Nuclear Operating Company
South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

December 23, 2003
NOC-AE-03001656
10CFR50.90

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

South Texas Project
Unit 2
Docket No. STN 50-499
Proposed Emergency Change to Technical Specification 3.8.1.1
to Support Diesel Generator Inspections

Reference: 1. Letter from T. J. Jordan to NRC Document Control Desk dated December 15, 2003, "Proposed Emergency Change to Technical Specification 3.8.1.1" (NOC-AE-03001647)
2. Letter from T. J. Jordan to NRC Document Control Desk dated December 18, 2003, "Supplement 1 to Proposed Emergency Change to Technical Specification 3.8.1.1" (NOC-AE-03001650)
3. Letter from T. J. Jordan to NRC Document Control Desk dated December 20, 2003, "Revision to Proposed Emergency Change to Technical Specification 3.8.1.1" (NOC-AE-03001653)

In the referenced letters STP Nuclear Operating Company (STPNOC) requested an emergency amendment to the STP Unit 2 Operating License NPF-80. The proposed changes to the Technical Specifications (TS) would have revised TS 3.8.1, "AC Sources - Operating," to extend the allowed outage time (AOT) for Unit 2 Standby Diesel Generator (SDG) 22 beyond 14 days to complete repairs.

STPNOC determined that the cause of the SDG 22 failure is microcracks created on the master connecting rod during manufacturing that propagated due to high cycle fatigue until the master connecting rod failed. Reference 2 includes a detailed description of the STPNOC cause evaluation, potential for common mode failure, and a description of the inspections performed on the other SDG 22 connecting rods and on the connecting rods for the STP Unit 1 SDGs. Those inspections have been completed with no recordable indications. Consequently, STPNOC has determined there is no evidence of common mode failure.

To provide further confirmation that there is no potential for common mode failure, STPNOC will apply the 7 day AOT extension proposed in this application to inspect the connecting rods on the other two Unit 2 SDGs.

A005

The proposed license amendment is needed to avoid a potential shutdown in accordance with TS 3.8.1.1 at the expiration of the AOT, which would require STP Unit 2 to be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. Therefore, STPNOC requests approval of this license amendment request on an emergency basis and issuance of the amendment no later than December 23, 2003.

Attachment 4 provides additional information requested by the NRC staff regarding the non-destructive examination (NDE).

The STPNOC Plant Operations Review Committee has reviewed and concurred with the proposed change to the Technical Specifications.

In accordance with 10 CFR 50.91(b), STPNOC is notifying the State of Texas of this supplement to the request for license amendment by providing a copy of this letter and its attachments.

If there are any questions regarding the proposed amendment, please contact Mr. S. M. Head at (361) 972-7136 or me at (361) 972-7902.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on December 23, 2003

T. J. Jordan
Vice President
Engineering & Technical Services

awh/

Attachments:

1. Description of Changes and Safety Evaluation
2. Revised Technical Specification Pages
3. Commitments
4. NRC Requested Information Regarding NDE

cc:
(paper copy)

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Attachment 1

Description of Changes and Safety Evaluation

1.0 Description

Pursuant to 10 CFR 50.90 and 10 CFR 50.91(a)(6), STP Nuclear Operating Company (STPNOC) requests an emergency amendment to the STP Unit 2 Operating License NPF-80. The proposed change to the Technical Specifications (TS) would revise TS 3.8.1, "AC Sources – Operating," to extend the allowed outage time (AOT) for Unit 2 Standby Diesel Generator (SDG) 22 from 14 days to 21 days. STPNOC is proposing this as a one-time change.

During a surveillance test on December 9, 2003, SDG 22 experienced a failure and STPNOC will not be able to complete the repairs in the current 14 day AOT. The maintenance activities are being worked on a 24-hour per day schedule until completed.

Emergency approval of the proposed license amendment is needed to avoid a potential shutdown in accordance with TS 3.8.1 at the expiration of the AOT on December 23, 2003. Action 3.8.1.1.b would require STP Unit 2 to be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. STPNOC could not reasonably have foreseen or anticipated the failure of SDG 22. Therefore, STPNOC requests approval of this license amendment request on an emergency basis and issuance of the amendment prior to expiration the AOT at 10:38 a.m. CST on December 23, 2003.

This license amendment request is a risk-informed licensing change. The proposed change meets the criteria of Regulatory Guide RG 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis" and Regulatory Guide 1.182, "Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants".

2.0 Proposed Change

The proposed change adds a footnote to TS 3.8.1.1.b, TS 3.8.1.1.c, and TS 3.8.1.1.f to permit a one-time extension to the AOT for SDG 22 as shown below.

b. With a standby diesel generator inoperable, demonstrate the OPERABILITY of the above-required A.C. offsite sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. If the standby diesel generator became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE standby diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.2) for each such standby diesel generator separately within 8 hours,

unless it can be demonstrated there is no common mode failure for the remaining diesel generator(s). Restore the inoperable standby diesel generator to OPERABLE status within 14 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. (12)

c. With one offsite circuit of the above-required A.C. electrical power sources and one standby diesel generator inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Specification 4.8.1.1.1a. within 1 hour and at least once per 8 hours thereafter; and if the standby diesel generator became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE standby diesel generators by performing Surveillance Requirement 4.8.1.1.2a.2) within 8 hours, unless it can be demonstrated there is no common mode failure for the remaining diesel generator(s); restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two offsite circuits to OPERABLE status within 72 hours and three standby diesel generators to OPERABLE status within 14 days from the time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. (12)

f. With two or three of the above required standby diesel generators inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing the requirements of Specification 4.8.1.1.1a. within 1 hour and at least once per 8 hours thereafter; restore at least one standby diesel generator to OPERABLE status within 2 hours and at least two standby diesel generators to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least three standby diesel generators to OPERABLE status within 14 days from time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. (12)

