

# The Light company

Houston Lighting & Power South Texas Project Electric Generating Station P. O. Box 289 Wadsworth, Texas 77483

January 22, 1996  
ST-HL-AE-5270  
File No.: G20.02.01  
10CFR50.90,  
10CFR50.92,  
10CFR51

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

South Texas Project  
Unit 1  
Docket No. STN 50-498  
Unit 1 Technical Specifications 3.4.5

The South Texas Project (STP) proposes to amend its Operating License NPF-76 for Unit 1, by incorporating the attached proposed change to Technical Specification 3.4.5. The purpose of this amendment is to modify the Steam Generator tube plugging criteria in Technical Specification 3.4.5, Steam Generators, and the associated Bases. These changes will allow the implementation of alternate steam generator tube plugging criteria for the tube-to-tubesheet joints (known in the industry as F\*).

STP has reviewed the attached proposed amendment pursuant to 10 CFR 50.92 and determined that it does not involve a significant hazards consideration. In addition, STP has determined that the proposed amendment satisfies the criteria of 10 CFR 51.22(c)(9) for categorical exclusion from the requirement for an environmental assessment. The STP 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 affected pages of the Technical Specifications are included as attachments to this letter.

As Attachment 4 contains information proprietary to B&W Nuclear Technologies (BWNT), it is supported by an affidavit signed by BWNT, provided in letter ST-HL-AE-5026 from T. H. Cloninger to the U.S. Nuclear Regulatory Commission dated March 1, 1995, the owner of the information. The affidavit set forth the basis on which the information may be withheld from public disclosure by the Commission and addresses with specificity the considerations listed in paragraph (b)(4) of 10 CFR Section 2.790 of the Commission's regulations.

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TSC-96/5270

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

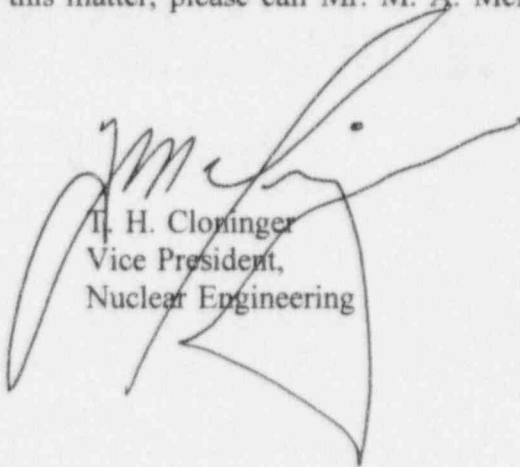
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Change: NRC PDR 1 INP

Accordingly, it is respectfully requested that the information which is proprietary to BWNT be withheld from public disclosure in accordance with 10 CFR Section 2.790 of the Commission's regulations.

Correspondence with respect to the copyright or proprietary aspects of the items listed above or the supporting BWNT Affidavit should reference BAW-10203P and should be addressed to J. Taylor, Manager, Licensing Services, Framatome Technologies Inc. (formerly B&W Nuclear Technologies), P. O. Box 10935, Lynchburg, Virginia 24506-0935.

In accordance with 10 CFR 50.91(b), STP 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. M. A. McBurnett at (512) 972-7206 or myself at (512) 972-8787.



I. H. Cloninger  
Vice President,  
Nuclear Engineering

HRP/lf

- Attachment:
1. Affidavit
  2. Safety Evaluation and No Significant Hazards Consideration Determination
  3. Mark-ups of Proposed Change to Technical Specifications 3.4.5.
  4. BAW-10203P, "W E-Series F\* Qualification Report", Proprietary
  5. BAW-10203, "W E-Series F\* Qualification Report", Non-Proprietary

c: \*

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\* Without Attachments 4 & 5  
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\*\*\* Attachment 5 only

