeled in the Fire PRA and described in Table S-2, "Plant Modifications," of Tennessee Valley Authority letter CNL-18-100, dated October 18, 2018.
- D. The UFSAR supplement, as revised, submitted pursuant to 10 CFR 54.21(d), shall be included in the next scheduled update to the UFSAR required by 10 CFR 50.71(e)(4) following the issuance of this renewed operating license. Until that update is complete, TVA may make changes to the programs and activities described in the supplement without prior Commission approval, provided that TVA evaluates such changes pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.
- E. The UFSAR supplement, as revised, describes certain future activities to be completed prior to the period of extended operation. TVA shall complete these activities no later than July 2, 2016, and shall notify the NRC in writing when implementation of these activities is complete and can be verified by NRC inspection.

# Attachment 4 Tennessee Valley Authority Browns Ferry Nuclear Plant, Units 1, 2, and 3

Clean Typed Pages of BFN Units 1, 2, and 3 Renewed Facility Operating Licenses

- (8) Deleted.
- (9) Deleted.
- (10) Deleted.
- (11)(a) The licensee shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans, which contains Safeguards Information protected under 10 CFR 73.21, is entitled: "Browns Ferry Nuclear Plant Physical Security Plan, Training and Qualification Plan, and Contingency Plan," submitted by letter dated April 28, 2006.
  - (b) The licensee shall fully implement and maintain in effect all provisions of the Commission-approved cyber security plan (CSP), including changes made pursuant to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The licensee CSP was approved by License Amendment No. 279, as amended by changes approved by License Amendment Nos. 286 and 297.
- (12) Deleted.
- (13)TVA Browns Ferry Nuclear Plant shall implement and maintain in effect all provisions of the approved fire protection program that comply with 10 CFR 50.48(a) and 10 CFR 50.48(c), as specified in the license amendment request dated March 27, 2013, June 7, 2017, and May 3, 2018, and October 18, 2018 as supplemented by letters dated May 16, 2013; December 20, 2013; January 10, 2014; January 14, 2014; February 13, 2014; March 14, 2014; May 30, 2014; June 13, 2014; July 10, 2014; August 29, 2014; September 16, 2014; October 6, 2014; December 17, 2014; March 26, 2015; April 9, 2015; June 19, 2015; August 18, 2015; September 8, 2015; October 20, 2015; September 18, 2017; October 23, 2017; and February 13, 2019, as approved in the Safety Evaluation dated October 28, 2015; December 19, 2017; and October 9, 2018; and [[INSERT DATE SEI]. Except where NRC approval for changes or deviations is required by 10 CFR 50.48(c), and provided no other regulation, technical specification, license condition or requirement would require prior NRC approval, the licensee may make changes to the fire protection program without prior approval of the Commission if those changes satisfy the provisions set forth in 10 CFR 50.48(a) and 10 CFR 50.48(c), the change does not require a change to a technical specification or a license condition, and the criteria listed below are satisfied.

## Risk-Informed Changes that May Be Made Without Prior NRC Approval

A risk assessment of the change must demonstrate that the acceptance criteria below are met. The risk assessment approach, methods, and data shall be acceptable to the NRC and shall be appropriate for the nature and scope of the change being evaluated; be based on the as-built, as-operated, and maintained plant; and reflect the operating experience at the plant. Acceptable methods to assess the risk of the change may include methods that have been used in the

2. Fire Protection Program Changes that Have No More than Minimal Risk Impact

Prior NRC review and approval are not required for changes to the licensee's fire protection program that have been demonstrated to have no more than a minimal risk impact. The licensee may use its screening process as approved in the NRC Safety Evaluation dated October 28, 2015, to determine that certain fire protection program changes meet the minimal criterion. The licensee shall ensure that fire protection defense-in-depth and safety margins are maintained when changes are made to the fire protection program.