This note will appear on TS page 3/4 8-7:

(12) For the Unit 2 Train B standby diesel generator (SDG 22) failure of December 9, 2003, restore the inoperable standby diesel generator to OPERABLE status within 21 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

The current TS 3.8.1.1.c and TS 3.8.1.1.f requirements are not compatible with the proposed extension to the AOT for SDG 22 in TS 3.8.1.1.b in that STPNOC would not be able to comply with the action required in TS 3.8.1.1.c or TS 3.8.1.1.f to restore three SDGs to operable status within 14 days. Consequently, in addition to the proposed change to TS 3.8.1.1.b, STPNOC proposes to add the same Note 12 to TS 3.8.1.1.c and TS 3.8.1.1.f that is proposed for TS 3.8.1.1.b.

The time limits on the shutdown action are worded slightly differently in the note and the action statements in that the action statements specify times to achieve hot standby and cold shutdown, and the note (originally excerpted from TS 3.8.1.1.b) specifies times to achieve hot shutdown and cold shutdown. However, the total time to be in cold shutdown is 36 hours in all cases. The intent and assumption for both action statements and the note is a normal plant shutdown to cold shutdown and the difference in wording is not significant.

3.0 Background

3.1 Electrical Power Systems On-site AC Sources Description

STP UFSAR Section 8.3.1.1.4 provides an overview of the on-site AC sources (standby diesel generators):

Onsite Standby Power Supply and ESF Power Distribution: The Onsite Standby Power Supply Systems of Units 1 and 2 each consist of three independent, physically separated, SBDGs supplying power to three associated load groups designated Train A, Train B, and Train C. Each load group consists of a 4.16 kV ESF bus and the electrical loads connected to that bus. The Onsite Standby Power Supply Systems of Units 1 and 2 operate independently of each other. Each SBDG and load group of a particular unit is also physically separated and electrically independent from the other two SBDGs and their load groups. Each train (i.e., Load Group) is independent but is not totally redundant; two trains are necessary to mitigate the consequences of a design basis accident (DBA). Qualification of all Class 1E electrical equipment which is a part of the Onsite Standby Power Supply and ESF Power Distribution System is discussed in Sections 3.10 and 3.11.

Each SBDG is located in a separate room of the Diesel Generator Building (DGB), which is a seismic Category I structure (described in Section 3.8.4).

Each 4.16 kV ESF bus is provided with switching that permits energization of the bus by five alternative sources:

1. The respective unit auxiliary transformer
2. No. 1 standby transformer
3. No. 2 standby transformer
4. Standby diesel generator
5. 138 kV emergency transformer

Each SBDG is automatically started in the event of loss of offsite power (LOOP) or safety injection (SI) signal, as described in Section 8.3.1.1.4.4, and the required Class 1E loads connected to that ESF bus are automatically connected in a predetermined time sequence. Each SBDG is ready to accept load within 10 seconds after the start signal.

The SBDGs are not used for peaking and therefore the design complies with Branch Technical Position (BTP) Instrumentation and Controls System Branch (ICSB) 8.

3.2 Past Performance

Prior to the failure of SDG 22, STP Unit 2 Emergency Diesel Generators have not exhibited any unusual performance issues over the past 3 years.

The NRC Performance Indicator for Emergency AC Power tracks the cumulative unavailability for these diesels over a rolling 3 year period. Unit 2 Emergency Diesel Generators have performed at (or very close to) the industry average, which has significant margin to the performance indicator threshold.

3.3 SDG 22 Failure

During a surveillance run on December 9, 2003, SDG 22 experienced a failure, which included ejection of a number of major components. Because of the extent of damage to the diesel, STPNOC is disassembling the SDG to repair or replace the damaged components.

STPNOC determined that the cause of the failure is microcracks created on the master connecting rod during manufacturing that propagated due to high cycle fatigue until the master connecting rod failed. Reference 2 of the cover letter includes a detailed description of the STPNOC cause evaluation, potential for common mode failure, and a description of the inspections performed on the other SDG 22 connecting rods and on the connecting rods for the STP Unit 1 SDGs. Those inspections have been completed with no recordable indications. Consequently, STPNOC has determined there is no evidence of common mode failure.

To provide further confirmation that there is no potential for common mode failure, STPNOC will apply the proposed 7 day AOT extension to inspect the connecting rods on the other two Unit 2 SDGs. If STPNOC's conclusions regarding common mode failure change prior to approval of this amendment, STPNOC will promptly advise the NRC and withdraw the proposed amendment. If the conclusions change subsequent to issuance of the amendment, STPNOC will promptly evaluate the operability of the potentially affected SDGs and apply the requirements of the Technical Specifications.

Inspection Schedule

Based on the experience gained from inspecting the Unit 1 SDGs, STPNOC has determined that inspection of the two remaining Unit 2 SDGs can be accomplished in 7 days. Although STPNOC believes the inspection of each SDG can be accomplished within the 24 hours allowed for two inoperable SDGs per TS 3.8.1.1.f, it is conservatively assumed in the risk calculation that each SDG NDE inspection will require 36 hours to complete (more than one entry into TS 3.8.1.1.f for each diesel).

4.0 Technical Analysis

4.1 Electrical Power Systems AC Sources Safety Analysis Basis

The initial conditions of DBA and transient analyses in the FSAR, Chapter 6 and Chapter 15, assume ESF systems are OPERABLE. The AC electrical power sources are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that the fuel, Reactor Coolant System (RCS), and containment design limits are not exceeded.