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**ATTACHMENT 1**

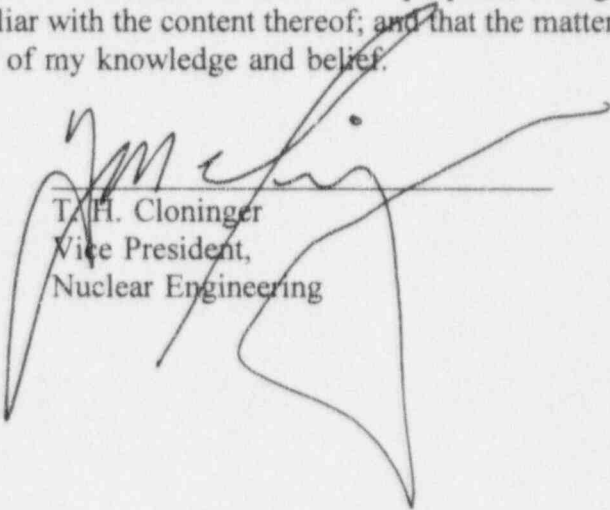
**AFFIDAVIT**

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

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

AFFIDAVIT

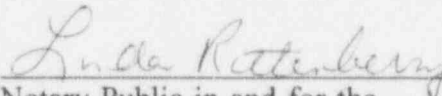
I, T. H. Cloninger, being duly sworn, hereby depose and say that I am Vice President, Nuclear Engineering, of Houston Lighting & Power Company; that I am duly authorized to sign and file with the Nuclear Regulatory Commission the attached revision to proposed changes to Technical Specification 3.4.5; 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.

  
\_\_\_\_\_  
T. H. Cloninger  
Vice President,  
Nuclear Engineering

STATE OF TEXAS )  
 )  
 )

22<sup>nd</sup> Subscribed and sworn to before me, a Notary Public in and for the State of Texas, this  
day of January, 1996.



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

ATTACHMENT 2

SAFETY EVALUATION  
AND  
NO SIGNIFICANT HAZARDS  
CONSIDERATION DETERMINATION  
FOR  
STP UNIT 1  
F\* TUBE PLUGGING CRITERIA

### **Description of the Proposed Change**

The South Texas Project (STP) requests an amendment to Technical Specifications (TS) 3.4.5 Steam Generators, and the associated bases to allow the use of an alternate plugging criteria (known in the industry as F\*) on steam generator tubes that are defective or degraded within certain areas within the tubesheet. The areas where this alternate criteria will be employed are those portions of the tubes within the tubesheet that have been determined by analysis to be structurally non-relevant to the safe operation of the steam generator. In the tubes that are appropriately rolled into the tubesheet and where cracking is well below the point where the tube is rolled to the tubesheet, the 40% through-wall plugging limit will not be imposed. Cracking greater than the 40% limit in this area will not have an adverse impact on the integrity of the pressure boundary of the tube-to-tubesheet joint.

Copies of the Technical Specification pages with the proposed changes indicated are included in Attachment 3 to this submittal.

### **Description of Current Requirement:**

The current requirements identified in Technical Specifications 3.4.5, Steam Generators, requires tubes to be plugged when degradation exceeds 40% through-wall.

### **Safety Analysis:**

STP is requesting a change to the technical specifications to allow the use of an alternate plugging criteria for certain areas of the tubing within the tubesheet that exhibit primary water stress corrosion cracking (PWSCC). This will allow more tubes to remain in service and will preserve the function of the tube as a heat transfer surface.

This change applies to STP Unit 1 only. STP Unit 2 tube-to-tubesheet joints are expanded by a hydraulic process and the process is not covered by this requested amendment.

In tubes that are appropriately rolled into the tubesheet, cracking well below the point where the tube is rolled to the tubesheet will not have an adverse impact on the integrity of the pressure boundary of the tube-to-tubesheet joint. Eddy-current inspections will ensure that the tube-to-tubesheet joint is appropriately configured in the areas that are structurally relevant. The parameters that are required to determine the characteristics of the tubes where this alternate criteria can be applied and the distances below the secondary face of the tubesheet where the use of the criteria is appropriate, have been determined by analysis and testing. This analytical work is included in this submittal as attachment 4 and is titled "W E-Series F\* Qualification Report"; BAW-10203P and was prepared by B&W Nuclear Technologies (BWNT).

A limited number of "wavy" roll expansion tubes have been identified in the Unit 1 steam generators which are not suitable for application of this criteria. These tubes contain certain rolling anomalies that are characterized as "wavy" (i.e. do not have full 360 degree roll contact in the tube sheet). Specific pull out force and leakage testing for this limited number of "wavy" tubes was not cost effective. As such they are specifically excluded from application of the F\* criteria. These tubes are as indicated in Technical Specification 4.4.5.4.a.10 change mark-up attached.

