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

June 22, 1989
ST-HL-AE-3133
File No.: G3.3
10CFR50

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

South Texas Project Electric Generating Station
Unit 1 & Unit 2
Docket Nos. STN 50-498, STN 50-499
Response to NRC Compliance Bulletin 89-001:
"Failure of Westinghouse Steam Generator Tube Mechanical Plugs"

Houston Lighting & Power Company (HL&P) has completed an evaluation of the South Texas Project Electric Generating Station (STPEGS) Steam Generators Tube Mechanical Plugs in accordance with IE Bulletin 89-001.

We have determined that the concerns of the Bulletin are not applicable to STPEGS Units 1 and 2 in that Westinghouse mechanical plugs fabricated from thermally treated Inconel 600 heat numbers 3279, 3513, 3962 or 4523 have not been installed at STP. Westinghouse Inconel 600 mechanical plugs which are removed from STP's steam generators will be made available to Westinghouse for examination for primary water stress corrosion cracking and inclusion into the Westinghouse database.

If you should have any questions on this matter, please contact Mr. A. W. Harrison at (512) 972-7298.

S. L. Rosen
Vice President
Nuclear Engineering & Construction

SLR/SDP/ss

Attachment: Response to NRC Bulletin 89-001

IE01
1/1

cc:

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NUCLEAR REGULATORY COMMISSION

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

AFFIDAVIT

S. L. Rosen being duly sworn, hereby deposes and says that he is Vice President Nuclear Engineering and Construction, of Houston Lighting & Power Company; that he is duly authorized to sign and file with the Nuclear Regulatory Commission the attached response to NRC Bulletin 89-001; is familiar with the content thereof; and that the matters set forth therein are true and correct to the best of his knowledge and belief.

S. L. Rosen
Vice President
Nuclear Engineering & Construction

Subscribed and sworn to before me, a Notary Public in and for The State of Texas this 22nd day of June, 1989.

Notary Public in and for the
State of Texas

S3/LIC10/498499

Response to NRC Bulletin 89-001

NRC IE Bulletin 89-001 requests that HL&P determine whether certain mechanical plugs supplied by Westinghouse are installed in STPEGS Steam Generators. This is in response to an event at North Anna Unit 1 in which a mechanical plug failed. The failure mechanism involved a full circumferential severance of the top portion of the plug from the body of the plug. The top portion of the plug was propelled up the length of the affected tube by primary system pressure until it impacted and punctured the outer curvature of the tube just above the U-bend tangent point. An adjacent tube was also dented.

The response to actions required by the Bulletin follow:

Actions Requested, item 1

1. Addressees are requested to verify that information contained in References 1 and 2 relating specifically to their plants is correct for plugs supplied from heat numbers 3279, 3513, 3962, and 4523. The specific information to be verified is the number of Westinghouse mechanical plugs installed in the hot and cold legs broken down by steam generator number, heat number, and date of installation. If information from these references is incorrect, appropriate corrections should be identified. Addressees are requested to so state if their plants have not installed Westinghouse mechanical plugs from the subject heats.

References:

1. Westinghouse reports WCAP-12244 (proprietary version) and WCAP-12245 (non-proprietary version), "Steam Generator Tube Plug Integrity Summary Report," Revision 1, April 1989. NRC Accession Nos. 8904250229 and 8905030163.

2. Westinghouse letter to NRC dated May 1, 1989 (NS-NRC-89-3432) "Steam Generator Tube Plug Integrity Update." NRC Accession No. 8905040092 (Proprietary). Westinghouse has agreed to provide copies of this letter to the affected utilities by May 17, 1989.

Response:

Westinghouse mechanical plugs fabricated from thermally treated Inconel 600 heat numbers 3279, 3513, 3962 or 4523 have not been installed at STP. Westinghouse has determined that the installed STP mechanical plugs fabricated from Inconel 600 are classified as "category 16" which exhibits a nearly continuous grain boundary precipitate and therefore is less susceptible to Primary Water Stress Corrosion Cracking (PWSCC). The projected performance of "category 16" plugs was determined based on the corrosion algorithm described in Westinghouse WCAP-12244, Rev. 1. The expected Effective Full Power Day (EFPD) performance of these plugs is approximately 7800 EFPD.

Response to NRC Bulletin 89-001 (cont'd)

Actions Requested, item 2

2. Addressees are requested to take the following actions, to be implemented initially during any refueling outage or extended outage (greater than four weeks) which ends 30 days or more following receipt of this bulletin and during a future refueling outages.

a) Steam generator tube plug lifetime for plugs from heats 3279, 3513, 3962, and 4523 should be estimated using the methodology from References 1 and 2 and should be based on the Millstone Unit 2 benchmark subject to any corrections per item 1 above. Lifetime estimates in Reference 2 for plugs fabricated from heat 4523 are based on the Farley Unit 2 benchmark. These estimates should be adjusted to reflect the Millstone Unit 2 benchmark using the methodology described in Section 4.1.2 of Reference 1.

b) Addressees should implement appropriate remedial actions (i.e., repair and/or replacement) for all plugs whose estimated lifetimes in 2a, above do not extend to the next refueling outage. If operation is planned beyond a refueling outage that represents the last outage before any plug exhausts the predicted lifetime, an alternative schedule with the appropriate technical justification should be submitted to the NRC at least 30 days before the end of this refueling outage.

c) Prior to any plug repairs or replacement, addressees are reminded that their responsibilities under ALARA require analysis of the various plug repair or replacement methods available to determine which method will result in the lowest overall personnel radiation exposure while still remaining cost-effective. In choosing a plug repair or replacement method, the licensee should consider the accessibility of the plugs and the dose reduction benefit of using robotic manipulators. Prior to plug repair or replacement, the licensee should consider steam generator decontamination and/or local shielding to reduce working area dose rates.

d) Installation of Westinghouse mechanical plugs from heats 3279, 3513, 3962, and 4523 should be discontinued.

e) Westinghouse mechanical plugs removed from steam generators, regardless of heat number, should be examined for PWSCC on a sample basis for each heat. Addressees should maintain a record of these examinations and the results should be provided to Westinghouse to improve the database concerning the susceptibility of plugs to PWSCC.

Response:

See Actions Requested, item 4.

Response to NRC Bulletin 89-001 (cont'd)

Actions Requested, item 3

3. Remedial actions at plants where the steam generator tubes are partially-depth-expanded within the tubesheet as described above may be deferred on a one time basis to the next scheduled refueling outage if the outage that immediately follows receipt of this bulletin ends before October 1, 1989.

Response:

See Actions Requested, item 4.

Actions Requested, item 4

4. Remedial actions for "sentinel related" mechanical plugs described above may be deferred on a one time basis to the next refueling outage if the outage that immediately follows receipt of this bulletin ends before October 1, 1989.

Response:

The actions requested above, with the exception of Action 2e, are limited to Westinghouse mechanical plugs supplied from Category I heats (3279, 3513 and 3962) and heat 4523. Mechanical plugs fabricated from these heat numbers have not been installed at STP. Westinghouse will perform a STP specific 626 degree F. analysis for category 16 plugs in the future, but has stated that mechanical plugs installed by Westinghouse to date are expected to last 7800 effective full power days. This equates to approximately 20 years of additional operation under the most conservative assumptions of power operation.

In response to Action 2e, Westinghouse Inconel 600 mechanical plugs which are removed from STP's steam generators will be made available to Westinghouse for examination for primary water stress corrosion cracking and inclusion into the Westinghouse database.