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

March 12, 1986
ST-HL-AE-1617
File No.: G9.10

Mr. Harold Denton, Director
Office of Nuclear Reactor Regulation
Nuclear Regulatory Commission
Washington, DC 20555

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

Reference: 1) Letter from J. H. Goldberg (HL&P) to H. R. Denton (NRC) dated September 28, 1983 (ST-HL-AE-1010)

2) Letter from J. H. Goldberg (HL&P) to H. R. Denton (NRC) dated July 17, 1984 (ST-HL-AE-1096)

3) Letter from J. H. Goldberg (HL&P) to H. R. Denton (NRC) dated August 19, 1985 (ST-HL-AE-1326)

Dear Mr. Denton:

On August 19, 1985, Houston Lighting & Power Company (HL&P), by way of reference (3) above, requested a schedular exemption to the requirements of 10CFR50, Appendix A, General Design Criteria (GDC)-4 for the treatment of main reactor coolant loop pipe breaks inside the containment. This schedular exemption was requested to cover the period until startup following the second refueling outage and eliminate the need to install the associated pipe whip restraints and jet impingement shields for the RCS main loop and cross-over piping and to eliminate the need to design for the dynamic effects associated with these breaks, including jet impingement and compartment pressurization.

HL&P is continuing to pursue the application of alternative pipe break design bases to other piping systems. In accordance with 10CFR50.12(a), HL&P hereby applies for an exemption to the requirements of 10CFR50, Appendix A, GDC-4 for the treatment of pressurizer surge line pipe breaks. This exemption would eliminate the need to install the associated pipe whip restraints and jet impingement shields and to eliminate the need to design for the dynamic effects associated with these breaks. These dynamic effects are specifically defined as the effects of missiles, pipe whipping, subcompartment pressurization, and fluid jets. Granting our request (1) would eliminate the need to postulate longitudinal and circumferential pipe breaks in the pressurizer surge line piping; and 2) eliminate the requirement to analyze and design for

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Change: 24X Ltr Encl
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the following dynamic effects of these breaks: jet impingement, blowdown loads, pipe whip, reactor cavity pressurization, asymmetric pressurization transients (USI A-2), subcompartment pressurization transients, and load combination assumptions. This exemption request does not affect the containment pressure boundary, the emergency core cooling system, or environmental qualification design bases. Pursuant to 10CFR50.12(a), HL&P believes the requested exemption "will not endanger life or property or the common defense and security and is otherwise in the public interest".

Accordingly, HL&P as Project Manager for STP, acting for itself and for the City of San Antonio (acting by and through the City Public Service Board of San Antonio), Central Power and Light Company, and the City of Austin, Texas, hereby requests that Construction Permit (CP) Nos. CPPR-128 and CPPR-129 be amended to reflect the above stated partial exemption to GDC-4. Enclosed in accordance with 10CFR Section 170.12 is a check in the amount of $300 in payment of the application fees associated with the request for amendments of the two construction permits.

In support of this request, HL&P is enclosing a report, WCAP-10489, "Technical Bases for Eliminating Pressurizer Surge Line Ruptures as the Structural Design Basis for the South Texas Project" as Enclosure A. Enclosure C contains additional information in support of Enclosure A. Because of the proprietary nature of these documents, Enclosures A and C have been provided only to the addressee, to Mr. R. D. Martin, and to Mr. N. P. Kadambi of the NRC. Non-proprietary versions have been included as Enclosures B and D and have been provided to others on the attached distribution list. This report and the additional information provide technical justification for the elimination of pressurizer surge line breaks based on fracture mechanics analysis. The application of this fracture mechanics technology has demonstrated that small flaws or leakage cracks will remain stable and will be detected either by in-service inspection or by leakage monitoring systems long before such flaws can grow to critical sizes which otherwise could lead to large break areas such as a double ended rupture of the surge line.

A safety balance assessment is submitted as Enclosure E. As demonstrated in this safety balance assessment, the strict application of the definition of a loss of coolant accident (LOCA) in Appendix A to 10CFR Part 50, without applying advanced fracture mechanics technology to large diameter, thick walled piping, such as the pressurizer surge line, imposes a penalty in terms of both cost and occupational radiation exposure. For the STP, a nominal occupational radiation exposure savings in excess of 24 man-rem can be achieved over the 40 year life of both units as a result of not installing the protective devices (pipe whip restraints and jet impingement barriers) currently employed in the STP design to mitigate the dynamic effects associated with postulated breaks in the pressurizer surge line. As shown in

the same analysis, this real reduction in occupational radiation exposure is to be contrasted with a 0.3 man-rem calculated increase in radiation exposure to the general public in the unlikely event of a pipe rupture.

