

The Light company

Houston Lighting & Power

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

October 2, 1995
ST-HL-AE-5190
File No.: G03.08
10CFR50

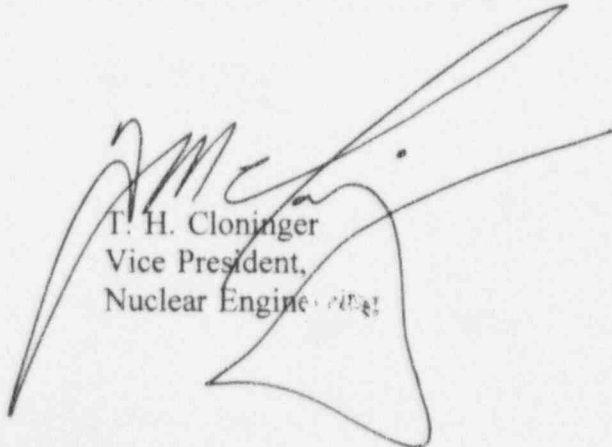
U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

South Texas Project Electric Generating Station
Units 1 and 2
Docket Nos. STN 50-498, STN 50-499
Additional Information Regarding NRC Generic Letter 95-03:
"Circumferential Cracking of Steam Generator Tubes"

Reference: Correspondence from T. W. Alexion, Nuclear Regulatory Commission
to W. T. Cottle, South Texas Project dated September 8, 1995
(ST-AE-HL-94301)

Pursuant to the referenced correspondence, the attachment provides additional
information and clarification regarding South Texas Project's response on June 27, 1995 to
NRC Generic Letter 95-03.

If there are any questions regarding this request, please contact Mr. S. E. Thomas at
(512) 972-7162 or me at (512) 972-8787.



T. H. Cloninger
Vice President,
Nuclear Engineering

KJT/lf

Attachment: Additional Information Regarding NRC Generic Letter 95-03

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

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Houston Lighting & Power Company
South Texas Project Electric Generating Station

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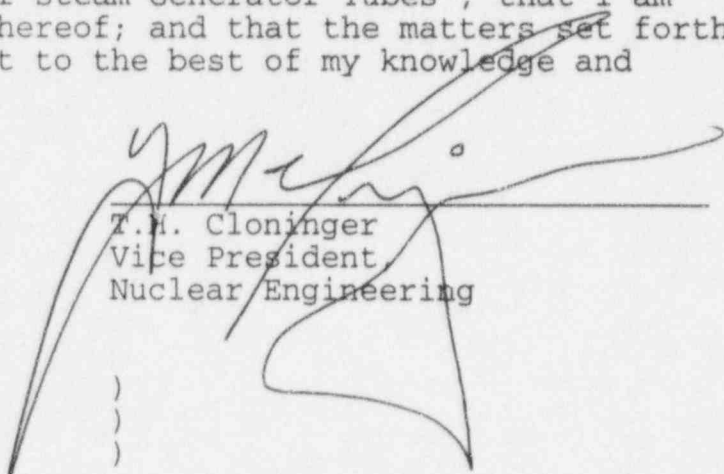
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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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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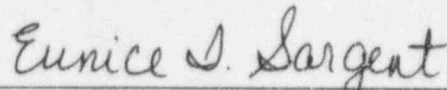
I, T. H. Cloninger, being duly sworn, hereby depose and say that I am Vice President, Nuclear Engineering, of Houston Lighting & Power Company; that I am duly authorized to sign and file with the Nuclear Regulatory Commission the attached additional information regarding NRC Generic Letter 95-03: "Circumferential Cracking of Steam Generator Tubes"; 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.



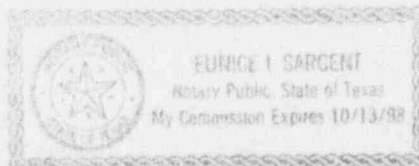
T.H. Cloninger
Vice President
Nuclear Engineering

STATE OF TEXAS)
)
COUNTY OF MATAGORDA)

Subscribed and sworn to before me, a Notary Public in and for the State of Texas, this 2 day of *October*, 1995.



Notary Public in and for the
State of Texas



**ADDITIONAL INFORMATION REGARDING
NRC GENERIC LETTER 95-03**

**SOUTH TEXAS PROJECT
UNITS 1 AND 2**

South Texas Project responded to NRC Generic Letter 95-03, "Circumferential Cracking of Steam Generator Tubes", on June 27, 1995. This attachment provides additional information and clarification regarding that response.

1. Additional Information Requested by the NRC:

It was reported that the bend radii of the inner row U-bend tubes are greater than those from other Westinghouse steam generators; however, no conclusions on the susceptibility of this region to circumferential cracking were provided. If this area is susceptible to circumferential cracking, submit the information requested in GL 95-03 per the guidance contained in the GL for this area (and any other area susceptible to circumferential cracking).

