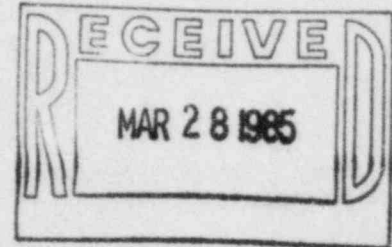


The Light company

Houston Lighting & Power P.O. Box 1700 Houston, Texas 77001 (713) 228-9211

March 22, 1985
ST-HL-AE-1210
File No.: G12.215

Mr. Robert D. Martin
Regional Administrator, Region IV
Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76011



South Texas Project
Units 1 & 2
Docket Nos. STN 50-498, STN 50-499
Final Report Concerning
Trapeze Type Support Assemblies

Dear Mr. Martin:

On October 22, 1984, pursuant to 10CFR50.55(e), Houston Lighting & Power Company (HL&P) notified your office of an item concerning trapeze type support assemblies. Attached is our final report concerning this item. This deficiency has been determined to meet the reporting requirements of 10CFR50.55(e).

If you should have any questions on this matter, please contact Mr. Michael E. Powell at (713) 993-1328.

Very truly yours,

A handwritten signature in cursive script that reads "J. H. Goldberg".

J. H. Goldberg
Group Vice President, Nuclear

JSP:yd

Attachment: Final Report Concerning
Support Assemblies

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cc:

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South Texas Project
Units 1 & 2
Final Report Concerning
Trapeze Type Support Assemblies

I. Summary

A deficiency has been identified in the design of trapeze type support assemblies with mechanical snubbers used to support a feedwater line in the Reactor Containment Building (RCB). The design was such that if left uncorrected, the trapeze assemblies could become misaligned such that an overstress condition could develop in the pipe during dynamic events. In addition, these assemblies used U-Straps around the pipe for which there was no documentation showing that these straps were qualified for lateral loads.

This deficiency was investigated on a generic basis to assess the implications relative to all similar type of designs used at STP. The preliminary investigation revealed that the same problem exists for approximately 78 other support assemblies per unit. During our review an additional 6 trapeze-type supports were identified in the IVC and one small bore pipe support in the RCB. In addition the investigation revealed that similar designs have been provided by EDS Nuclear (now Impell) and Nuclear Power Services, Inc. to the previous A/E. Bechtel has discussed the potential for misalignment with both companies.

Based on the evaluation of the identified feedwater supports, we have determined that if left uncorrected, a significant safety hazard exists which is reportable pursuant to 10CFR50.55(e).

II. Description of Deficiency

On October 22, 1984, pursuant to 10CFR50.55(e), Houston Lighting & Power Company (HL&P) notified the NRC Region IV of an item concerning trapeze type support assemblies. Bechtel engineering identified a concern that three trapeze type supports used in a feedwater line would have a tendency to slide or rotate around the pipe.

The support concept in question is identified in Figure 1. This support is commonly used in the industry in those locations where the pipe is located too close to a wall to allow for adequate room for snubber placement. In those situations, a beam is placed outboard of the pipe from the wall and the snubbers connected to the beam. Typically the support is held in place by friction between the beam and pipe that is developed by the tensioning of a U-Bolt that goes around the pipe. This deficiency concerned supports that used a welded strap to attach the support to the pipe, such that a gap existed between the strap and pipe. This clearance between the strap and pipe would allow the assembly to slide down the pipe in the case of a vertical pipe or to rotate around the pipe in the case of a horizontal pipe. The stress analysis is

performed assuming that snubbers are correctly oriented and acting as designed. If, due to misalignment, these supports fail to act during the dynamic event for which they are designed, then the piping system may be overstressed. In the case of the feedwater line, the trapeze assemblies are designed for waterhammer as well as seismic loads. An additional item of concern was that there was no documentation to show that the U-Straps used in the trapeze assemblies were qualified for side loads.

Further investigation into the use of similar supports identified approximately 85 supports per unit that utilized welded straps or U-bolts to attach the support to the pipe. A review of the design drawings revealed that some of the U-bolt designs also included a gap between the U-bolt and pipe. In addition the applicable construction specifications and design drawings did not specify a required torque value for the U-bolts necessary to hold the support tight to the pipe. There was also no documentation to show that the U-bolts used were qualified for side loads.

During the investigation of the deficiency, it was determined that similar designs had been provided by EDS and NPSI for the previous A/E. All such designs were voided or superseded by Bechtel redesign. Since the previously supplied designs are not used on STP, there is no reportable condition pursuant to 10CFR21 relative to the support designs supplied by EDS and NPSI. HL&P does not know if this problem exists in the designs supplied by EDS and NPSI for any other projects.

Bechtel has processed a Deficiency Evaluation Report on this subject through their Corporate Problem Investigation Request (PIR) process. The PIR process involves a transmission of a description of the deficiency to other Bechtel projects for information or action. The PIR process resolution includes a required response for all action assignees with documentation maintained in applicable project files and at Bechtel's Western Power Division offices.

III. Corrective Action

The following corrective actions have been taken to resolve this issue.

1. All the identified trapeze assemblies using snubbers were put on construction hold.
2. Pipe support personnel have been given additional training in the design of pipe support trapeze assemblies.
3. All the pipe support designs issued on the project were reviewed to identify the trapeze assemblies using snubbers. Seventy-four of the 85 trapeze type pipe supports reviewed are on ASME Class 2 and 3 piping. The remaining 11 supports are on ASME Class 1 piping.