The pressurizer surge line currently contains postulated pipe breaks at two terminal ends, two fittings and at the long radius bend. Pipe whip restraints have been fabricated for both units and have been partially installed in Unit 1. Jet impingement barriers have not been fabricated. The cost savings associated with not completing Unit 1 restraint installation, not installing the Unit 2 restraints, and with not fabricating or installing jet impingement barriers in either unit is estimated to be in excess of $400,000.

In order to achieve the benefits of substantially reduced occupational radiation exposure and to avoid remaining installation cost for both units, we request your prompt and favorable action.

Because Enclosures A and C contain information proprietary to Westinghouse Electric Corporation, the attached affidavits signed by Westinghouse management set 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). These affidavits address with specificity the considerations of 10CFR2.790(b)(4). Correspondence with respect to the proprietary aspects of the affidavit and Application for Withholding of Enclosure A and C should reference CAW-84-12 and CAW-84-76 respectively and should be addressed to R. A. Wisemann, Manager Regulatory and Legislature Affairs, Westinghouse Electric Corporation, P. O. Box 355, Pittsburgh, Pennsylvania 15230.

It is noted for your information that this program will not affect the following:

* Emergency Core Cooling System (ECCS) design bases
* Containment design bases
* Equipment qualification bases (overall design conditions)
* Engineered Safety Features System response
* Design of RCS heavy component supports

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

Very truly yours,

J. H. Goldberg
Group Vice President, Nuclear

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Attachments: A) WCAP-10489, Technical Bases for Eliminating Pressurizer Surge Line Ruptures last the Structural Design Basis for South Texas Units 1 and 2, prepared by S. A. Swamy, C. Y. Yang, A. D. Sane, Y. S. Lee, dated February, 1984 (Proprietary)

B) WCAP-10490, Technical bases for Eliminating Pressurizer Surge Line Ruptures as the Structural Design Basis for South Texas Units 1 and 2, prepared by S. A. Swamy, C. Y. Yang, A. D. Sane, Y. S. Lee, dated February, 1984 (Non-Proprietary)

C) Additional information on the Report Titled, "Technical Bases for Elimination Pressurizer Surge Line Ruptures as the Structural Design Basis for South Texas Units 1 and 2, "WCAP-10489, February, 1984 (Proprietary)

D) Additional information on the Report Titled, "Technical Bases for Eliminating Pressurizer Surge Line Ruptures as the Structural Design Basis for South Texas Units 1 and 2," WCAP-10489, February, 1984 (Non-Proprietary)

E) Safety Balance for Elimination of Pressurizer Surge Line Break Protective Devices for South Texas Projects Unit 1 and 2

cc:

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Revised 12/2/85

(*) Include attachments A&C, all others without attachments A&C

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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

AFFIDAVIT

J. H. Goldberg being first duly sworn, deposes and says: That he is Group Vice President, Nuclear, of HOUSTON LIGHTING & POWER COMPANY, Project Manager of the South Texas Project and an Applicant herein; that the foregoing request for amendments of Construction Permits Nos. CPPR-128 and CPPR-129, to permit exemption from the requirements of General Criteria 4 (Appendix A to 10CFR50) as they relate to the dynamic effects of postulated circumferiential and longitudinal breaks in the pressurizer surge lines at the South Texas Project has been prepared under his supervision and direction; that he knows the contents thereof; and that to the best of his knowledge and belief said request and the facts contained therein are true and correct.

DATED: This 12th day of March, 1986.

Signed: J. H. Goldberg

J. H. Goldberg
Group Vice President, Nuclear

STATE OF TEXAS

COUNTY OF HARRIS

Subscribed and sworn to before me, a Notary Public in and for Harris County, Texas this 12th day of March, 1986.

Beverly J. Fite

Notary Public in and for the
State of Texas

My commission expires:

BEVERLY J. FITE
Notary Public, State of Texas
My Commission Expires 10/17/88