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

April 6, 2007

TVA-BFN-TS-460-T

10 CFR 50.90

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 Nos. 50-296
Tennessee Valley Authority	)	

BROWNS FERRY NUCLEAR PLANT (BFN) - UNIT 3 - TECHNICAL SPECIFICATIONS (TS) CHANGE TS-460-T - REQUEST FOR ONE-TIME EXTENSION OF ALLOWED OUTAGE TIME (AOT) - EMERGENCY DIESEL GENERATOR (EDG) 3D

Pursuant to 10 CFR 50.90, the Tennessee Valley Authority (TVA) is submitting a request for an emergency one-time TS change (TS-460-T) to license DPR-68 for BFN Unit 3. This TS change proposes a one-time extension of the AOT for EDG 3D from seven days to fourteen days. The extension would allow continued operation of Unit 3 while repairs, post-maintenance testing, and surveillance testing of the subject EDG are completed. The proposed amendment is being requested on an emergency basis pursuant to 10 CFR 50.91(a)(5).

On April 1, 2007, at 0815 hours Central Time, EDG 3D was declared inoperable in preparation for a scheduled performance of the routine monthly diesel generator operability surveillance tests prescribed by TS Surveillance Requirements (SR) 3.8.1.1 and 3.8.1.2. This inoperability results in entering the action statements of TS Limiting Condition for Operability (LCO) 3.8.1.B to conduct the SR tests. During the test, the SR test acceptance criteria on output voltage were not satisfied;

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thus, the EDG has since remained inoperable while troubleshooting and repair activities are being conducted. At this time, procurement of parts, completion of repairs, post-maintenance testing, and surveillance testing to reestablish EDG operability may not be completed prior to expiration of the current seven-day AOT of TS 3.8.1.B.4. Therefore, TVA is requesting a one-time extension of the seven-day AOT by an additional seven days to ensure adequate time is available for completion of repairs and testing of the EDG.

Enclosure 1 to this letter provides the justification for this request. Enclosure 2 provides mark-ups of the affected TS page. TVA has determined that there are no significant hazards considerations associated with the proposed change and that the TS change qualifies for a categorical exclusion from environmental review pursuant to the provisions of 10 CFR 51.22(c)(9). Additionally, in accordance with 10 CFR 50.91(b)(1), TVA is sending a copy of this letter and enclosures to the Alabama State Department of Public Health.

TVA is asking that this TS change be approved by April 8, 2007, at 0815 hours Central Time based on the expiration time of the LCO to avoid commencement of the shutdown of Unit 3.

There are two new regulatory commitments associated with this submittal as contained in Enclosure 3. If you have any questions about this matter, please contact me at (256) 729-2636. I declare under penalty of perjury that the foregoing is true and correct. Executed on April 6, 2007.

Sincerely,

William D. Crouch

William D. Crouch
Manager of Licensing
and Industry Affairs

Enclosures:
1. TVA Evaluation of the Proposed Change
2. Proposed Technical Specifications Changes (mark-up)
3. Regulatory Commitments

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Enclosure 1

Browns Ferry Nuclear Plant (BFN) Unit 3

Technical Specifications (TS) Change TS-460-T
Request for One-Time Extension of Allowed Outage Time (AOT)
Emergency Diesel Generator (EDG) 3D

TVA Evaluation of the Proposed Change

1.0 DESCRIPTION

Pursuant to 10 CFR 50.90, the Tennessee Valley Authority (TVA) is submitting a request for an emergency one-time TS change (TS-460-T) to license DPR-68 for BFN Unit 3. This TS change proposes a one-time extension of the AOT for EDG 3D from seven days to fourteen days. This AOT extension would allow continued operation of Unit 3 while repairs and testing of the EDG 3D are being completed. The proposed amendment is being requested on an emergency basis pursuant to 10 CFR 50.91(a)(5).

2.0 PROPOSED CHANGE

The proposed Unit 3 TS change revises the Completion Time for Required Action 3.8.1.B.4 from seven days to fourteen days on a one-time basis. Marked-up TS pages showing the proposed revision are provided in Enclosure 2.

3.0 BACKGROUND

Description of Events

On April 1, 2007, at 0815 hours Central Time, EDG 3D was declared inoperable in preparation for a scheduled performance of the routine monthly diesel generator operability surveillance tests prescribed by TS Surveillance Requirements (SR) 3.8.1.1 and 3.8.1.2. The test instruction for the monthly operability test is plant test procedure 3-SR-3.8.1.1(3D). This inoperability results in entering the action statements of TS Limiting Condition for Operability (LCO) 3.8.1.B to conduct the SR tests.