#### **Transition License Conditions**

- 1. Before achieving full compliance with 10 CFR 50.48(c), as specified by (2) below, risk-informed changes to the licensee's fire protection program may not be made without prior NRC review and approval unless the change has been demonstrated to have no more than a minimal risk impact, as described in (2) above.
- 2. With the exception of Modifications 102 and 106, the licensee shall implement modifications to its facility, as described in Table S-2, "Plant Modifications," of Tennessee Valley Authority letter CNL-18-100, dated October 18, 2018; as supplemented by CNL-19-027, dated February 13, 2019, to complete the transition to full compliance with 10 CFR 50.48(c) no later than the end of the second refueling outage (for each unit) following issuance of the NFPA 805 License Amendment dated October 28, 2015. Modifications 102 and 106 as described in Table S-2, shall be implemented no later than August 14, 2019, and October 14, 2019, respectively. The licensee shall maintain appropriate compensatory measures in place until completion of these modifications.
- 3. The licensee shall complete implementation items 09, 32, 33, and the second part of Implementation Item 47 as listed in Table S-3, "Implementation Items," of TVA letter CNL-17-130 dated October 23, 2017. Implementation Item 09 shall be completed by June 29, 2018. Implementation Items 32, 33, and the second part of Implementation Item 47, i.e., resolving Finding level Facts and Observations, are associated with modifications and will be completed after all procedure updates, modifications, and training are complete.
- (14) The licensee shall maintain the Augmented Quality Program for the Standby Liquid Control System to provide quality control elements to ensure component reliability for the required alternative source term function defined in the Updated Final Safety Analyses Report (UFSAR).
- (15) The licensee is required to confirm that the conclusions made in TVA's letter dated September 17, 2004, for the turbine building remain acceptable using seismic demand accelerations based on dynamic seismic analysis prior to the restart of Unit 1.
- (16) Upon implementation of Amendment No. 275, adopting TSTF-448, Revision 3, the determination of control room envelope (CRE) unfiltered air inleakage as required by SR 3.7.3.4, in accordance with TS 5.5.13.c(i), the assessment of the CRE habitability as required by TS 5.5.13.c(ii), and the measure of CRE pressure as required by TS 5.5.13.d, shall be considered met.

- (h) The results of the visual inspections of the steam dryer shall be submitted to the NRC staff in a report in accordance with 10 CFR 50.4. The report shall be submitted to the NRC within 90 days following startup from each of the first two respective refueling outages.
- (i) Within 6 months following completion of the second refueling outage, after the implementation of the EPU, the licensee shall submit a long-term steam dryer inspection plan based on industry operating experience along with the baseline inspection results.

The license condition described above shall expire: (1) upon satisfaction of the requirements in items (g) and (h), provided that a visual inspection of the steam dryer does not reveal any new unacceptable flaw(s) or unacceptable flaw growth that is due to fatigue, and; (2) upon satisfaction of the requirements specified in item (i).

- (19) Neutron Absorber Monitoring Program

  The licensee shall, at least once every ten years, withdraw a neutron absorber coupon from the spent fuel pool and perform Boron-10 (B-10) areal density measurement on the coupon. Based on the results of the B-10 areal density measurement, the licensee shall perform any technical evaluations that may be necessary and take appropriate actions using relevant regulatory and licensing processes.
- (20) Radiological Consequences Analyses Using Alternative Source Terms
  TVA shall perform facility and licensing basis modifications to resolve the
  non-conforming/degraded condition associated with the Alternate Leakage
  Treatment pathway such that the current licensing basis dose calculations
  (approved in License Amendment Nos. 251/282 (Unit 1), 290/308 (Unit 2)
  and 249/267 (Unit 3)) would remain valid. These facility and licensing basis
  modifications shall be complete prior to initial power ascension above
  3458 MWt.
- (21) Prior to extending the frequency for the Integral Leakage Rate Testing described in TS 5.5.12, the licensee shall implement the modifications, that are modeled in the Fire PRA and described in Table S-2, Plant Modifications," of Tennessee Valley Authority letter CNL-18-100, dated October 18, 2018; as supplemented by CNL-19-027, dated February, 13, 2019.
- D. The UFSAR supplement, as revised, submitted pursuant to 10 CFR 54.21(d), shall be included in the next scheduled update to the UFSAR required by 10 CFR 50.71(e)(4) following the issuance of this renewed operating license. Until that update is complete, TVA may make changes to the programs and activities described in the supplement without prior Commission approval, provided that TVA evaluates such changes pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.
- E. The UFSAR supplement, as revised, describes certain future activities to be completed prior to the period of extended operation. TVA shall complete these activities no later than December 20, 2013, and shall notify the NRC in writing when implementation of these activities is complete and can be verified by NRC inspection.

