Nuclear Operating Company

South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

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U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

South Texas Project
Units 1 and 2
Docket Nos. STN 50-498, STN 50-499
Addendum to Proposed Amendment to Technical Specification 6.8.3.j for a
Change in 10CFR50, Appendix J, Integrated Leakage Rate Test Interval

Reference: 1) "Proposed Amendment to Technical Specification 6.8.3.j for a Change in 10CFR50, Appendix J, Integrated Leakage Rate Test Interval," J. J. Sheppard to NRC Document Control Desk, dated August 2, 2001 (NOC-AE-01001115)

2) "One-time Extensions of Containment Integrated Leak Rate Interval," Nuclear Energy Institute, dated November 13, 2001

The South Texas Project previously requested (Reference 1) Nuclear Regulatory Commission review and approval of an amendment to the Technical Specifications to allow a one-time extension of the interval between containment integrated leakage rate tests from 10 years to 15 years. In support of that application, the South Texas Project has completed an assessment of the impact of the proposed extension on the Probabilistic Risk Assessment using a template approach presented in NEI guidance (Reference 2).

The conclusion of the assessment is that the consequences of the proposed extension are not significant in terms of overall risk. Details of the analysis performed and the specific risk values calculated are provided in the attachment to this letter.

Based upon the results of this assessment as well as reference 1 above, the South Texas Project requests that the Nuclear Regulatory Commission approve the proposed amendment no later than May 15, 2002, because of its significance for the Unit 2 outage currently scheduled for October 2002. Implementation would occur within 30 days following approval.

If there are any questions, please contact either Mr. M. S. Lashley at (361) 972-7523 or me at (361) 972-8757.

I state under penalty of perjury that the foregoing is true and correct. Executed on 3/6/02.

T. Jordan for J. J. Sheppard

J. J. Sheppard
Vice President,
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PLW
Attachment: Evaluation of Changes to ILRT Frequency Using NEI Template

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SOUTH TEXAS PROJECT
UNITS 1 & 2
EVALUATION OF CHANGES TO ILRT FREQUENCY USING NEI TEMPLATE

Purpose and Scope

This probabilistic risk analysis assessment was performed to quantify the impact of a one-time five-year extension of the Containment Integrated Leakage Rate Test (ILRT) interval as described in the proposed change to Technical Specification 6.8.3.j. The current South Texas Project ILRT interval is ten years. A change to Technical Specification 6.8.3.j has been proposed for a one-time extension to fifteen years.

A template approach developed by the Nuclear Energy Institute (NEI), as documented in NEI correspondence dated November 13, 2001, describes a methodology that can be used to assess a one-time extension of the Containment ILRT interval. The methodology determines the changes in off-site consequences for various extensions of the ILRT testing interval. This assessment presents the results of using South Texas Project Level 2 PRA results with the NEI methodology for the proposed five-year test interval extension.

Overview of Integrated Leakage Rate Testing in the PRA

Integrated leakage rate testing is performed to confirm that the conditions assumed in the UFSAR Chapter 15 design-basis accident analysis concerning doses at the site boundary are maintained. If the Containment leakage is less than the specified limit, then, under Chapter 15 accident analysis, the dose to the public at the site boundary will not exceed the limits of 10CFR100.

The South Texas Project PRA (Reference 1) is a full Level 2 analysis of Core Damage Frequency (CDF) and Containment Response including Large Early Release Frequency (LERF) and Small Early Release Frequency.

- Integrated leakage rate testing has no impact on the protection of the reactor core. Therefore, there is no impact on the core damage frequency due to a change in the ILRT testing interval.
- Sequences contributing to LERF are dominated by sequences caused by the phenomenon "Induced Steam Generator Tube Rupture" (ISGTR). ISGTR occurs when the secondary sides of the steam generators dry out after a core damage event with the Reactor Coolant System (RCS) intact at high pressure. High temperature gases from the degraded core circulate through the RCS, heating up the steam generator tubes to the point of failure. The ISGTR sequences are primarily caused by core damage scenarios that involve loss of all station AC power (Station Blackout). The dominant cause of early containment failure in the STP PRA is not affected by integrated leakage rate testing.
- The leading mechanical cause of containment bypass leading to LERF is failure of the supplementary containment purge subsystem to isolate during an accident sequence. Supplementary purge isolation is also not affected by ILRT.

The purpose of the ILRT, as it relates to the PRA, is to confirm Containment integrity. The ILRT program affects the likelihood for detection of small Containment isolation failure and determination of Small Early Release Frequency in the PRA analysis.

Assumptions

There are no assumptions used for this evaluation other than those identified in the South Texas PRA.

Analysis

Containment failure in the South Texas Project PRA is binned to various radioactive release categories. These categories are defined in the South Texas Project Level 2 PRA and repeated in Table 1 of this report. Also included in Table 1 is the bin frequency calculated in the PRA.