During the performance of 3-SR-3.8.1.1(3D), it was discovered that voltage following the fast start signal was

too high. The acceptance criteria range for this step is 3940 volts to 4400 volts, but the tested value was 4450 volts. Investigation of the problem was promptly commenced and is in progress. Vendor and industry experts have been consulted and are onsite assisting with the investigation and repair.

Initially, the apparent cause appeared to be related to the motor operated potentiometer and/or associated reset circuitry used to maintain generator output frequency at 60 hertz. However, testing showed the potentiometer was not the cause of the SR failure. Subsequently, troubleshooting indicated the cause was associated with the EG-A component of the governor control circuitry. Although the root cause is unknown at this time, this condition appears to be an isolated problem not impacting any of the other EDGs. A review of the previous monthly EDG surveillance operability tests for the other seven BFN EDGs did not show similar high voltages or upward trends in voltage. This indicates that this is an isolated problem not common to the remaining operable EDGs. BFN has eight EDGs all of which are tested monthly on a rotating basis. This frequent testing makes it unlikely that common mode type problems can exist undetected for an appreciable period of time. Accordingly, there is high confidence that the remaining EDGs do not have a similar problem to that observed on EDG 3D.

The EG-A component of the electrical governor was replaced with a refurbished spare. However, on April 5, 2007, during post-maintenance EDG testing, the replacement EG-A failed. TVA has experienced difficulty in locating readily available compatible EG-A spares in the industry. Both EG-As are in the process of being repaired at a vendor location on an expedited basis.

TS Required Action 3.8.1.B.4 provides a seven-day Completion Time for returning an inoperable EDG to service, which for EDG 3D expires on April 8, 2007, at 0815 hours Central Time. If EDG 3D cannot be returned to operability by then, a shutdown of Unit 3 will be required in accordance with LCO 3.8.1.I.1 within 12 hours. TVA has determined that the risk of extending the seven-day AOT by an additional seven days (total AOT of fourteen days) does not warrant subjecting Unit 3 to a shutdown transient and TVA is requesting herein a one-time extension of the AOT from seven to fourteen days.

Basis for Current Requirements

The operability requirements for the alternating current (AC) power sources during plant operation ensures that sufficient power will be available to supply the safety-related equipment required for 1) the safe shutdown of the facility and 2) the mitigation and control of accident conditions within the facility. The minimum specified independent and redundant alternating power sources satisfy the objectives of General Design Criteria 17, "Electric Power Systems," of Appendix A to 10 CFR 50. The TS action requirements specified for the levels of degradation of the power sources provide restrictions for continued facility operation commensurate with the level of degradation. The operability requirements for the power sources are consistent with the initial condition assumptions of the accident analyses and are based upon maintaining the remaining onsite alternating current power sources and associated distribution systems operable.

Reason for Requesting Emergency Amendment

10 CFR 50.91(a)(5) states that where the NRC finds that an emergency situation exists, in that failure to act in a timely manner would result in derating or shutdown of a nuclear power plant, or in prevention of either resumption of operation or of increase in power output up to the plant's licensed power level, it may issue a license amendment involving no significant hazards consideration without prior notice and opportunity for a hearing or for public comment. The regulation also states that the NRC will decline to dispense with notice and comment on the determination of no significant hazards if it determines that the licensee has abused the emergency provision by failing to make timely application for the amendment and thus itself creating the emergency.

The regulation requires that a licensee requesting an emergency amendment explain why the emergency situation occurred and why the licensee could not avoid the situation. As explained below, an emergency amendment is needed to preclude an unnecessary plant shutdown, and TVA could not have reasonably avoided the situation or made timely application for an amendment.