#### **Bases of the Proposed Amendment:**

The F\* alternate plugging criteria has been developed with the objective of preservation of the structural margin specified by the original design. This alternate criteria would allow many tubes to remain in service before operationally constraining the steam generator when compared to removal of the tubes from service by plugging.

#### **Impact of the Proposed Change:**

The implementation of the proposed F\* alternate criteria does not introduce significant or adverse changes to the plant design basis. Use of the F\* criteria will continue to maintain the overall tube bundle structural integrity at a level consistent with that of the originally designed and supplied tubing during all plant conditions.

Based on the above, the proposed amendment request has no significant negative impact on any system or operating mode.

#### **NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION**

Pursuant to 10 CFR 50.91, this analysis provides a determination that the proposed change to the Technical Specifications described previously, does not involve any significant hazards consideration as defined in 10 CFR 50.92, as described below:

##### **1. The proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.**

The proposed changes to the Steam Generator section of Technical Specifications do not affect any accident initiators or precursors and do not alter the design assumptions for the systems or components used to mitigate the consequences of an accident. The requirements approved by the NRC will not be reduced by this request. Since F\* utilizes the "as rolled" tube configuration that exists as part of the original steam generator design, all of the design and operating characteristics of the steam generator and connected systems are preserved. The F\* joint has been analyzed and tested for design, operating and faulted condition loadings in accordance with Regulatory Guide 1.121 safety factors. At worst case, a tube leak would occur with the result being a primary to secondary leak.



Should a tube leak occur, the impact is bounded by the ruptured tube evaluation submitted by STP for the Unit 1 operating license. No new or unreviewed accident conditions are created by the use of F\* criteria. The potential for a tube rupture is not increased from the original submittal, thus there is no impact on accidents evaluated as the design basis. Therefore use of the F\* criteria will not increase the probability of occurrence of an accident previously evaluated.

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

The use of the proposed F\* alternate plugging criteria will not introduce significant or adverse changes to the plant design basis. The failure of a tube which remained unplugged in accordance with the F\* criteria would result in a tube leak, which is a previously analyzed condition. Since this leak would occur below the secondary face of the tubesheet, its leak rate would be limited by the tube-to-tubesheet interface. Qualification testing and previous experience indicates that normal and faulted leakage would be well below the technical specification limits creating no threat associated with tube rupture type leakages. This conclusion is consistent with previous F\* programs approved and used at other operating plants.

However, in the unlikely event the failed tube severed completely at a point below the F\* region, the remaining F\* joint would retain engagement in the tubesheet due to its length of expanded contact within the tubesheet bore, preventing any interaction with neighboring tubes. If the tube severs at a point above the F\* region, then it is covered by the tube rupture event as a part of the UFSAR. Thus, the possibility of a new or different type of accident from any accident previously evaluated is not created.

**3. The proposed change does not involve a significant reduction in a margin of safety.**

Based on previous responses (above), the protective boundaries of the steam generator are preserved. A tube with degradation can be kept in service through F\* criteria which provided an un-degraded expanded interface with the tubesheet and which satisfies all of the necessary structural and leakage requirements in accordance with Regulatory Guide 1.121 and the Technical Specifications. Since the joint is constrained within the tubesheet bore there is no additional risk associated with tube rupture. Since the UFSAR analyzed accident scenarios remain bounding, the use of an F\* criteria does not reduce the margin of safety.

Thus, these changes do not involve a significant reduction in the margin of safety. Therefore, based on the above evaluation, STP has concluded that these changes do not involve any significant hazards considerations.

STP has evaluated the proposed amendment against the criteria for identification of licensing and regulatory actions requiring environmental assessment in accordance with 10 CFR 51.22(c)(9). It has been determined that the proposed change meets the criteria for a categorical exclusion as provided for under 10 CFR 51.22(c)(9). This determination is based on the fact that the proposed change does not involve a significant hazards consideration, will not involve significant changes in the types or amounts of any radioactive effluent, does not affect any of the permitted release paths, and does not involve a significant increase in individual or cumulative occupational exposure. Therefore, this change meets the categorical exclusion requirements permitted by 10 CFR 51.22(c)(9).

**Schedule Requirements:**

STP requests this supplemental amendment be given an expeditious review and approval prior to May 1996 for the upcoming Unit 1 refueling outage. STP requests 10 days for implementation.