

The Light company

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

May 18, 1987
ST-HL-AE-2165
File No.: G9.10
10CFR50, Appendix A

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

South Texas Project
Units 1 and 2
Docket Nos. STN 50-498, STN 50-499
Alternative Pipe Break Criteria - Accumulator Line

- References:
- (1) HL&P Letter to NRC, M. R. Wisenburg to V. S. Noonan, November 14, 1986, ST-HL-AE-1784
 - (2) HL&P Letter to NRC, M. R. Wisenburg to V. S. Noonan, February 19, 1987, ST-HL-AE-1906
 - (3) HL&P Letter to NRC, M. R. Wisenburg to N. P. Kadambi, March 13, 1987, ST-HL-AE-1969
 - (4) NRC Letter to to HL&P, N. P. Kadambi to J. H. Goldberg, April 15, 1987, ST-AE-HL-91237

By letter dated November 14, 1986 (reference 1) Houston Lighting & Power Company (HL&P) requested an exemption from the requirements of 10CFR Part 50, Appendix A, General Design Criterion 4 for dynamic effects associated with postulated pipe ruptures of accumulator line piping. The exemption would allow the application of "leak before break" technology as an alternative to providing protective devices against the dynamic loads resulting from postulated ruptures of the South Texas Project Units 1 and 2 accumulator lines. Reference (2) provided, for the high pressure 12 inch accumulator safety injection system piping, the detailed fracture mechanics analysis together with a full discussion of material properties and an evaluation to NUREG 1061 criteria. Reference (3) provided for the low pressure 12 inch accumulator safety injection system piping detailed fracture mechanics analysis together with a full discussion of material properties and an evaluation to NUREG 1061. Reference (3) also provided fracture mechanics analysis for the connecting 10 inch and 8 inch lines from the residual heat removal (RHR) system.

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PDR ADOCK 05000498
A PDR

Change: L&P 1 INP
PDR 1 INP

Ltr Each

PR01
1/1 Prop
1/1 Prop

As shown on Figures 1, 2 and 3 the 8 inch piping beyond the check valve is moderate energy (20 psig, 120°F) piping, therefore, HL&P requests approval to eliminate the need to design for dynamic effects associated with an 8 inch RHR connection pipe break. During the April 16, 1987 meeting with the NRC, the staff stated that to meet NUREG-1061 criteria the branch connections should be evaluated anchor to anchor. The LBB evaluation provided in reference (3) for the 8 inch line was completed for the most limiting location (node 284) in the 8 inch line which is normally pressurized to 665 psig. The piping stress analysis was completed from the 12 inch piping connection to the RHR heat exchanger anchor point. Therefore, the limiting location node points reflect loadings based upon an anchor to anchor piping analysis. Also, all material used in the 665 psig section of both 8 and 10 inch diameter piping was reviewed to ensure minimum properties were enveloped in the analysis.

The NRC staff having reviewed the information contained in references 1, 2 and 3 requested via reference (4) additional information. Attachments 1 and 2 provide the additional information requested by the staff (proprietary and non-proprietary versions).

As shown in references 2 and 3 and discussed in this submittal, the South Texas 12 inch diameter accumulator lines and 8 and 10 inch connection lines for both Units 1 and 2 meet all the specified criteria for break elimination as specified by NUREG 1061.

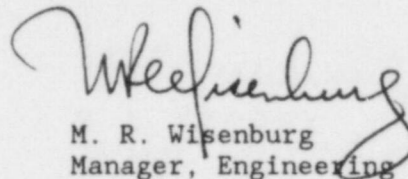
The accumulator line 12 inch diameter piping running from the reactor coolant loop connection to the accumulator tank connection was reviewed to ensure that the leak before break analysis envelopes the entire piping system anchor to anchor.

The 12 inch diameter accumulator lines currently contain postulated pipe breaks at terminal end connections to the reactor coolant loop (RCL). Pipe whip restraints have been fabricated for both units and have been partially installed on Unit 1. Jet impingement barriers have not been fabricated. The cost savings associated with not completing Unit 1 & 2 restraint installation, not fabricating or installing jet impingement barriers in either Unit and the associated system modifications and testing that would have been required as a result of these installations is estimated to be in excess of \$400,000.

Without applying fracture mechanics technology to the accumulator line a penalty in terms of both cost and occupational radiation exposure would be imposed on South Texas. For the STP, a nominal occupational radiation exposure savings estimated to be in excess of 24 man-rem should be achieved over the 40 year life of both units as a result of not installing the pipe whip restraints and jet barriers.

Because Attachment 1 contains information proprietary to Westinghouse Electric Corporation, the attached affidavit signed by Westinghouse management sets forth the basis on which the information may be withheld from public disclosure by the NRC in accordance with the requirements of 10CFR2.790(b)(1). This affidavit addresses with specificity the considerations of 10CFR2.790(b)(4). Correspondence with respect to the proprietary aspects of the affidavit and Application for Withholding of Attachment 1 should reference CAW-87-048 and should be addressed to R. A. Weismann, Manager Regulatory and Legislature Affairs, Westinghouse Electric Corporation, P.O. Box 355, Pittsburgh, Pennsylvania 15230.

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



M. R. Weisenburg
Manager, Engineering and Licensing

ABP/yd

Attachments: (1) "NRC Request for Additional Information in Support of the Elimination of Postulated Pipe Ruptures in the Accumulator Line of South Texas Project Units 1 & 2," Westinghouse Proprietary Class 2, May, 1987.

Also enclosed is a Westinghouse authorization letter, CAW-87-048, Proprietary Information Notice, and accompanying Affidavit.

(2) "NRC Request for Additional Information in Support of the Elimination of Postulated Pipe Ruptures in the Accumulator Line of South Texas Project Units 1 and 2," Westinghouse Non-Proprietary Class 3, May, 1987.

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cc:

Regional Administrator, Region IV
Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 1000
Arlington, TX 76011

M.B. Lee/J.E. Malaski
City of Austin
P.O. Box 1088
Austin, TX 78767-8814

(*) N. Prasad Kadambi, Project Manager
U.S. Nuclear Regulatory Commission
7920 Norfolk Avenue
Bethesda, MD 20814

A. von Rosenberg/M.T. Hardt
City Public Service Board
P.O. Box 1771
San Antonio, TX 78296

(*) Robert L. Perch, Project Manager
U.S. Nuclear Regulatory Commission
7920 Norfolk Avenue
Bethesda, MD 20814

Advisory Committee on Reactor Safeguards
U.S. Nuclear Regulatory Commission
1717 H Street
Washington, DC 20555

Dan R. Carpenter
Senior Resident Inspector/Operations
c/o U.S. Nuclear Regulatory
Commission
P.O. Box 910
Bay City, TX 77414

Claude E. Johnson
Senior Resident Inspector/Construction
c/o U.S. Nuclear Regulatory
Commission
P.O. Box 910
Bay City, TX 77414

M.D. Schwarz, Jr., Esquire
Baker & Botts
One Shell Plaza
Houston, TX 77002

J.R. Newman, Esquire
Newman & Holtzinger, P.C.
1615 L Street, N.W.
Washington, DC 20036

T.V. Shockley/R.L. Range
Central Power & Light Company
P. O. Box 2121
Corpus Christi, TX 78403

(*) With Attachments; all others without Attachments.

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