- (8) Deleted.
- (9) Deleted.
- (10) Deleted.
- (11)(a) The licensee shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans, which contains Safeguards Information protected under 10 CFR 73.21, is entitled: "Browns Ferry Nuclear Plant Physical Security Plan, Training and Qualification Plan, and Contingency Plan," submitted by letter dated April 28, 2006.
  - (b) The licensee shall fully implement and maintain in effect all provisions of the Commission-approved cyber security plan (CSP), including changes made pursuant to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The licensee CSP was approved by License Amendment No. 306, as amended by changes approved by License Amendment Nos. 312 and 321.
- (12) Deleted.
- (13) Deleted.
- (14)TVA Browns Ferry Nuclear Plant shall implement and maintain in effect all provisions of the approved fire protection program that comply with 10 CFR 50.48(a) and 10 CFR 50.48(c), as specified in the license amendment request dated March 27, 2013; June 7, 2017; May 3, 2018; and October 18, 2018, as supplemented by letters dated May 16, 2013; December 20, 2013; January 10, 2014; January 14, 2014; February 13, 2014; March 14, 2014; May 30, 2014; June 13, 2014; July 10, 2014; August 29, 2014; September 16, 2014; October 6, 2014; December 17, 2014; March 26, 2015; April 9, 2015; June 19, 2015; August 18, 2015; September 8, 2015; October 20, 2015; September 18, 2017; October 23, 2017; and February 13, 2019, as approved in the Safety Evaluations dated October 28, 2015; and December 19, 2017; and October 9, 2018; and [[INSERT DATE SE]]. Except where NRC approval for changes or deviations is required by 10 CFR 50.48(c), and provided no other regulation, technical specification, license condition or requirement would require prior NRC approval, the licensee may make changes to the fire protection program without prior approval of the Commission if those changes satisfy the provisions set forth in 10 CFR 50.48(a) and 10 CFR 50.48(c), the change does not require a change to a technical specification or a license condition, and the criteria listed below are satisfied.

# Risk-Informed Changes that May Be Made Without Prior NRC Approval

A risk assessment of the change must demonstrate that the acceptance criteria below are met. The risk assessment approach, methods, and data shall be

- (h) The results of the visual inspections of the steam dryer shall be submitted to the NRC staff in a report in accordance with 10 CFR 50.4. The report shall be submitted to the NRC within 90 days following startup from each of the first two respective refueling outages.
- (i) Within 6 months following completion of the second refueling outage, after the implementation of the EPU, the licensee shall submit a long-term steam dryer inspection plan based on industry operating experience along with the baseline inspection results.

The license condition described above shall expire: (1) upon satisfaction of the requirements in items (g) and (h), provided that a visual inspection of the steam dryer does not reveal any new unacceptable flaw(s) or unacceptable flaw growth that is due to fatigue, and; (2) upon satisfaction of the requirements specified in Item (i).

(19) Neutron Absorber Monitoring Program

The licensee shall, at least once every ten years, withdraw a neutron absorber coupon from the spent fuel pool and perform Boron-10 (B-10) areal density measurement on the coupon. Based on the results of the B-10 areal density measurement, the licensee shall perform any technical evaluations that may be necessary and take appropriate actions using relevant regulatory and licensing processes.

(20) Radiological Consequences Analyses Using Alternative Source Terms

TVA shall perform facility and licensing basis modifications to resolve the non-conforming/degraded condition associated with the Alternate Leakage Treatment pathway such that the current licensing basis dose calculations (approved in License Amendment Nos. 251/282 (Unit 1), 290/308 (Unit 2) and 249/267 (Unit 3)) would remain valid. These facility and licensing basis modifications shall be complete prior to initial power ascension above 3458 MWt.

- (21) Prior to extending the frequency for the Integral Leakage Rate Testing described in TS 5.5.12, the licensee shall implement the modifications, that are modeled in the Fire PRA and described in Table S-2, "Plant Modifications," of Tennessee Valley Authority letter CNL-18-100, dated October 18, 2018; as supplemented by CNL-19-027, dated February 13, 2019.
- D. The UFSAR supplement, as revised, submitted pursuant to 10 CFR 54.21(d), shall be included in the next scheduled update to the UFSAR required by 10 CFR 50.71(e)(4) following the issuance of this renewed operating license. Until that update is complete, TVA may make changes to the programs and activities described in the supplement without prior Commission approval, provided that TVA evaluates such changes pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.
- E. The UFSAR supplement, as revised, describes certain future activities to be completed prior to the period of extended operation. TVA shall complete these activities no later than June 28, 2014, and shall notify the NRC in writing when implementation of these activities is complete and can be verified by NRC inspection.

- Automatic and Manual Water-Based Fire Suppression Systems (Section 3.9);
- Gaseous Fire Suppression Systems (Section 3.10); and Passive Fire Protection Features (Section 3.11).

