

# The Light company

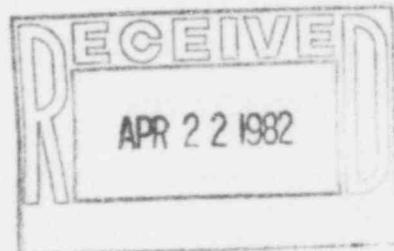
Houston Lighting & Power P.O. Box 1700 Houston, Texas 77001 (713) 228-9211

April 21, 1982

ST-HL-AE-818

SFN: V-0530

Mr. John T. Collins  
Regional Administrator, Region IV  
Nuclear Regulatory Commission  
611 Ryan Plaza Dr., Suite 1000  
Arlington, TX 76012



Dear Mr. Collins:

South Texas Project  
Units 1 & 2  
Docket Nos. STN 50-498, STN 50-499  
First Interim Report Concerning  
the Design of the Residual Heat Removal System

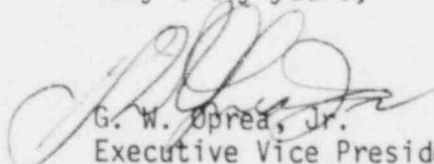
On March 26, 1982, Houston Lighting & Power Company (HL&P), pursuant to 10CFR50.55(e), notified your office of an item concerning the design of the Residual Heat Removal (RHR) System. The RHR heat exchangers are located at an elevation higher than the refueling water storage tank (RWST), which is the source of borated water for safety injection. This configuration places the heat exchangers at the "high point" in the system, and therefore, subject to possible accumulation of noncondensable gases in the tube bundles when the system is not in operation. The accumulation of noncondensable gases in the tube bundles could lead to a potential for water hammer when the low head safety injection (LHSI) pumps are started.

Brown & Root, Inc. (B&R) notified the NRC - Region IV office on March 26, 1982 that this item was potentially reportable pursuant to 10CFR21. A copy of the B&R report concerning this item is attached and is intended to supplement our first interim report.

Bechtel Power Corporation (BPC) is currently evaluating this item and will provide HL&P with recommendations regarding the modifications which are required to preclude air entrapment in the RHR heat exchanger tube bundles. The next report concerning this item will be submitted to your office by August 30, 1982.

If you should have any questions concerning this item, please contact Mr. Michael E. Powell at (713) 877-3281.

Very truly yours,

  
G. W. Oprea, Jr.  
Executive Vice President

MEP/blt  
Attachments



TE-27  
S/1

8205030350

Houston Lighting & Power Company

cc: G. W. Oprea, Jr.

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Director, Office of Inspection & Enforcement

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Revision Date 03-30-82

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A Halliburton Company

William M. Rice  
Group Vice President  
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(713) 676-3521



March 30, 1982

Mr. Richard C. DeYoung  
Office of Inspection and Enforcement  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Mr. DeYoung:

On March 26, 1982, Messrs. P. S. Jordan and H. L. Bell of Brown & Root, Inc. provided verbal notification to Mr. Cliff Hale of the Nuclear Regulatory Commission, Region IV Office of Inspection and Enforcement, of a problem in the design of the Residual Heat Removal/Safety Injection Systems (RHR/SIS) for the South Texas Project. This situation was determined by Brown & Root to be potentially reportable pursuant to 10CFR21 on March 26, 1982. This letter provides written notification of the potentially reportable condition in accordance with 10CFR21.

The potentially reportable condition involves design performed by Brown & Root as the Engineer of the South Texas Project Electric Generating Station (STP) located near Bay City, Texas. In September 1981, Brown & Root was removed as the STP Engineer by Houston Lighting & Power Company (HL&P) and replaced by Bechtel Power Corporation (BPC). Since September 1981, Brown & Root and BPC have been involved in various STP transition activities, including transfer of responsibilities. As the result of this situation, HL&P recently elected to have BPC review responses to various FSAR questions which were prepared by Westinghouse Nuclear Energy Systems (WNES). This review would have otherwise been performed by Brown & Root as a normal part of our responsibility as the STP Engineer.

The BPC review of WNES responses to FSAR Questions 211.26 and 211.39 identified an inconsistency with actual RHR/SIS design. BPC identified that the RHR heat exchangers are located at an elevation higher than the refueling water storage tank (RWST), the source of borated water for safety injection. This configuration makes the heat exchangers the "high point" in the system, and therefore, subject to possible accumulation of noncondensable gases in the tube bundles when the system is not in operation. Brown & Root discussed this condition with BPC at a recent "transition" meeting.

Both Units 1 and 2 of STP are each provided with three vertical, U-tube heat exchangers which serve a dual function of residual (decay) heat removal during normal plant shutdown and emergency core cooling during certain postulated accident events. The heat exchangers are located

*Dupe of 8204210220*



within each Reactor Containment Building (RCB). The source of water for the emergency core cooling (safety injection) function is the re-fueling water storage tank (RWST) which is located within each Mechanical Auxiliary Building (MAB) of Units 1 and 2. The top of RHR/SIS heat exchanger tubes is approximately at elevation 64 feet and the top of the RWST is approximately at elevation 42 feet. The RWST is an atmospheric tank. During normal plant operation, the RHR/SIS piping and equipment are wetted but idle. Due to the difference in elevation between the RWST and the heat exchangers, system back-leakage may permit noncondensable gases to collect in the tube bundles of the heat exchangers while they are not in use. Should residual heat removal or safety injection be initiated with this condition existing, water hammer or other undesirable effects may result.

The design of the RHR/SIS (components and functional requirements) is the responsibility of WNES but system layout was performed by Brown & Root. While the interface requirements specified by WNES were adequately considered by Brown & Root, they do not expressly address relative elevations of the subject components. The Brown & Root design as released for construction had been reviewed by WNES and HL&P.

In Unit 1, the RHR/SIS heat exchangers have been located in the RCB awaiting installation. Associated piping has not been installed. The RWST is stored in place in the MAB. The Unit 2 components have not been installed.

Two of the unique design features of STP (RESAR 41 Nuclear Steam Supply System), are the location of the RHR/SIS heat exchangers within the RCB and the RWST within the MAB. This layout is not commonly found in other Westinghouse or Pressurized Water Reactor designs. The STP design problem may, therefore, not be of generic significance.

An evaluation of the safety significance of the problem has not been performed. Because of the current status of Brown & Root with STP, we are unable to assure such an evaluation is performed and appropriate corrective action effected. The safety significance of this problem is judged to be not unlikely; therefore, Brown & Root has determined this condition to be potentially reportable pursuant to 10CFR21 pending completion of a safety evaluation.

Mr. Richard C. DeYoung  
March 30, 1982  
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Brown & Root has coordinated on this matter with BPC. We have been assured that BPC has the technical issue identified and that it will be evaluated and resolved consistent with BPC procedural requirements. Additionally, HL&P has been notified by Brown & Root of our concern and actions and WNES has been apprised of the condition. Any further communication on and resolution of this matter should be expected from others.

Additional questions regarding this matter should be addressed to our Mr. Peter S. Jordan, (713) 676-8205.

Very truly yours,

BROWN & ROOT, INC.

W. M. Rice  
Group Vice President

WMR/HLB/JLB/PSU/iyg

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