The OPERABILITY of the AC electrical power sources is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. In Modes 1, 2, 3, and 4 this results in maintaining at least two trains of the onsite or one train of the offsite AC sources OPERABLE during accident conditions in the event of:

a. An assumed loss of all offsite power or all onsite AC power; and
b. A worst case single failure.

The extended allowed outage time (EAOT) of 14 days in TS 3.8.1.1b includes a combination of deterministic and risk-informed bases justified by the redundancy of the plant design and the extremely low probability of an event that cannot be mitigated by one operable ESF train.

The EAOT is typically adequate for emergent conditions and planned maintenance. However, the duration of the repair of SDG 22 for the current condition will exceed 14 days.

4.2 Deterministic Evaluation (Defense in Depth and Safety Margins)

During the extended repair period, design basis accident (DBA) AC power requirements can be met with the operable A and C train SDGs, assuming no single failure.

In addition, the deterministic component of the basis for the EAOT provides assurance that the plant retains a substantial capability to mitigate design basis events with the reduced capability that results from postulating a DBA and a single failure while the plant is in the EAOT, or from postulating an accident (with no single failure) in the 24 hours allowed by TS 3.8.1.1.d for inoperability of required equipment in one of the other trains. This evaluation shows that a single operable ESF train can mitigate (at a reduced capacity in certain cases) the design basis accidents except for a large break LOCA where the break is located in the RCS loop associated with the operating train of safety injection. Because postulation of these events is beyond the design basis of the plant, in some cases the deterministic analyses apply less conservative acceptance criteria than those required of design basis analyses. These capabilities were described in detail in STP's license amendment application to extend the SDG AOT to 14 days, which was approved in Amendments 85/72 to the STP Operating Licenses. The information in Table 1

summarizes the limitations identified in the deterministic evaluations. Table 1 was previously submitted in Reference 3 of the cover letter.

Spent Fuel Pool Cooling

SDG 22 provides emergency power for one of the two 100% trains of Spent Fuel Pool Cooling (SFPC). In the event of a loss of off-site power, SDG-23 for Train C would provide adequate power for its associated train of SFPC. Should there be a single failure of SDG-23 or other required SFPC component with the postulated loss of off-site power, the heat-up rate of the SFP will be very slow (~1°F/hr). The time to boil from the current SFP temperature (83°F) is 129 hours. Restoration of off-site power would be expected well before boiling would occur.

In addition to the margin described above, compensatory actions as described in Section 4.4 will be taken in order to minimize the small increase in risk during the period when SDG 22 is inoperable.

Based on these evaluations, STPNOC has concluded that the proposed change maintains essentially the same defense-in-depth and safety margins that were determined to be acceptable in the review and approval for extending the original AOT to 14 days.

Table 1: Deterministic Capability with One Inoperable SDG and Assuming Single Failure

System	Function Affected	Alternative Action	Comments
Safety Injection (LHSI and HHSI)	Cannot mitigate LBLOCA if the SI train is injecting into the broken RCS loop	None (minimal cooling from using hot leg recirculation)	One train in maintenance outage One train fails One train injects into the broken loop
Safety Injection (HHSI)	Steam line break mitigation capability reduced	None required	DNB not expected to occur
Safety Injection (LHSI and HHSI)	Cannot mitigate SBLOCA without operator action if the SI train is injecting into the broken RCS loop	Operator action per EOPs to depressurize	One train in maintenance. One train fails. One train of HHSI not enough to match break flow Operator action is expected to be effective
Residual Heat Removal	Cannot provide long term cooling if only a single ESF bus is energized or if RHR is injecting into broken loop	Continue to inject using LHSI until RHR is restored.	RHR is required approximately 14 hours after event. Recovery of power to ESF bus is expected within 8 hours
Containment Spray	Iodine removal during a LBLOCA or SBLOCA	Monitor TSC doses and relocate to lower dose area	
Control Room Envelope HVAC	Cannot maintain 1/8" positive pressure	None	Tests done during single-train operation have shown minor in-leakage may occur in equipment room inside the control room envelope. (2)
Fuel Handling Building HVAC	Cannot provide filter path for recirculation phase leakage if C train is only operable train	Provide alternate power supply from operable diesel	Procedure in place for establishing cross-connect.
Hydrogen Recombiners	Cannot use hydrogen recombiners if A is the only operable train	Provide alternate power supply from operable diesel	Procedure in place for establishing cross-connect. In addition, 10CFR50.44 has been revised to eliminate the requirement for recombiners for large dry containments.(3)
Component Cooling Water	CCW flow to RCFC's and RHR Heat Exchanger less than design	Manually isolate non-safety header to restore design flow.	If train C is the operable train, CCW flow approximates design flow. Effect of reduced CCW flow is slight even without manual action.

(1) These conditions require an initiating event (i.e., Large Break LOCA) with a loss of offsite power and failure of a standby diesel generator given a diesel generator is unavailable for its extended AOT.
(2) NRC SE for Amendments 85/72 dated October 31, 1996 acknowledged the in-leakage.
(3) Original analysis and SE reflected 11 days before recombiners would be required. The current calculations allow 1 day, which STP still considers adequate. In addition, analyses were based on requirements prior to changes to 10CFR50.44.

4.3 Probabilistic Risk Assessment (PRA) Evaluation

Evaluation of Risk Impact

Risk-informed considerations for the proposed change consist of:

- Maintaining defense-in-depth,
- Quantifying the PRA to determine the change in core damage frequency (CDF) and large early release frequency (LERF) produced by the increased completion time for SDG 22,
- Continuation of the STP configuration risk management program to control performance of other risk significant tasks during the SDG maintenance, and
- Consideration of specific compensatory measures to minimize risk.