Reason Emergency Situation Has Occurred

On April 1, 2007, at 0815 hours Central Time, EDG 3D was declared inoperable in preparation for a scheduled performance of the routine monthly diesel generator operability surveillance tests prescribed by TS SR 3.8.1.1 and 3.8.1.2. This inoperability resulted in entering the action statements of TS LCO 3.8.1.B to conduct the SR tests. During the test, the SR test acceptance criteria on output voltage were not satisfied; thus, the EDG has since remained inoperable. In the course of troubleshooting activities, the existing EG-A component of the electrical governor for DG 3D was determined to be suspect and was replaced with a refurbished spare. During post-maintenance testing on April 5, 2007, the refurbished EG-A also failed, although in a different manner. There were no additional spare EG-As in-house and spare compatible EG-As are not readily available from vendors or in the industry. One spare EG-A has been obtained from another utility, installed, and is being tested. In parallel, TVA is expediting the repair of the two EG-As at a vendor facility. However, repair, replacement, and in-situ testing of the EG-A may exceed the seven-day EDG AOT.

Reason the Situation Could Not Have Been Avoided

Failure of the EDG to pass the monthly operability SR was unexpected. Troubleshooting and repair activities were promptly commenced and have been ongoing around the clock. To date, the following activities have been completed in attempting to diagnose and remedy the problem

- Diagnosed the voltage regulation issue due to a failed EG-A
- Replaced the suspect EG-A with a refurbished spare
- During post-maintenance testing, the refurbished EG-A failed and has been removed for repair
- A replacement EG-A from another utility has been installed and is being tested

The efforts to repair and return the EDG to a fully operable status have not been successful due to the unexpected failure of the EG-A and failure of the replacement EG-A. Thus, the net time to troubleshoot and repair the EDG 3D has been longer than typically experienced, and has resulted in an unexpectedly lengthy duration of EDG 3D inoperability. TVA could not have

reasonably foreseen these added difficulties in returning EDG 3D to operable status within the existing seven-day Completion Time of TS LCO 3.8.1.B.4.

Completion of repairs, post-maintenance testing, and surveillance testing to reestablish EDG 3D operability may not be completed prior to expiration of the existing seven-day AOT timeframe. Therefore, TVA is requesting a one-time extension of this seven-day AOT by an additional seven days to assure adequate time is available for completion of repairs, post-maintenance testing, and surveillance testing of the EDG.

TVA has determined that the risk of the requested AOT extension does not warrant subjecting Unit 3 to a shutdown transient. This requested extension would be limited to the current period of EDG 3D inoperability. TVA, therefore, considers that the situation could not have been avoided and there is justification for requesting the proposed license amendment on an emergency basis.

4.0 TECHNICAL ANALYSIS

The proposed amendment to allow a one-time extension of the AOT for EDG 3D is based on the following considerations.

Onsite Emergency Power System Description

At BFN, eight EDGs (four for Units 1 and 2, and four for Unit 3) are provided as standby power supplies to be used on loss of the Normal Auxiliary Power System. A detailed description is in the Updated Final Safety Analysis Report (UFSAR), Section 8.5, "Standby Alternating Current Power Supply and Distribution."

The standby AC system for Unit 3 is robust and has four EDGs (3A, 3B, 3C, and 3D) dedicated to Unit 3 service. Unit 1 and 2 share four EDGs. Each of the Unit 3 EDGs serves a 4.16-kV shutdown board and supplies various safety-related loads as shown in UFSAR Figures 8.5-4.b, 8.5-4.f, 8.5-4.g, and 8.5-4.h. The Units 1/2 standby AC power system and the Unit 3 standby AC system power system are, with exception of the support systems described below, independent of each other with regard to plant standby readiness safety systems alignment. The BFN standby AC system is designed such that the Unit 1/2 EDGs and Unit 3 EDGs can be manually connected to their corresponding

4.16-kV shutdown boards between the plants. For example, Unit 3 4.16-kV shutdown board 3D can be tied to Unit 1/2 4.16-kV shutdown board D and vice versa.

As shown in UFSAR Figures 8.5-4.b, 8.5-4.f, 8.5-4.g, and 8.5-4.h, EDG 3A and 3C are the most important of the Unit 3 EDGs in that they power the Division 1 and 2 480-V Reactor Motor Operated Valve (RMOV) Boards. EDG 3D is not a standby power supply for a RMOV board. In the event of the loss of offsite power, EDG 3D powers one (out of four) Unit 3 Residual Heat Removal (RHR) Pumps, one (out of four) Unit 3 Core Spray Pumps, one common (out of eight) RHR Service Water (RHRSW) Pumps, and one common (out of three) Standby Gas Treatment System (SBGT) train. It is seen that in the event of a loss of offsite power event where Unit 3 EDGs are required, the effect of the inoperability of EDG 3D on Unit 1 and 2 operations is limited to one RHRSW pump and one SBGT system train.

