

# The Light company

Houston Lighting & Power

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

November 8, 1994

ST-HL-AE-4927

File No.: G09.06

10CFR50.90,

10CFR50.92, 10CFR51

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555

South Texas Project  
Units 1 & 2  
Docket Nos. STN 50-498, STN 50-499  
Unit 1 and Unit 2 Technical Specification 3.8.2

Houston Lighting & Power Company (HL&P) proposes to amend its Operating Licenses NPF-76 and NPF-80 for the South Texas Project Electric Generating Station (STPEGS), Units 1 and 2, by incorporating the attached proposed change to Technical Specifications 3.8.2.1 and 3.8.2.2. The purpose of this amendment is to require only one of the two battery chargers associated with each Class 1E 125 VDC Channel I and Channel IV to be operable.

HL&P has reviewed the attached proposed amendment pursuant to 10CFR50.92 and determined that it does not involve a significant hazards consideration. In addition, HL&P has determined that the proposed amendment satisfies the criteria of 10CFR51.22(c)(9) for categorical exclusion from the requirement for an environmental assessment. The South Texas Project Electric Generating Station Nuclear Safety Review Board has reviewed and approved the proposed changes.

The required affidavit, along with a Safety Evaluation and No Significant Hazards Consideration Determination associated with the proposed changes, and the marked up effected pages of the Technical Specifications are included as attachments to the letter.

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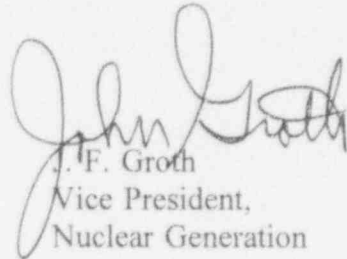
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Project Manager on Behalf of the Participants in the South Texas Project

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In accordance with 10CFR50.91(b), HL&P is providing the State of Texas with a copy of this proposed amendment.

If you should have any questions concerning this matter, please call Mr. A. W. Harrison at (512) 972-7298 or myself at (512) 972-8664.



J. F. Groth  
Vice President,  
Nuclear Generation

LW/eg

- Attachment:
1. Affidavit
  2. Safety Evaluation and No Significant Hazards Consideration Determination
  3. Mark-ups of Proposed Change to Technical Specifications 3.8.2.1 and 3.8.2.2

Houston Lighting & Power Company  
South Texas Project Electric Generating Station

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ATTACHMENT 1


AFFIDAVIT

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
Houston Lighting & Power	)	Docket Nos. 50-498
Company, et al.,	)	50-499
	)	
South Texas Project	)	
Units 1 and 2	)	

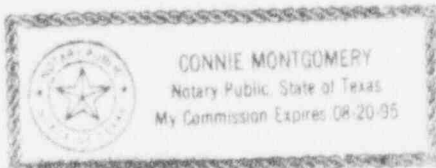
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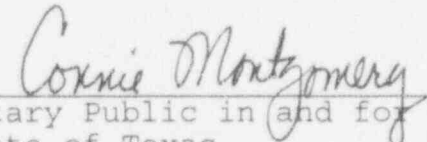
I, J. F. Groth, being duly sworn, hereby depose and say that I am Vice President, Nuclear Generation, of Houston Lighting & Power Company; that I am duly authorized to sign and file with the Nuclear Regulatory Commission the attached revision to proposed changes to Technical Specification 3.8.2.1 and 3.8.2.2; that I am familiar with the content thereof; and that the matters set forth therein are true and correct to the best of my knowledge and belief.

  
\_\_\_\_\_  
J. F. Groth  
Vice President,  
Nuclear Generation

STATE OF TEXAS       )  
                              )  
                              )

Subscribed and sworn to before me, a Notary Public in and for the State of Texas, this 9 day of November, 1994.