The risk impact of the proposed change for extending the SDG 22 AOT for up to 7 additional days (21 days total) has been evaluated and found to be acceptable. The overall risk impact is within acceptable limits of current regulatory guidance. The effect on risk of the proposed increase in completion time for maintenance of SDG 22 has been evaluated using Regulatory Guide (RG) 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis" and RG 1.182, "Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants".

RG 1.174 Evaluation

The proposed change has been evaluated in accordance RG 1.174 by applying the "three-tier" approach.

Tier 1 - PRA Capability and Calculation of Risk Insights

Tier 2 - Avoidance of Risk-Significant Plant Configurations

Tier 3 - Risk-Informed Configuration Risk Management

Tier 1: PRA Capability and Calculation of Risk Insights

PRA Capability

As described in more detail below, the STP PRA is a complete Level 1 and Level 2 at-power model that includes external events. Consideration of plant operating modes other than Mode 1 is not necessary for the requested extension in the Allowed Outage Time.

The STP PRA is a full-scope, at-power (Plant MODE 1 and MODE 2) Level 1 / 2 PRA that incorporates internal events, inclusive of fires/floods, and external events (seismic, fire, flood). STP's PRA features a seismic PRA, flood/fire PRA (including spatial interactions analysis), human reliability analysis, and detailed common cause

modeling. The model is quantified using the RISKMAN® software code that has met station and industry software quality assurance requirements. The PRA is maintained and updated under a PRA configuration control program in accordance with station procedures. The station's PRA program and associated processes are governed by procedure. Periodic reviews and updates, if necessary, are performed for plant changes (including as a minimum, performance data, procedures, and plant modifications) by qualified personnel with independent reviews and approvals. As described below, the STP PRA has undergone a recent industry Peer Review.

STPNOC has used its PRA for risk-informed insights and applications since the mid-1980s. The NRC has previously reviewed the STP PRA in support of approving the following risk-informed licensing applications:

1. Amendment Nos. 59 & 47, dated February 17, 1994 (initial application made in 1990). The application extended the allowed outage times for 10 LCOs and the intervals for 3 surveillance tests.
2. Amendment Nos. 85 & 72, dated October 31, 1996. The application extended the allowed outage time for the standby diesel generators and their associated support systems.
3. Amendment Nos. 125 & 113, dated September 26, 2000. The application relaxed LCO requirements for control room and fuel handling building HVAC.
4. Approval of Exemption to Special Treatment Requirements, dated August 3, 2001. The application relaxed regulatory requirements for various degrees of special treatment provisions for safety related components (Option 2 Pilot).
5. Amendment Nos. 135 & 124, dated January 10, 2002. The application extended the allowed outage time for ECCS Accumulators consistent with WCAP-15049-A and relaxed accumulator surveillance requirements consistent with Westinghouse Improved Technical Specifications.
6. Amendment Nos. 143 & 131, dated September 17, 2002. The application allowed a one-time extension of integrated leak rate test to 15 years.
7. Amendment Nos. 146 & 134, dated December 31, 2002. The application extended the allowed outage time for auxiliary feedwater.
8. Amendment Nos. 158 & 146, dated December 2, 2003. The application eliminated the UFSAR description of the turbine missile design basis.

In addition to the risk-informed licensing applications above, STPNOC has used the STP PRA to provide additional insight to other license amendments and to respond to NRC questions.

The following references are evaluations of the STP PRA that have been performed by the NRC and others:

1. NRC SER related to the STP Probabilistic Safety Assessment, dated January 21, 1992, documented favorable conclusions with regard to the STP PRA, including its treatment of fire (done to support the review for Amendment Nos. 59 & 47, above).

2. 2002 Peer Review

   In April 2002, STP's PRA underwent an industry peer review performed in accordance with NEI-00-02, "Industry PRA Peer Review Process." All technical elements within the scope of the peer review were graded as sufficient to support application requiring the capabilities of a grade 2 (e.g., risk ranking applications). Most of the elements were further graded as sufficient to support application requiring the capabilities defined for grade 3 (e.g., risk-informed applications supported by deterministic insights). The general assessment of the peer reviewers was that STP's PRA could effectively be used to support applications involving risk significance determinations supported by deterministic analyses once the items noted in the element summaries and Fact & Observations (F&O) sheets were addressed. Using STP's Corrective Action Program as a tracking mechanism, the F&O items identified by the peer team that could affect this application have been completed and are incorporated into the latest revision of the STP PRA (Revision 4). The STP PRA Revision 4 model is the basis for this application of Risk-Informed Technical Specifications.

   STPNOC is confident that the STP PRA is acceptable for the risk assessment performed for this application.

Calculation of Risk Insights

Regulatory Guide 1.174 describes a general approach to risk-informed regulatory decision-making and contains different acceptance criteria using changes in core damage frequency and large early release frequency.

STP used the guidance contained in RG 1.174 for permanent changes to facilities even though this Technical Specification change request is for a temporary condition. The results of the risk analysis performed for the 21-day extended AOT meet the acceptance criteria contained in RG 1.174 as shown below. Application of the risk criteria for a permanent change is conservative for a temporary change.

Because the SDG 22 condition is limited in time, the delta CDF and the delta LERF are multiplied by the expected 7-day extension of the AOT to obtain a conditional probability. The conditional probability is treated as an ICCDP and ICLERP for the evaluation against RG 1.174. The PRA evaluation for extending the AOT an additional 7 days was performed assuming "zero maintenance" for that time.