1. South Texas Project Response:

STP considers the stress relief process that was applied to the rows 1 & 2 U-bends to be effective to the extent that these areas are not susceptible to circumferential cracking.

As a conservative measure and to provide confirmation of the effectiveness of U-bend heat treatment, STP has monitored these inner row U-bends with a small sample of RPC examinations for cracking at the 1993 outages for both Units, at the 1995 outage for Unit 1 and plans to perform this inspection for Unit 2 in the upcoming outage planned for October of 1995.

2. Additional Information Requested by the NRC:

In your response you indicated that no appreciable denting has been observed in either unit. Does this imply that the dents are of such limited size that circumferential cracking could not occur at these locations? Provide the procedures used for sizing the dents. If a dent voltage threshold is used (e.g. 5.0 volts) for determining the size of the dents, provide the calibration procedure used. If the procedure is identical to the procedure for the voltage-based repair criteria, a detailed description is not necessary. If circumferential cracking could occur at these dented locations, submit the information requested in GL 95-03 per the guidance contained in the GL for this area.

2. South Texas Project Response:

STP Unit 1 has drilled carbon steel support plates and is, as such, susceptible to tube support plate denting which could lead to circumferential cracking. However, STP has monitored the condition of the tubing in this area since the baseline examination, recorded dents and noted no increase in denting beyond the manufacturing artifacts that were noted on the baseline examination. Successful chemistry control has precluded the occurrence of tube support plate denting. STP plans to continue monitoring the tubing in the support plate area for degradation. At this time and in the absence of tube support plate denting STP does not consider the tube support plate area of the tubing susceptible to circumferential cracking.

A single exception to the above has been noted in one tube at a top support plate elevation. A tube support plate dent that is evident in the 1989, 1993 and 1995 in-service examination data and was not apparent on the baseline examination has been recorded in tube 1C-R36C34. At this time it is considered an anomalous condition. This condition is planned to be examined with RPC at the next Unit 1 outage.

STP guidelines for sizing dents are as follows:

Dent-like signals were reported using Mix 1.

Mix 1 was a tube support plate suppression mix of the 550 kHz and 130 kHz differential signals.

Support plate intersections were viewed at a span setting that provided at least a 3/4 full screen height for the 4 x 20% holes on the calibration standard.

A transfer/field standard was calibrated against a laboratory standard (which is the normalization the basis for the alternate plugging criteria for outer diameter stress corrosion cracking at tube support plates) to establish voltages for the field standard that was equivalent to the laboratory standard. The peak-to-peak response of the 4 x 20% holes was set to produce a field voltage equivalent to that obtained from the laboratory or transfer standard. This setting was saved and stored to all other channels. Voltage normalization to the standard calibration voltages on Channel 1 (550 kHz differential) was the preferred normalization to minimize analyst sensitivity in establishing Mix 1. However, where the bobbin probes used result in a 550/130 kHz mix to 550 kHz voltages ratio which was not 0.66 - 0.72, then the 550/130 kHz mix field voltage equivalent was saved to Mix 1.

All dent signals greater than or equal to 3 volts on Mix 1 were reported.

STP Unit 2 has stainless steel support plates and STP considers this unit to be resistant to denting and in turn non-susceptible to circumferential cracking in the tube support plate area. STP plans to monitor the tube support plate areas in Unit 2 for degradation using sampling methodology meeting or exceeding the Technical Specification requirements.

3. Additional Information Requested by the NRC:

Several plants with preheater model steam generators have tubes expanded into the tube support plate in the preheater region to minimize the potential for vibration induced wear. Since these expansions contain similarities to other expanded regions which have experienced circumferential cracking, discuss whether or not this area is susceptible to circumferential cracking. If this area is susceptible to circumferential cracking, please submit the information requested in GL 95-03 per the guidance contained in the GL.

3. South Texas Project Response:

Preheater expansions have been performed at STP in nominally 160 tubes per steam generator to minimize the potential for vibration induced wear. The original qualification program for the expansion process indicated that no definitive increase in O.D. or I.D. stresses result from the maximum expected field expansions. STP has examined process records from the field implementation of the process at STP and noted no examples of tubes that were over-expanded. Also, other operating Model E steam generators have been examined in these expansion for several cycles of operation in excess of STP's current operating age. No circumferential cracking has been noted. STP considers the tube areas expanded in the preheater to not be susceptible to circumferential cracking.

As a conservative measure to provide additional assurance of tube integrity STP has monitored preheater expansions with a small sample of RPC examinations for cracking of all types at the 1993 outages for both Units, for the 1995 outage for Unit 1 and plans to perform this inspection for Unit 2 in it's upcoming outage planned for October of 1995.