  
\_\_\_\_\_  
Notary Public in and for the  
State of Texas

ATTACHMENT 2  
SAFETY EVALUATION  
AND  
NO SIGNIFICANT HAZARDS  
CONSIDERATION DETERMINATION

## DESCRIPTION OF PROPOSED CHANGE AND SAFETY EVALUATION

### Background

The design of STPEGS utilizes an enhanced redundancy inherent in three trains of Engineered Safety Feature (ESF) equipment, with four independent Class 1E 125 VDC channels, as opposed to a more common two ESF train/two DC channel train design. The STPEGS Technical Specifications, however, are derived from the Westinghouse Standard Technical Specifications, and are based on the typical two train plant design. Consequently, the STPEGS design requires all four batteries to be operable when the respective unit is at power operation. Operability, as defined, includes a functioning battery charger(s) capable of maintaining the connected battery and load. Because the total connected DC loads were calculated using battery recharging requirements in lieu of charge maintenance, Channel I and Channel IV loads exceeded the capability of a single battery charger. This led to the Technical Specifications requiring two operable battery chargers in parallel. The present STPEGS Channel I and Channel IV battery charger operability requirements do not account for actual system operation and assume failures that far exceed single failure conditions. This requirement can potentially result in unnecessary and unplanned unit shutdowns due to the loss of a single battery charger.

The purpose of this submittal is to provide the qualitative information necessary to support the proposed changes to Technical Specification 3.8.2 as indicated in Attachment 3.

### ● Class 1E 125 VDC System Design

The Class 1E 125 VDC system at STPEGS consists of four independent, physically separated channels, each served by two battery chargers and one battery. The batteries are sized in accordance with IEEE Standard 485-1978, "IEEE Recommended Practice for Sizing Large Lead Storage Batteries for Generating Stations and Substations". The battery charger configurations are sized to recharge a battery, discharged for the specified duty cycle, to where charging current has stabilized at the charging voltage within twelve (12) hours.

Emergency power required for plant protection and control is supplied by the batteries, without interruption, when the power from normal AC sources fails. Each battery system also supplies power to the associated inverter system, which converts the DC power to AC power for the vital instrumentation and protection system. The ampere-hour capacity of each battery is sufficient to provide the minimum voltage and current required by emergency DC controls and the vital AC for a minimum of two hours.

The four STPEGS Class 1E 125 VDC Channels I, II, III and IV are each equipped with two battery chargers, each nominally rated for

300 amps DC. Channels I and IV have a larger DC load and use a larger battery than Channels II and III. This load difference is reflected in STPEGS Technical Specification 3.8.2, which requires one operable battery charger for Channels II or III, but requires operability of both battery chargers for Channels I or IV (UFSAR 8.3.2.1.3). The basis for this difference between Channels I and IV is the note in UFSAR Table 8.3-6, which imposes 393 amps of DC loads on Channels I and IV. This value from the UFSAR Table 8.3-6 represents the maximum possible load that the batteries are capable of supporting while concurrently maintaining the required two hour duty cycle, but due to the wording of the note, this maximum possible battery load has been interpreted as the battery charger output current requirements. This is not the correct charger load, since this maximum battery load includes the inverters which will not be powered from the battery if AC power is available and does not reflect the actual DC battery bus load.

Each battery charger was originally designed to be capable of operating continuously at a maximum of 125 percent of the nominal DC current rating, or 375 amps. The current limit setting is adjustable from 110 to 125 percent of the nominal rating and is presently set at 110 percent of nominal, or 330 amps. This value is adequate for all postulated operating conditions defined by the design basis for the D.C. Electrical System.

#### PROPOSED CHANGE

The proposed change to STPEGS Technical Specification 3.8.2 is to require only one of the two battery chargers associated with each Class 1E 125 VDC Channel I and Channel IV to be operable. The present allowed operating time (AOT) for the batteries will not be affected by the proposed change. This change will make Technical Specification 3.8.2 identical for all four STPEGS Class 1E 125 VDC channels, and also will bring it into closer conformance with the format of the Standard Technical Specifications.