For the seven day AOT extension, it is conservatively assumed in the risk calculation that each SDG NDE inspection will require 36 hours to complete (more than one entry into TS 3.8.1.1.f for each diesel). Also during the AOT extension, the PRA

analysis assumes no planned maintenance or surveillance activities impacting calculated risk levels will occur other than the NDE of SDG 21 and SDG 23. Equipment impacted for the AOT extension used in the PRA analysis are SDG 22 alone, SDG 22 in conjunction with SDG 21, and SDG 22 in conjunction with SDG 23.

The table below depicts the acceptance criteria of RG 1.174 and the results calculated for the proposed change.

	ICCDP	Total CDF	ICLERP	Total LERF
STP Unit 2 before proposed change	-	9.1E-06/yr	-	5.2E-07/yr
Results with 7 days additional AOT	4.1E-06	1.3E-05/yr	3.3E-07	8.5E-07/yr
RG 1.174 Criteria	>1.0E-06 <1.0E-05	<1.0E-04/yr	>1.0E-07 <1.0E-06	<1.0E-05/yr

These values are within the criteria established in RG 1.174.

Severe Weather Considerations

The STP PRA model loss of offsite power (LOOP) frequency includes causes of LOOP and incorporates site specific grid recovery information. STP has not experienced a LOOP as defined and analyzed in the PRA (i.e. loss of power in the switchyard and safety busses, with a plant trip). The frequency and duration of LOOP events are based in part on conditions, such as severe weather, external to the plant and specific to the plant location. Severe weather events typically have longer durations for recovery because of the possibility of widespread effects but occur less frequently than other causes of LOOP. Severe weather events at the South Texas Project location are dominated by high winds caused by tornados and hurricanes. Tornadoes can occur any time during a year, but typically occur most frequently between March and June. The hurricane season runs from May to early November. The most likely causes of loss of offsite power from severe weather should have a lower likelihood of occurrence for the duration of the repairs to the emergency diesel generator. This effect is not included in the quantification presented above.

The site-specific long-term forecast is consistent with the considerations above. No icing conditions are forecast through December 30, 2003.

Tier 2: Avoidance of Risk-Significant Plant Configurations

Except for the time when NDE is being performed on either SDG 21 or SDG 23, there are no planned risk-significant plant equipment configurations while SDG 22 is out of service (OOS). Increases in risk posed by potential combinations of equipment OOS will be managed by the CRMP.

The compensatory measures delineated in Section 4.4 are structured to avoid risk significant plant configurations during the SDG 22 outage. This is achieved by minimizing planned maintenance activities that could have adverse risk impacts and by ensuring that key equipment necessary to respond to loss of offsite power events (e.g., turbine driven auxiliary feedwater pump) remain available for service.

Tier 3: Risk-informed Configuration Risk Management

STP's Configuration Risk Management Program ensures that on-line risk levels are appropriately evaluated prior to performing any maintenance activity. This program provides guidance for managing plant trip risk, nuclear safety risk, and safety function degradation from on-line maintenance, external or internal conditions, as required by 10 CFR 50.65(a)(4) of the Maintenance Rule. The procedure addresses risk management practices in maintenance planning and execution. Additional detail is provided in Section 4.4 of this application.

RG 1.182 Evaluation

RG 1.182 and RG 1.160 are used in conjunction with NUMARC 93-01 as standards for implementation of 10CFR50.65 (Maintenance Rule). Section 11.3.7.2 of NUMARC 93-01 includes recommended quantitative risk action thresholds for maintenance activities, as reproduced in the table below.

Incremental [Conditional] Core Damage Probability (ICCDP)[1]		**Incremental [Conditional] Large Early Release Probability (ICLERP)[1]**
> 1E-05	Configuration should not normally be entered voluntarily	> 1E-06
1E-06 – 1E-05	• Assess non-quantifiable factors • Establish risk management actions	1E-07 – 1E-06
< 1E-06	Normal work controls	< 1E-07

Note 1: For clarity and consistency of terms, the term "conditional" is added to the table heading. The calculated ICDP includes the quantified effect of the maintenance configuration (condition).

The ICCDP for the proposed change is 4.1E-06, which is within the 1E-06 – 1E-05 range and the ICLERP for the proposed change is 3.3E-07, which is within the 1E-07-1E-06 range. As described in Section 4.4 of this application, STPNOC will address the non-quantifiable factors and establish risk management actions.

PRA Evaluation Conclusions

The final results of the risk evaluation were compared with the risk significance criteria from RGs 1.174 and 1.182. The calculated values for ICCDP and ICLERP demonstrate that the proposed AOT extension has an acceptably small quantitative impact on plant risk.

Station risk levels are manageable with sufficient margin to allow remedial and corrective actions to be implemented in the event unplanned equipment outages occur. Therefore, it is concluded that, based on the small quantitative plant risk impact and the compensatory measures described in Section 4.4, the risk associated with the extended AOT does not impose a significant risk to public health and safety.

4.4 Risk Management, Including Compensatory Actions and Consideration of Non-quantifiable factors

The proposed action conforms to the requirements of the STP CRMP. The CRMP is controlled by procedure 0PGP03ZA0091, "Configuration Risk Management Program." South Texas will continue to use the CRMP to evaluate and monitor the risk significance associated with extending the AOT. The CRMP requires the compensatory measures listed below to be implemented if the Non-Risk Significant Threshold of 1.0E-6 is exceeded. The STP CRMP satisfies the Maintenance Rule requirements as specified in 10CFR50.65(a)(4).