Table 1

Name	Definition	Total
REL I	Large early failure of containment	5.759E-07
REL II	Small early failure of containment	2.137E-06
REL III	Late failure of containment	3.223E-06
REL IV	No containment failure	5.386E-06
Total (Frequency of occurrence per year)		1.132E-05

Table 2 presents accident class information from the NEI letter for use in the ILRT evaluation. Included is the mapping of equivalent STP release categories to the NEI Class Number. Table 3 presents the results for a five-year extension of the ILRT interval using the methodology described in the NEI letter. The base case in Table 3 is for a ten-year interval.

Results

Using the methodology described in the NEI letter to assess the impact of a five-year extension in ILRT test interval, the increase in population dose rate is 1.7E-04 person-rem/reactor-year, the increase in LERF is 1.5E-08, and the corresponding increase in conditional containment failure probability is 0.13%. These changes are not significant in terms of overall risk at STP.

Reference

South Texas Project Level II PRA, STP_1999, October 2001.

Table 2 Accident Class Information

Class No.	Description	STP Mapping	Frequency	Leakage	Population Dose, person-rem	Population Dose Rate, person-rem/RX-Year
Class 1	Containment intact; accident sequences do not lead to failure; not affected by changes to ILRT leak testing frequencies.	REL IV	5.05E-06 (PRA Class 1) minus (F3a + F3b)	La	8.97E+01 Value from EPRI	4.53E-04 Dose1 * Frequency1
Class 2	Failure of isolation system to operate from common cause or power failure; not affected by changes to ILRT leak testing frequencies.	REL II	2.14E-06 Value from Plant PRA	Value from Plant PRA	4.07E+06 Value from EPRI	8.70E+00 Dose2 * Frequency2
Class 3a	Small pre-existing leak in containment structure or liner, identifiable by ILRT; affected by ILRT testing frequency.	--	3.06E-07 0.027*CDF	10La	8.97E+02 (Class 1 dose for La) * 10La	2.74E-04 Dose3a * Frequency3a
Class 3b	Large pre-existing leak in containment structure or liner, identifiable by ILRT; affected by ILRT testing frequency.	--	3.06E-08 0.0027*CDF	35La	3.14E+03 (Class 1 dose for La) * 35La	9.60E-05 Dose3b * Frequency3b
Class 4	Type B tested components fail to seal, not affected by ILRT leak testing frequencies.	--	NA	NA	NA	NA
Class 5	Type C tested components fail to seal, not affected by ILRT leak testing frequencies.	--	NA	NA	NA	NA
Class 6	Failure to isolate due to valves failing to stroke closed, not affected by ILRT testing frequency, low probability.	--	NA	NA	NA	NA
Class 7	Failure induced by severe accident phenomena, not affected by ILRT testing frequency.	REL III	3.22E-06 Value from Plant PRA	Value from Plant PRA	2.16E+06 Value from EPRI	6.96E+00 Dose7 * Frequency7
Class 8	Containment Bypass, not affected by ILRT testing frequency. (PWR SGTR; BWR MSIV leakage ISLOCA)	REL I	5.76E-07 Value from Plant PRA	Value from Plant PRA	1.24E+07 Value from EPRI	7.14E+00 Dose8 * Frequency8
	Totals	**CDF**	1.13E-05	**Total Dose Rate**		2.28E+01

Table 3 Calculation Sheet

Base Case				5-Year Extension		
Class No.	**Frequency**	**Population Dose, person-rem**	**Population Dose Rate, person-rem/reactor-year**	**Frequency**	**Population Dose, person-rem**	**Population Dose Rate, person-rem/reactor-year**
Class 1	5.05E-06	8.97E+01	4.53E-04	4.88E-06	8.97E+01	4.38E-04
Class 2	2.14E-06	4.07E+06	8.70E+00	2.14E-06	4.07E+06	8.70E+00
Class 3a	3.06E-07	8.97E+02	2.74E-04	4.59E-07	8.97E+02	4.11E-04
Class 3b	3.06E-08	3.14E+03	9.60E-05	4.59E-08	3.14E+03	1.44E-04
Class 4	NA	NA	0	NA	NA	0
Class 5	NA	NA	0	NA	NA	0
Class 6	NA	NA	0	NA	NA	0
Class 7	3.22E-06	2.16E+06	6.96E+00	3.22E-06	2.16E+06	6.96E+00
Class 8	5.76E-07	1.24E+07	7.14E+00	5.76E-07	1.24E+07	7.14E+00
CDF	1.13E-05	**Total Dose Rate**	2.28E+01	1.13E-05	**Total Dose Rate**	2.28E+01
Dose Rate Change from Base (rem)			---			1.70E-04
ILRT Dose Rate (% of total dose)			0.002			0.002
% Change in ILRT Dose Rate from Base*			---			0.001
LERF [**Class 3b only**]			3.06E-08			4.59E-08
Change in LERF from base			---			1.53E-08
CCFP** (%)			52.70			52.83
Change in CCFP** from base (%)			---			0.13

* This value is the change in the percentage of the total dose attributable to classes 3a and 3b (those accident classes affected by change in ILRT surveillance interval) from the base dose.

**Conditional Containment Failure Probability