Unit 1 is currently in Mode 4 following a lengthy reconstruction project and will not restart prior to May 2007. The Unit 1 core design consists of 672 fresh fuel assemblies and 92 previously irradiated fuel assemblies, which were discharged in March 2005 from the BFN Unit 2 Cycle 13 core. Decay heat is extremely low (~.13 MWt), which is on the order of ambient heat loss from the reactor vessel. Therefore, the likelihood of Unit 1 requiring standby AC power from one of the Unit 1/2 shared EDGs is very small during the requested Unit 3 EDG 3D AOT extension request.

Unit 2 is currently in a refueling outage and is scheduled to restart within the next week. However, with the minimal needs for AC power on Unit 1 due to the prolonged shutdown condition, Unit 2 will restart with the four shared Unit 1/2 EDGs in essence dedicated exclusively to Unit 2 service. As discussed above, EDG 3D is dedicated to Unit 3 service with the exception that it does provide standby power to one RHRSW pump and one train of SBGT. RHRSW and SBGT are shared systems among the 3 units. With a total of eight RHRSW pumps, but only two BFN units (Units 2 and 3) in power operation, there are excess RHRSW pumps available. So, the unavailability of standby AC pump power for a single RHRSW pump is not a significant issue.

With regard to SBGT, two SBGT trains are powered by Units 1/2 EDGs, which are fully operable. It is unlikely that,

during the proposed seven-day EDG 3D AOT extension request, a loss of off site power will occur in combination with an event (pipe break with significant fuel damage) and loss of one of the remaining SBGT trains will occur.

Qualitative Risk Assessment from Proposed Extended AOT

A qualitative probabilistic risk assessment was performed for the proposed seven-day AOT extension for EDG 3D by comparing the results of previous calculations which quantified approximate values of Core Damage Frequency and Large Early Release Frequency for extended out-of-service times for EDGs versus the baseline risk with nominal equipment unavailability. Based on this comparison, BFN has concluded that a one-time, single EDG AOT extension has a very small impact on overall plant risk.

Grid Reliability

Regarding the likelihood of needing EDGs due to the loss of offsite power or degraded voltage conditions, it is noted that TVA's power system provides some of the most reliable electric power in North America. TVA's regional transmission grid spans portions of seven states. TVA's nuclear plants generate approximately 30 percent of TVA's net power. The remaining 70 percent of power generation comes from reliable fossil and hydroelectric plants, pumped storage, and green power.

In actions taken in response to Generic Letter 2006-02, "Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power," protocols have been put in place to improve communications between TVA grid operators and BFN operating staff. This includes daily communications regarding plant activities and TVA system grid activities, coordination of scheduling activities on matters related to off site power and onsite power systems, contingency planning for degraded configurations, and prompt notification of plant operators in the event of degraded grid situations. Adverse weather contingency procedures have also been established for meteorological conditions which could potentially affect off site power availability.

Operation and Maintenance Restrictions

During the time period the EDG 3D inoperability exceeds the original AOT of 7 days, planned maintenance and testing

activities on components/systems, which could result in inoperability or equipment loss, or which would increase the probability of an unplanned plant transient will be avoided. These components/systems include those features specifically redundant to the features supported by the inoperable EDG 3D such as SBGT Systems A and B, Division I of Unit 3 Core Spray, Division I of Unit 3 RHR, and the three Unit 3 EDGs and four Units 1/2 EDGs. Also, testing and maintenance of the Unit 3 high pressure injection systems will be avoided except for required TS testing.

The communications protocols described in the previous section will be maintained during the time that EDG 3D inoperability exceeds the original AOT of 7 days. Also, switchyard activities will be carefully monitored and restricted to those needed for plant operation.

5.0 REGULATORY SAFETY ANALYSIS

Pursuant to 10 CFR 50.90, the Tennessee Valley Authority (TVA) is submitting a request for a one-time Technical Specifications (TS) change (TS-460-T) to license DPR-68 for Browns Ferry Nuclear Plant (BFN) Unit 3. The proposed change revises the TS Completion Time for Required Action 3.8.1.B.4 from seven days to fourteen days for restoration of an inoperable emergency diesel generator (EDG) 3ED.