- Notify the Duty Operations and Duty Plant Manager
- Identify and implement compensatory measures approved by the Duty Plant Manager. Compensatory measures may include but are not limited to the following:
  - Reduce the duration of the risk sensitive activities
  - Remove risk sensitive activities from the planned work scope
  - Reschedule work activities to avoid high risk sensitive equipment outages or maintenance states
  - Accelerate the restoration of out-of-service equipment
  - Determine and establish the safest plant configuration
  - Establish contingency plan to reduce the effects of the degradation of the affected SSC(s) by utilizing the following:
    - Operator actions

- Increased awareness of plant configuration concerns and the effects of certain activities and transients on plant stability
- Administrative controls
- Ensure availability of functionally redundant equipment

- Ensure any measures taken to reduce risk are recorded in the Control Room Logbook.
- Heighten station awareness of plant conditions and evolutions as deemed necessary by the Duty Plant Manager.

The above actions have been implemented for the current condition.

In addition to the risk management actions described above, the compensatory actions listed below are to be implemented for unplanned entry into extended AOTs for SDGs in accordance with procedure 0POP01ZO0006, "Extended Allowed Outage Time". STPNOC has already initiated these actions for this situation, which is an unplanned entry into an extended AOT. If any changes to these actions are required, STPNOC will assess and manage the risk in accordance with the CRMP, which implements 10CFR50.65(a)(4).

- Notification of the transmission/distribution service providers (TDSP) of the condition and of the maintenance restrictions required for the STP switchyard.
- Hang EAOT protected train signs.
- Planned maintenance on required systems, subsystems, trains, components, and devices that depend on the other trains of equipment during the EAOT SHALL NOT be performed.
- No maintenance that could result in an inoperable OPEN containment penetration.
- Containment purges shall be for pressure control only and for short duration.
- No planned maintenance on the Unit 2 TSC DG.
- No planned maintenance on Load Center 2W.
- No planned maintenance on MCC 2G8.
- No planned maintenance on the Positive Displacement Charging Pump (PDP).
- No planned maintenance on the Emergency Transformer or the 138KV Blessing to STP and Lane City to Bay City lines.
- No maintenance activities in the switchyard that could directly cause a Loss of Offsite Power event unless required to ensure the continued reliability and availability of the offsite power sources.
- No planned maintenance on the turbine-driven auxiliary feedwater pump.
- Attempt to VERIFY that the station is NOT under hurricane, tornado, or flood watches or warnings. (Note that weather was addressed earlier in this application and no severe weather is currently forecast.)

- Attempt to VERIFY with the TDSP that NO adverse weather conditions exist in the areas of our offsite power supplies that challenge the stability of grid.
- ENSURE the Work Schedule contains NO planned maintenance on SWGR 2L or 2K.

The PRA evaluation for extending the AOT an additional 7 days was performed assuming "zero maintenance" for that time. While SDG 22 is inoperable beyond its normal 14 day AOT, STPNOC will suspend planned maintenance of components that could affect the risk calculated for the 7-day extension, except for the NDE planned for SDG 21 and SDG 23. In addition, STPNOC has determined that no TS surveillance requirements (SR) are required to be performed that would impact the PRA basis for the proposed change.

Although BOP initiating events are modeled in the Probabilistic Risk Assessment (PRA) (e.g., loss of feedwater), changes in BOP trip risk due to secondary equipment unavailability is not included in the risk calculated for the 7-day extension. However, the CRMP risk monitor can quantify the change in BOP trip risk and the impact to core damage frequency (CDF). The impact to CDF of planned maintenance of BOP secondary equipment is typically not significant. STPNOC monitors and controls changes in BOP trip risk due to planned maintenance activities in accordance with the CRMP. In addition, during the extended SDG 22 AOT, approval of the operations management will be required prior to performing planned maintenance that will increase BOP trip risk.

If A or C train components required by TS are found to be inoperable, STPNOC will apply the 24 hour ACTION of TS 3.8.1.1.d as required and perform corrective maintenance to restore the components within the TS 3.8.1.1.d required action times or follow the shutdown action required by the TS. For B train components required by TS found to be inoperable, STPNOC will apply the appropriate TS and perform corrective maintenance in accordance with the required action times for that TS. If no TS applies, STPNOC will restore the component to operable status as promptly as practical.

STPNOC would similarly apply TS 3.8.1.1.c for corrective maintenance for emergent conditions where a required off-site power source is lost while SDG 22 is not operable and TS 3.8.1.1.f where more than one SDG is inoperable. Performing the inspections will require entry into TS 3.8.1.1.f.

STP will monitor changes in planned risk levels using the CRMP. During the extended AOT, the calculated average CDF levels will be updated in the event unplanned maintenance is required on equipment within the scope of the CRMP. Risk levels will be monitored during the AOT extension and STP will comply with the risk threshold actions required by the CRMP. In addition, STPNOC will keep the NRC Resident Inspector apprised of deviations from the expected risk profile for the duration of the proposed AOT extension.

STPNOC is not proposing in this application to change the requirements of any Technical Specification other than the one-time change to TS 3.8.1.1.b, TS 3.8.1.1.c, and TS 3.8.1.1.f. STPNOC will continue to comply with the TS requirements for STP Unit 2.

5.0 Regulatory Analysis

5.1 No Significant Hazards Consideration

In 10 CFR 50.92(c), the Nuclear Regulatory Commission (NRC) provides the following standards to be used in determining the existence of a significant hazards consideration:

> ...a proposed amendment to an operating license for a facility licensed under 50.21(b) or 50.22, or for a testing facility involves no significant hazards consideration, if operation of the facility in accordance with the proposed amendment would not: (1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) Involve a significant reduction in the margin of safety.