#### SAFETY EVALUATION

The following is information supporting the proposed change to Technical Specification 3.8.2 regarding the Channel I and Channel IV battery charger operability requirement.

The STPEGS has performed an analysis for this submittal that identifies all of the actual Class 1E 125 VDC loads for Channel I and Channel IV, assuming the battery is fully charged, for which the battery chargers may have to supply power. This analysis is beyond the design bases single failure criteria, since it would require the simultaneous failure of the Westinghouse (NSSS) Inverter and the Elgar (TMI) Inverter. For this analysis, Channel I values (worst case) were used:



Loss of AC Supply to both the NSSS and TMI Inverters with Battery on float charge: Normal DC Bus Loads + 7.5 kVA Inverter + 25 kVA Inverter

The current required by the two inverters with the batteries fully charged, the charger on normal float voltage and the normal DC Bus loads is 280 amps total.

These requirements are based on 100% loading of the associated Elgar and Westinghouse inverters. Current condition include minimum margins for future load growth of 21% for the Elgar inverter, 25% for the Westinghouse inverter, and 50% for DC loads

On this basis, a single battery charger using 110% (330 amp) current limit setting will maintain the bus operable.

●Standard Technical Specifications NUREG-1431

In the Standard Technical Specifications for DC sources, the Limiting Condition for Operation (LCO) is two operable DC electrical power subsystems. The AOT of two hours is for an inoperable DC electrical power subsystem and is not defined for an inoperable battery charger.

STPEGS Technical Specifications currently have an AOT of two hours for an inoperable battery, two hours for an inoperable charger on Channels II or III, and 24 hours for inoperable status of either of the chargers on Channels I or IV. With the STPEGS design of four battery banks and two chargers for each bank, indefinite continued operation with one inoperable battery charger in any channel is permissible. Also, this is consistent with the format of the Standard Technical Specifications.

NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

Pursuant to 10CFR50.91, this analysis provides a determination that the proposed change to Technical Specification 3.8.2 does not involve any significant hazards consideration as defined in 10CFR50.92, as described below:

- (1) The proposed change does not involve a significant increase in the probability or consequences of accidents previously evaluated.

A single charger is able to maintain the operability of Channel I or Channel IV at the design loading with a single failure condition. The proposed change does not alter equipment or assumptions made in previously evaluated accidents. The consequences of previously evaluated accidents are not increased. On this basis, the proposed change does not involve a significant increase in the probability or consequences of accidents previously evaluated.

- (2) The proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

The proposed change involves only the operability requirement for the second battery charger in Channel I and Channel IV. The failure modes and operating modes would then be identical for all four STPEGS Class 1E DC channels. Failure modes and effects analyses already performed for DC Channels II and III would thus become applicable to Channels I and IV also. The change proposed by this Technical Specification revision is bounded by the failure modes and effects analysis provided as Table 8.3-8 of the STPEGS UFSAR. On this basis, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

- (3) The proposed change does not involve a significant reduction in the margin of safety.

The proposed change involves only the operability requirement for the second battery charger in Channel I and Channel IV. The number and capacity of DC channels required is not affected by the proposed change. The electrical loads supported by these DC channels are not changed and the duration of their function is not impacted. On this basis, the proposed change does not involve a significant reduction in the margin of safety.

Based on the information provided in this submittal, HL&P considers that the present operability requirement for the Channel I and IV battery chargers are overly restrictive and do not contribute to the safe operation of STPEGS. HL&P request that the proposed changes to the Technical Specification for DC sources be approved.

#### IMPLEMENTATION PLAN

The proposed Technical Specification 3.8.2 change implementation will be primarily administrative, i.e., authorization to operate with one or both battery chargers connected. However, a change to the ERFDADS database and annunciator is necessary for proper alarm functioning with single charger operation. HL&P requests that the NRC provide at least 31 days between the effective date and of the date of implementation to allow for on-site distribution of the change.

ATTACHMENT 3

PROPOSED TECHNICAL SPECIFICATION CHANGES