

The Light company

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July 17, 1984
ST-HL-AE-1096
File No: G9.10/C11.1

Mr. Harold R. Denton
Director, Office of Nuclear
Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

South Texas Project
Units 1 & 2
Docket Nos. STN 50-498, STN 50.499
Alternative Pipe Break Design Considerations

- 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 G. W. Knighton (NRC) to J. H. Goldberg
dated April 20, 1984 (ST-AE-HL-90370)

Dear Mr. Denton:

On September 28, 1983 Houston Lighting and Power Company (HL&P) filed a request and provided justification for the application of alternative pipe break design criteria on the South Texas Project (STP) Units 1 and 2. We requested your approval to eliminate postulated longitudinal and circumferential breaks in the reactor coolant system (RCS) main loop piping and associated dynamic effects from design consideration (Reference 1). Technical justification for elimination of these breaks was provided based on the application of plant specific advanced fracture mechanics technology, and the availability of a reactor coolant pressure boundary leak detection system, which satisfies the requirements of NRC Regulatory Guide 1.45.

Subsequent to our September 28, 1983 request, the NRC issued Generic Letter 84-04. In the generic letter, the NRC concluded that, with respect to Unresolved Safety Issue (USI) A-2, the generic Westinghouse fracture mechanics analysis could provide an acceptable basis for the elimination of discrete RCS main loop pipe breaks and associated asymmetric blowdown loads. The Generic Letter further concluded that this generic work, in conjunction with plant specific analyses, could provide an adequate basis for the application of alternative pipe break criteria to Westinghouse PWRs, such as STP. Generic Letter 84-04 also indicated that in order to obtain NRC approval of a proposed application of alternative pipe break criteria it would be necessary to request an exemption to General Design Criterion (GDC) 4.

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Therefore, in accordance with 10 CFR 50.12 (a), HL&P hereby applies for an exemption from the provisions of 10 CFR Part 50, Appendix A, GDC 4 as it relates to the dynamic effects associated with RCS main loop pipe breaks. The requested exemption is based upon the application of advanced fracture mechanics technology as described in STP's plant specific report attached to Reference 1. Pursuant to 10 CFR 50.12 (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."

Specifically, we request the elimination of postulated circumferential and longitudinal breaks in the RCS main loop piping and the associated dynamic effects from consideration in the structural design basis of STP. The postulated pipe breaks in the RCS main loop are those identified in Westinghouse Topical Report WCAP 8172. This exemption request does not affect the containment pressure boundary, the emergency core cooling system, or environmental qualification design bases for STP.

In support of this request and in addition to reference 1, the enclosed safety-balance assessment is hereby submitted. As demonstrated in the enclosed safety-balance assessment, a nominal occupational radiation exposure savings of approximately 170 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 RCS main loop piping. As shown in the same analysis, this real reduction in occupational radiation exposure is to be contrasted with a 1.3 man-rem calculated increase in radiation exposure to the general public in the unlikely event of a guillotine break of the RCS main loop piping if the protective devices are not installed.

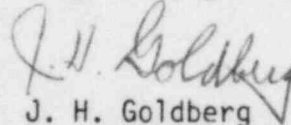
In addition, we are in receipt of a letter dated April 20, 1984, from G. W. Knighton (Reference 2) transmitting your request for additional information concerning the application of leak before break to the STP. Responses to the questions contained therein are included as Attachment 2.

We believe the information provided in Reference 1 in conjunction with Attachments 1 and 2 to this letter provide adequate plant specific justification for approval of the requested exemption to GDC 4.

In order to achieve the early benefits of substantially reduced occupational radiation exposure, and to avoid as much of the purchase and installation costs as possible, we request that this exemption request receive an expeditious review. A positive response by August 31 will maximize project construction benefit, based on Unit 1 completion dates and Unit 2 start dates for installation of RCS restraints.

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

Very truly yours,



J. H. Goldberg
Vice President
Nuclear Engineering & Construction

LJK/MRW/na

- Attachments: 1) Safety Balance for the Elimination of
Reactor Coolant System Main Loop Pipe
Break Protective Devices
- 2) Response to NRC Request for Additional
Information Concerning Leak-Before-
Break Analysis for South Texas Project,
Units 1 and 2 dated April 20, 1984 with
Enclosures A and B (WCAP's 10559 and 10560)

cc:

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