STPNOC has reviewed the proposed amendment request and determined that its adoption does not involve a significant hazards consideration based as discussed below. The conclusions and evaluation presented in Reference 1 are still valid. The references to the specific time for the AOT extension have been removed.

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

   Response: No.

   SDG 22 provides onsite electrical power to vital systems should offsite electrical power be interrupted. It is not an initiator to any accident previously evaluated. Therefore, this extended period of operation with the SDG out-of-service will not increase the probability of an accident previously evaluated.

   The SDGs act to mitigate the consequences of design basis accidents that assume a loss of offsite power. For that purpose, redundant SDGs are provided to protect against a single-failure. During the Technical Specification 14 day allowed outage time, an operating unit is allowed by the Technical Specifications to remove one of the SDGs from service, thereby losing this single-failure protection. This operating condition is considered acceptable. The consequences of a design basis accident coincident with a failure of the redundant SDG during the extended allowed outage time are the same as those during the 14-day allowed outage time. Therefore, during the period of the extended AOT, there is no significant increase in consequences of an accident previously evaluated.

Therefore, the proposed change will not involve significant increase in the probability or consequences of an accident previously evaluated.

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

   Response: No.

   There are no new failure modes or mechanisms created due to plant operation during the extension of the AOT. Extended operation with an inoperable SDG 22 does not involve any modification in the operational limits or physical design of plant systems. There are no new accident precursors generated due to the extended allowed completion time.

   Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

   Response: No.

   Plant operation for the proposed extension of the existing AOT for inoperable SDG 22 has been shown to have a very small impact on plant risk using the criteria of RG 1.174 and RG 1.182. During the extended allowed outage time, the electrical power system maintains the ability to perform its safety function of providing an available source of power to the Engineered Safety Feature (ESF) systems as assumed in the accident analyses. During the extended maintenance and test period, appropriate compensatory measures will be implemented to restrict risk significant activities.

   Therefore, the proposed change does not involve a significant reduction in a margin of safety as defined in the basis for any Technical Specification.

5.2 Applicable Regulatory Requirements/Criteria

With the implementation of the proposed change, STP Unit 2 continues to meet applicable design criteria. The proposed change is a one-time extension to the TS AOT. It does not affect the design basis of the plant. In addition, STP Unit 2 will remain within the scope of the TS Limiting Conditions for Operation and is still subject to the requirements of the action statements as governed by 10CFR50.36.

STP Unit 2 meets the requirements of General Design Criterion 17 for Electric Power Systems. The design of the on-site power source is not changed by the extension to the AOT and compliance with the GDC is not affected.

The proposed change to extend a TS action does not alter the design basis for loss of all alternating current power governed by 10CFR50.63. In addition, although the normal

design of STP Unit 2 is an alternate AC plant, the plant meets the requirements for a four-hour coping plant as described in Reference 2 of the cover letter.

The proposed change to extend the TS action meets the criteria of RG 1.182 and 10CFR50.65

As described in the application, the risk criteria of RG 1.174 are met.

Since the mid-1980s, the NRC has been reviewing and granting improvements to TS that are based, at least in part, on PRA insights. In its final policy statement on TS improvements of July 22, 1993, the NRC stated that it expects that licensees, in preparing their Technical Specification related submittals, will utilize any plant-specific PSA (probabilistic safety assessment) or risk survey and any available literature on risk insights and PSAs. Similarly, the NRC staff will also employ risk insights and PSAs in evaluating Technical Specification related submittals. Further, as a part of the Commission's ongoing program of improving Technical Specifications, it will continue to consider methods to make better use of risk and reliability information for defining future generic Technical Specification requirements. The NRC reiterated this point when it issued the revision to 10 CFR 50.36, "Technical Specifications," in July 1995.

In August 1995, the NRC adopted a final policy statement on the use of PRA methods in nuclear regulatory activities that improve safety decision making and regulatory efficiency. The PRA policy statement included the following points:

1. The use of PRA technology should be increased in all regulatory matters to the extent supported by state-of-the-art in PRA methods and data and in a manner that compliments the NRC's deterministic approach and supports the NRC's traditional defense-in-depth philosophy.

2. PRA and associated analyses (e.g., sensitivity studies, uncertainty analyses, and importance measures) should be used in regulatory matters, where practical within the bounds of the state-of-the-art, to reduce unnecessary conservatism associated with current regulatory requirements.

3. PRA evaluations in support of regulatory decisions should be as realistic as practicable and appropriate supporting data should be publicly available for review.

In conclusion, based on the deterministic and PRA considerations discussed in this submittal, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

6.0 Environmental Consideration

STPNOC has evaluated the proposed changes and determined the changes do not involve (1) a significant hazards consideration, (2) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (3) a significant increase in the individual or cumulative occupational exposure. Accordingly, the proposed changes meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9), and an environmental assessment of the proposed changes is not required.

Revised Technical Specification Pages

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E Distribution System[(1)], and

b. Three separate and independent standby diesel generators, each with a separate fuel tank containing a minimum volume of 60,500 gallons of fuel.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

a. With one offsite circuit of the above-required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. Restore the offsite circuit to OPERABLE status within 72 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

b. With a standby diesel generator inoperable, demonstrate the OPERABILITY of the above-required A.C. offsite sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. If the standby diesel generator became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE standby diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.2) for each such standby diesel generator separately within 8 hours, unless it can be demonstrated there is no common mode failure for the remaining diesel generator(s). Restore the inoperable standby diesel generator to OPERABLE status within 14 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.[(12)]

c. With one offsite circuit of the above-required A.C. electrical power sources and one standby diesel generator inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Specification 4.8.1.1.1a. within 1 hour and at least once per 8 hours thereafter; and if the standby diesel generator became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned preventive