This License Condition does not apply to any demonstration of equivalency under Section 1.7 of NFPA 805.

1. Fire Protection Program Changes that Have No More than Minimal Risk Impact

Prior NRC review and approval are not required for changes to the licensee's fire protection program that have been demonstrated to have no more than a minimal risk impact. The licensee may use its screening process as approved in the NRC Safety Evaluation dated October 28, 2015, to determine that certain fire protection program changes meet the minimal criterion. The licensee shall ensure that fire protection defense-in-depth and safety margins are maintained when changes are made to the fire protection program.

### **Transition License Conditions**

- Before achieving full compliance with 10 CFR 50.48(c), as specified by (2) below, risk-informed changes to the licensee's fire protection program may not be made without prior NRC review and approval unless the change has been demonstrated to have no more than a minimal risk impact, as described in (2) above.
- 2. With the exception of Modifications 102 and 106, the licensee shall implement modifications to its facility, as described in Table S-2, "Plant Modifications," of Tennessee Valley Authority letter CNL-18-100, dated October 18, 2018; as supplemented by CNL-19-027, dated February 13, 2019, to complete the transition to full compliance with 10 CFR 50.48(c) no later than the end of the second refueling outage (for each unit) following issuance of the NFPA 805 License Amendment dated October 28, 2015. Modifications 102 and 106 as described in Table S-2, shall be implemented no later than August 14, 2019, and October 14, 2019, respectively. The licensee shall maintain appropriate compensatory measures in place until completion of these modifications.
- 3. The licensee shall complete Implementation Items 09, 32, 33, and the second part of Implementation Items 47 as listed in Table S-3, "Implementation Items," of TVA letter CNL-17-130 dated October 23, 2017. Implementation Item 09 shall be completed by June 29, 2018. Implementation Items 32, 33, and the second part of Implementation Item 47, i.e., resolving Finding level Facts and Observations, are associated with modifications and will be completed after all procedure updates, modifications, and training are complete.
- (15) The licensee shall maintain the Augmented Quality Program for the Standby Liquid Control System to provide quality control elements to ensure component reliability for the required alternative source term function defined in the Updated Final Safety Analyses Report (UFSAR).
- (16) Upon implementation of Amendment No. 275, adopting TSTF-448, Revision 3, the determination of control room envelope (CRE) unfiltered air inleakage as required by SR 3.7.3.4, in accordance with TS 5.5.13.c(i), the assessment of the CRE habitability as required by TS 5.5.13.c(ii), and the measure of CRE pressure as required by TS 5.5.13.d, shall be considered met.

- (3) The licensee is authorized to relocate certain requirements included in Appendix A and the former Appendix B to licensee-controlled documents. Implementation of this amendment shall include the relocation of these requirements to the appropriate documents, as described in the licensee's application dated September 6, 1996; as supplemented May 1, August 14, November 5 and 14, December 3, 4, 11, 22, 23, 29, and 30, 1997; January 23, March 12, April 16, 20, and 28, May 7, 14, 19, and 27, and June 2, 5, 10 and 19, 1998; evaluated in the NRC staff's Safety Evaluation enclosed with this amendment. This amendment is effective immediately and shall be implemented within 90 days of the date of this amendment.
- (4) Deleted.
- (5) Classroom and simulator training on all power uprate related changes that affect operator performance will be conducted prior to operating at uprated conditions. Simulator changes that are consistent with power uprate conditions will be made and simulator fidelity will be validated in accordance with ANSI/ANS 3.5-1985. Training and the plant simulator will be modified, as necessary, to incorporate changes identified during startup testing. This amendment is effective immediately.
- (6)(a) The licensee shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans, which contains Safeguards Information protected under 10 CFR 73.21, is entitled: "Browns Ferry Nuclear Plant Physical Security Plan, Training and Qualification Plan, and Contingency Plan," Revision 4, submitted by letter dated April 28, 2006.
  - (b) The licensee shall fully implement and maintain in effect all provisions of the Commission-approved cyber security plan (CSP), including changes made pursuant to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The licensee CSP was approved by License Amendment No. 265, as amended by changes approved by License Amendment Nos. 271 and 281.
- (7) TVA Browns Ferry Nuclear Plant shall implement and maintain in effect all provisions of the approved fire protection program that comply with 10 CFR 50.48(a) and 10 CFR 50.48(c), as specified in the license amendment requests dated March 27, 2013 and June 7, 2017; May 3, 2018, and October 18, 2018, as supplemented by letters dated May 16, 2013; December 20, 2013; January 10, 2014; January 14, 2014; February 13, 2014; March 14, 2014; May 30, 2014; June 13, 2014; July 10, 2014; August 29, 2014; September 16, 2014; October 6, 2014; December 17, 2014; March 26, 2015; April 9, 2015; June 19, 2015; August 18, 2015; September 8, 2015; October 20, 2015; September 18, 2017; October 23, 2017; and February 13, 2019, as approved in the Safety Evaluations dated October 28, 2015; and December 19, 2017; and October 9, 2018; and [[INSERT DATE SE]]. Except where NRC approval for changes or deviations is required by 10 CFR 50.48(c), and provided no other regulation, technical specification, license condition or requirement would require prior NRC approval, the licensee