5.1 No Significant Hazards Consideration

TVA has evaluated whether or not a significant hazards consideration is involved with the proposed TS changes by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of Amendment", as discussed below:

1. Does the proposed TS change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The proposed change does not affect the design of the EDGs, the operational characteristics or function of the EDGs, the interfaces between the EDGs and other plant systems, or the reliability of the EDGs. Required Actions and their associated Completion Times are not considered initiating conditions for any accident previously evaluated, nor are the EDGs

considered initiators of any previously evaluated accidents. The EDGs are provided to mitigate the consequences of previously evaluated accidents, including a loss of off site power. The consequences of previously evaluated accidents will not be significantly affected by the extended EDG Completion Time because a sufficient number of onsite Alternating Current power sources will continue to remain available to perform the accident mitigation functions associated with the EDGs, as assumed in the accident analyses. Thus, the consequences of accidents previously evaluated are not affected by the proposed change in Completion Time

A qualitative probabilistic risk assessment was performed for the proposed seven-day AOT extension for EDG 3D by comparing the results of previous calculations which quantified approximate values of Core Damage Frequency and Large Early Release Frequency for extended out-of-service times for EDGs versus the baseline risk with nominal equipment unavailability. Based on this comparison, BFN has concluded that a one-time, single EDG AOT extension has a very small impact on overall plant risk.

2. Does the proposed TS change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The proposed change does not involve a change in the design, configuration, or method of operation of the plant. The proposed change will not alter the manner in which equipment operation is initiated, nor will the functional demands on credited equipment be changed. The proposed change allows operation of the unit to continue while EDG 3D is repaired and retested. The proposed extension does not affect the interaction of EDG 3D with any system whose failure or malfunction can initiate an accident. As such, no new failure modes are being introduced. Therefore, this proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed TS change involve a significant reduction in a margin of safety?

Response: No

BFN's standby AC system is designed with sufficient redundancy such that an EDG may be removed from service for maintenance or testing. The remaining EDGs are capable of carrying sufficient electrical loads to satisfy the Updated Final Safety Analysis Report requirements for accident mitigation or unit safe shutdown. The proposed change does not impact the redundancy or availability requirements of offsite power supplies or change the ability of the plant to cope with station blackout events.

For these reasons, the proposed amendment does not involve a significant reduction in a margin of safety.

Based on the above, TVA concludes that the proposed TS change presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

6.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed TS changes would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed TS changes do not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed TS changes meet the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed TS changes.

Enclosure 2

Browns Ferry Nuclear Plant (BFN) Unit 3

Technical Specifications (TS) Change TS-460-T
Request for One-Time Extension of Allowed Outage Time (AOT)
Emergency Diesel Generator (EDG) 3D

Proposed Technical Specification Changes (mark-up)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.2 Declare required feature(s), supported by the inoperable Unit 3 DG, inoperable when the redundant required feature(s) are inoperable.	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)
	AND	
	B.3.1 Determine OPERABLE Unit 3 DG(s) are not inoperable due to common cause failure.	24 hours
	OR	
	B.3.2 Perform SR 3.8.1.1 for OPERABLE Unit 3 DG(s).	24 hours
	AND	
	B.4 Restore Unit 3 DG to OPERABLE status.	7 days[(a)] AND 14 days from discovery of failure to meet LCO

(continued)

[(a)] This 7-day Completion Time, which was entered on April 1, 2007, at 0815 hours, may be extended an additional 7 days to complete repair and testing of DG 3D. Unit 1 shall be maintained in a shutdown condition during this extended time interval.

Enclosure 3

Browns Ferry Nuclear Plant (BFN) Unit 3

Technical Specifications (TS) Change TS-460-T
Request for One-Time Extension of Allowed Outage Time (AOT)
Emergency Diesel Generator (EDG) 3D

Regulatory Commitments

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1. During the time period the EDG 3D inoperability exceeds the original AOT of 7 days, planned maintenance and testing activities on components/systems, which could result in inoperability or equipment loss, or which would increase the probability of an unplanned plant transient will be avoided. These components/systems include those features specifically redundant to the features supported by the inoperable EDG 3D such as SBGT Systems A and B, Division I of Unit 3 Core Spray, Division I of Unit 3 RHR, and the three Unit 3 EDGs and four Units 1/2 EDGs. Also, testing and maintenance of the Unit 3 high pressure injection systems will be avoided except for required TS testing.

2. The communications protocols described in the previous section will be maintained during the time that EDG 3D inoperability exceeds the original AOT of 7 days. Also, switchyard activities will be carefully monitored and restricted to those needed for plant operation.