LIMITING CONDITION FOR OPERATION

ACTION (Continued)

maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE standby diesel generators by performing Surveillance Requirement 4.8.1.1.2a.2) within 8 hours, unless it can be demonstrated there is no common mode failure for the remaining diesel generator(s); restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two offsite circuits to OPERABLE status within 72 hours and three standby diesel generators to OPERABLE status within 14 days from the time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.(12)

d. With one standby diesel generator inoperable in addition to ACTION b. or c. above, verify that:

1. All required systems, subsystems, trains, components, and devices that depend on the remaining OPERABLE diesel generator as a source of emergency power are also OPERABLE, and

2. When in MODE 1, 2, or 3, the steam-driven auxiliary feedwater pump is OPERABLE.

If these conditions are not satisfied within 24 hours be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

e. With two of the above required offsite A.C. circuits inoperable, restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. With only one offsite source restored, restore at least two offsite circuits to OPERABLE status within 72 hours from time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

f. With two or three of the above required standby diesel generators inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing the requirements of Specification 4.8.1.1.1a. within 1 hour and at least once per 8 hours thereafter; restore at least one standby diesel generator to OPERABLE status within 2 hours and at least two standby diesel generators to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least three standby diesel generators to OPERABLE status within 14 days from time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.(12)

TABLE 4.8-1

DIESEL GENERATOR TEST SCHEDULE

(Not used)

SPECIFICATION NOTATIONS

(1) Loss of one 13.8 kV Standby Bus to 4.16 kV ESF bus line constitutes loss of one offsite source. Loss of two 13.8 kV Standby busses to 4.16 kV ESF bus lines constitutes loss of two offsite sources.

(2) All diesel generator starts for the purpose of these surveillances may be preceded by a prelube period.

(3) A diesel generator start in less than or equal to 10 seconds (fast start) shall be performed every 184 days. All other diesel generator starts for the purpose of this surveillance may be modified starts involving reduced fuel (load limit) and/or idling and gradual acceleration to synchronous speed.

(4) Generator loading may be accomplished in accordance with vendor recommendations, including a warmup period prior to loading.

(5) The diesel generator start for this surveillance may be a modified start (see SR 4.8.1.1.2a.2)).

(6) Momentary transients outside this load range due to changing conditions on the grid shall not invalidate the test.

(7) If Specification 4.8.1.1.2a.2) is not satisfactorily completed, it is not necessary to repeat the preceding 24-hour test. Instead, the standby diesel generator may be operated at 5000-5500 kW for a minimum of 2 hours or until operating temperature has stabilized.

(8) (Not used)

(9) (Not used)

(10) This test may be performed during power operation provided that the other two diesel generators are operable.

(11) Credit may be taken for events that satisfy any of these Surveillance Requirements.

(12) For the Unit 2 Train B standby diesel generator (SDG 22) failure of December 9, 2003, restore the inoperable standby diesel generator to OPERABLE status within 21 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

Attachment 3

Commitments

The following is a summary of the commitments made for this proposed change. These commitments have been entered into the STP Corrective Action Program (CAP) for tracking. The CAP meets the requirements of NEI 99-04, Rev. 0, "Guidelines for Managing NRC Commitment Changes." There are no commitments other than the following in this letter:

1. STP will revise station procedures for responding to inclement weather to include guidance for coping with icing conditions that are affecting the offsite distribution system to adopt a similar strategy to the strategy currently in place to respond to hurricane force winds onsite. Specifically, in the event of a determination by the Duty Plant Manager after consultation with the TDSP that icing conditions in the area of STP may result in a loss of all power to the switchyard, STP will commence a shutdown of Unit 2 to Mode 3. The procedure will also require that one Standby Diesel be started and loaded to its ESF bus and that the ESF bus be subsequently removed from offsite power. These procedure revisions will be completed by December 23, 2003.

2. STP has procedural guidance to supply electrical power to an ESF bus in a unit that has lost all electrical power to its ESF busses from a functioning Emergency Diesel in the opposite unit. This procedure will only be implemented when the failure of emergency power sources in a unit has occurred such that the remaining emergency power is judged to be inadequate for mitigation of the event and sufficient power is available in the opposite unit to meet its electrical power requirements.

3. STP will monitor changes in planned risk levels using the CRMP. During the extended AOT, the calculated average CDF levels will be updated in the event unplanned maintenance is required on equipment within the scope of the CRMP. Risk levels will be monitored throughout the SDG 22 outage and STP will comply with the risk threshold actions required by the CRMP. In addition, STPNOC will keep the NRC Resident Inspector apprised of deviations from the expected risk profile for the duration of the proposed AOT extension.

NRC Requested Information Regarding NDE

1. **Length, depth and width of the EDM notch**

   STPNOC determined that the length of the notch is 0.428" on the journal surface. It is 0.161" deep, and the width of the opening is 0.025".

2. **Confirm that the inspection technique that will be performed on the other two Unit 2 Standby Diesel Generators (SDGs) is the same technique that was used on the Unit 1 SDGs.**

   The inspection technique that will be performed on the Unit 2 SDGs is the same technique that was performed on the Unit 1 SDGs. The actual instructions are contained in plant procedure UTI-PA-002 "Manual Phased Array Examination on Diesel Generator Connecting Rod Assemblies". In summary, STP will utilize a Harfang® X32 phased array system with a 4.0 MHz, 32-element transducer, propagating refracted longitudinal waves at angles ranging from 5 to 60 degrees. The examinations are conducted from the accessible outer surface of the main rod on the articulated rod side. This system is calibrated on the EDM notch discussed in Question 1 by maximizing the response and setting the signal to 50% full screen height.