The licensee may use an engineering evaluation to demonstrate that changes to certain NFPA 805, Chapter 3 elements are acceptable because the alternative is "adequate for the hazard." Prior NRC review and approval would not be required for alternatives to four specific sections of NFPA 805, Chapter 3, for which an engineering evaluation demonstrates that the alternative to the Chapter 3 element is adequate for the hazard. A qualified fire protection engineer shall perform the engineering evaluation and conclude that the change has not affected the functionality of the component, system, procedure, or physical arrangement, using a relevant technical requirement or standard. The four specific sections of NFPA 805, Chapter 3, are as follows:

- Fire Alarm and Detection Systems (Section 3.8);
- Automatic and Manual Water-Based Fire Suppression Systems (Section 3.9);
- · Gaseous Fire Suppression Systems (Section 3.10); and
- Passive Fire Protection Features (Section 3.11).

This License Condition does not apply to any demonstration of equivalency under Section 1.7 of NFPA 805.

2. Fire Protection Program Changes that Have No More than Minimal Risk Impact

Prior NRC review and approval are not required for changes to the licensee's fire protection program that have been demonstrated to have no more than a minimal risk impact. The licensee may use its screening process as approved in the NRC Safety Evaluation dated October 28, 2015, to determine that certain fire protection program changes meet the minimal criterion. The licensee shall ensure that fire protection defense-in-depth and safety margins are maintained when changes are made to the fire protection program.

# **Transition License Conditions**

- Before achieving full compliance with 10 CFR 50.48(c), as specified by (2) below, risk-informed changes to the licensee's fire protection program may not be made without prior NRC review and approval unless the change has been demonstrated to have no more than a minimal risk impact, as described in (2) above.
- With the exception of Modifications 102 and 106, the licensee shall implement modifications to its facility, as described in Table S-2, "Plant Modifications," of Tennessee Valley Authority letter CNL-18-100, dated October 18, 2018; as supplemented by CNL-19-027, dated February 13, 2019, to complete the transition to full compliance with 10 CFR 50.48(c) no later than the end of the second refueling outage (for each unit) following issuance of the NFPA 805 License Amendment dated October 28, 2015. Modifications 102 and 106 as described in Table S-2, shall be implemented no later than August 14, 2019, and October 14, 2019, respectively. The licensee shall maintain appropriate compensatory measures in place until completion of these modifications.

(16) Radiological Consequences Analyses Using Alternative Source Terms

TVA shall perform facility and licensing basis modifications to resolve the non-conforming/degraded condition associated with the Alternate Leakage Treatment pathway such that the current licensing basis dose calculations (approved in License Amendment Nos. 251/282 (Unit 1), 290/308 (Unit 2) and 249/267 (Unit 3)) would remain valid. These facility and licensing basis modifications shall be complete prior to initial power ascension above 3458 MWt.

- (17) Prior to extending the frequency for the Integral Leakage Rate Testing described in TS 5.5.12, the licensee shall implement the modifications, that are modeled in the Fire PRA and described in Table S-2, "Plant Modifications," of Tennessee Valley Authority letter CNL-18-100, dated October 18, 2018; as supplemented by CNL-19-027, dated February 13, 2019.
- D. The UFSAR supplement, as revised, submitted pursuant to 10 CFR 54.21(d), shall be included in the next scheduled update to the UFSAR required by 10 CFR 50.71(e)(4) following the issuance of this renewed operating license. Until that update is complete, TVA may make changes to the programs and activities described in the supplement without prior Commission approval, provided that TVA evaluates such changes pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.
- E. The UFSAR supplement, as revised, describes certain future activities to be completed prior to the period of extended operation. TVA shall complete these activities no later than July 2, 2016, and shall notify the NRC in writing when implementation of these activities is complete and can be verified by NRC inspection.