

The Light company

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

December 16, 1992
ST-HL-AE-4257
File Nos.: M33.02
G25
10CFR50

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
Response to Steam Generator Tube Rupture
Overfill Scenario (TAC Nos. M75099 and M75100)

- References: 1. Letter dated April 20, 1992, from USNRC to HL&P,
"Steam Generator Tube Rupture Analysis South Texas
Projects, Units 1 and 2"
2. Letter dated June 19, 1992, from HL&P to USNRC,
"Steam Generator Tube Rupture Analysis - Operator
Response Time"

As requested in Reference 1, Houston Lighting & Power (HL&P) is submitting demonstrated operator response times, representing all of the South Texas Project (STP) operators, for the Steam Generator Tube Rupture (SGTR) overfill scenario. All ten operating crews were timed on the STP simulator, and the results are presented in Attachment 1. In addition to a 600 gpm tube rupture on "D" Steam Generator, off-site power was lost at the time of the reactor trip. "D" Train Auxiliary Feedwater Control Valve and Outside Containment Isolation Valve were both failed open. These conditions were used to maximize the potential for Steam Generator overfill.

There were four High Level Action (HLA) step times obtained. The first HLA step begins with the tube rupture and ends when the ruptured Steam Generator is identified and isolated. The second HLA step accounts for the time when Reactor Coolant System (RCS) cooldown is initiated to establish subcooling margin after Steam Generator isolation. The third HLA step considers the time to initiate RCS depressurization at the end of cooldown. The fourth HLA step is the time period from restoration of RCS inventory to termination of Safety Injection flow.

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Inspection of the operator response time data shows that none of the ten operator crews identified and isolated the ruptured Steam Generator within the time originally assumed in the STP specific analysis (WCAP-12369, "LOPTR2 Analysis for a Steam Generator Tube Rupture for the South Texas Projects Units 1 and 2"). Because of these results, HL&P performed a calculation to determine the impact of the slowest operator crew response time on the WCAP SGTR analysis. The calculation determined the additional mass that would be added to the faulted Steam Generator based on the slowest operator response time and showed sufficient margin existed in the WCAP-12369 analysis such that the steam generator would not overfill. Therefore, the operator response times for all operating crews, Attachment 1, are submitted to close Confirmatory Issue 1 of the STP SGTR safety evaluation.

Although the acceptance criteria are met, actions have been taken which should reduce the response times and increase the existing minimal margin (<1 minute) to initiation of overfill. The increased operator response time are believed to result from operating procedure steps added subsequent to the original WCAP-12369 submittal and initial timing of the operators. During the review of this issue, it was noted that some procedure revisions which decrease operator response time had already been initiated. These now include the following actions:

- Operating procedure revisions which remove unnecessary redundancy to perform immediate action steps;
- Operating procedure revisions which allow immediate isolation of feedwater to a ruptured Steam Generator upon identification of the rupture and verification of adequate water inventory; and
- Revisions to operator lesson plans which identify and review the operator response times assumed in the Safety Analysis so that operators will recognize that the analysis is based on operator action time.

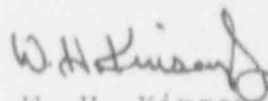
The procedure revisions have been completed and appropriate scenarios have been added to the licensed operator training material. HL&P will record the subject operator response times for all the STP operating crews during an upcoming licensed operator requalification cycle. This action is expected to be completed by August 1993.

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If you should have any questions concerning this matter,
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SDP/ag

Attachment: Steam Generator Tube Rupture Operator Response Times

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L4/NRC/

ACHMENT

STEADY STATE GENERATOR TUBE RUPTURE OPERATOR RESPONSE TIMES

Steam Generator Tube Rupture Operator Response Times

HLA STEP	WCAP TIMES	CREW 1	CREW 2	CREW 3	CREW 4	CREW 5	CREW 6	CREW 7	CREW 8	CREW 9	CREW 10
1	* 12:00	13:10	14:11	13:27	13:20	18:05	14:55	16:24	19:42	18:46	18:18
2	04:00	00:30	01:00	01:45	02:00	01:44	00:53	01:05	01:24	01:57	00:43
3	03:00	00:31	00:40	00:58	00:23	00:40	01:38	00:23	02:14	00:35	00:31
4	02:00	01:24	00:33	00:25	00:11	00:29	00:30	00:43	00:44	00:44	00:48

HLA STEP - High Level Action Step

HLA 1 - identify and isolate ruptured Steam Generator

HLA 2 - initiate RCS cooldown after Steam Generator isolation

HLA 3 - initiate RCS depressurization after RCS cooldown

HLA 4 - terminate safety injection

WCAP TIMES - times assumed in WCAP-12369 analysis for each HLA step
time format is in minutes:seconds

* Assumes 10 minutes to identify and isolate the ruptured steam generator, plus an additional 2 minutes to secure AFW flow. This is consistent with single failure criteria assumptions.