BEC will redesign the ASME Class 2 and 3 supports to replace the U-bolts or straps with welded pipe attachments. These welded attachments are standard designs which have been used both on STP and on other projects and will be qualified using standard state of the art computer programs.

BEC will avoid the use of welded pipe attachments for the supports on the ASME Class 1 lines. Other standard designs, such as pipe clamps and structural frames, will be used where possible. These designs will be corrected on or before September 13, 1985.

<u>BUILDING</u>	<u>SYSTEM</u>	<u>NUMBER OF SUPPORT ASSEMBLIES</u>
RCB	AF	2
"	CC	5
"	CV	3
"	FW	8
"	MS	2
"	RC	3
"	RH	14
"	SB	4
"	SI	9
IVC	FW	4
"	MS	12
MEAB	CC	14
"	CV	1
"	RH	2
"	WL	2

TOTAL SUPPORT ASSEMBLIES = 85 (per unit)

It should be noted that some of these support assemblies may be eliminated due to an ongoing effort on the project to optimize the pipe support designs and eliminate snubbers wherever possible.

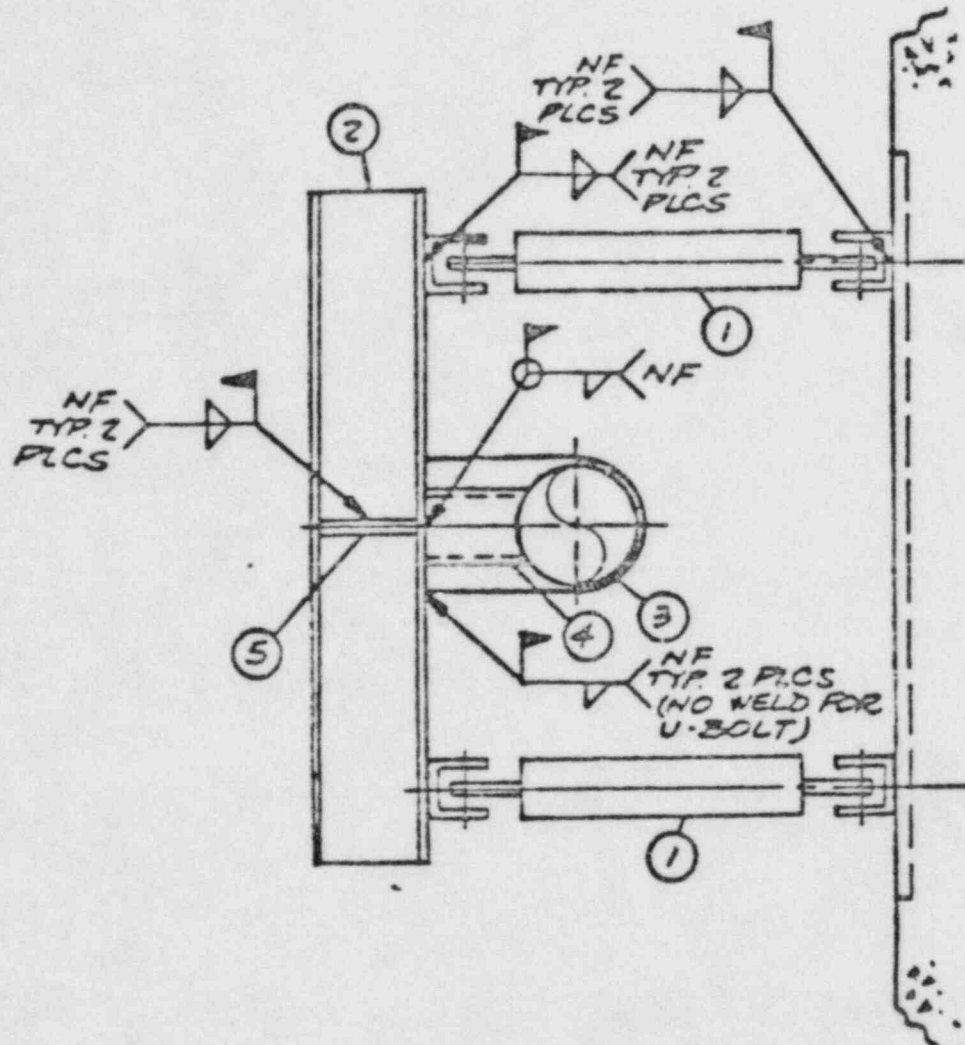
IV. Recurrence Control

Recurrence control has been provided in the form of additional training of the pipe support design personnel to assure that these types of deficiencies will not occur in future pipe support designs.

V. Safety Analysis

We have determined, that if left uncorrected, a safety hazard exists in the case of the feedwater line supported by the three deficient trapeze assemblies. A failure of these assemblies to perform their intended function during a waterhammer event would overstress the feedwater line. Detailed analyses have not been performed to determine the degree and/or consequences of overstress. The overstress condition is assumed to result in the failure of the line. The waterhammer event could result from an assumed high energy line break of another feedwater line. Significant propagation of a secondary side line break violates the initial conditions and inputs used in the FSAR Chapter 15 analyses.

Based on the evaluation of the identified feedwater supports, we have determined that, if left uncorrected, a significant safety hazard exists which is reportable pursuant to 10CFR50.55(e).



PLAN VIEW (VERTICAL PIPE)
SECTION VIEW (HORIZONTAL PIPE)

- ① SNUBBER
- ② STEEL BEAM
- ③ U-STRAP OR U-BOLT
- ④ STEEL BEAM/PIPE STANCHION
- ⑤ STIFFNER PLATE