



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

February 11, 2003
NOC-AE-03001464
10CFR50.46

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

South Texas Project
Units 1 & 2
Docket Nos. STN 50-498, STN 50-499
10CFR50.46 Annual Report of ECCS Model Revisions

- References: 1) Letter from D. A. Leazar to NRC Document Control Desk, "10CFR50.46 Thirty-Day Report of Significant ECCS Model Changes," dated December 17, 2002 (NOC-AE-02001441)
- 2) Letter from D. A. Leazar to NRC Document Control Desk, "10CFR50.46 Annual Report of ECCS Model Revisions," dated January 9, 2002 (NOC-AE-02001233)
- 3) Letter from D. A. Leazar to NRC Document Control Desk, "10CFR50.46 Thirty-Day Report of Significant Changes to the Accepted ECCS Model," dated October 19, 1999 (NOC-AE-000683)
- 4) Letter from D. A. Leazar to NRC Document Control Desk, "10CFR50.46 Annual Report of ECCS Model Revisions and 30-Day Report of Significant ECCS Model Changes," dated December 13, 2000 (NOC-AE-00000980)
- 5) Letter from D. A. Leazar to NRC Document Control Desk, "10CFR50.46 Annual Report of ECCS Model Revisions," dated December 17, 1998 (NOC-AE-000390)

Pursuant to 10CFR50.46(a)(3)(ii), the South Texas Project (STP) submits this annual report concerning revisions to the accepted Emergency Core Cooling System (ECCS) evaluation model at STP Units 1 and 2.

As documented in Reference 1, STP implemented a revised Small Break Loss of Coolant Accident (SBLOCA) analysis of record during 2002. The current SBLOCA Peak Clad Temperature is 1578°F for Unit 1 and Unit 2. No other SBLOCA ECCS model revisions were made in 2002.

Pool

During 2002, Westinghouse performed a limited scope Large Break Loss of Coolant Accident (LBLOCA) reanalysis to address concerns related to boiling in the downcomer. Details of the large break LOCA limited scope reanalysis are provided below. The PCT results of both the small break and large break LOCA analyses continue to remain below the acceptance criterion of 2200°F.

Details of the LBLOCA Limited Scope Reanalysis

A methodology has been developed by Westinghouse to extend the BASH-EM transient beyond the point at which downcomer boiling is predicted to occur in the BASH computer code. The new methodology models the reduction in core inlet flooding rate due to boiling in the downcomer. The impact of the methodology change on STP Units 1 and 2 was assessed through a limited scope reanalysis. As part of the limited scope reanalysis of the LBLOCA, a corrected version of the LOCBART code was used to account for the impact of downcomer boiling on the peak cladding temperature and cladding oxidation transients. As a result, all existing PCT assessments for LOCBART errors, as listed below, were eliminated.

- Change in LBLOCA PCT based on the 1999 limiting case reanalysis following the correction of errors in the LOCBART code (Reference 3)
- LOCBART Dispersed Flow Regime Wall Emissivity Error (Reference 4)
- LOCBART Vapor Film Flow Regime Heat Transfer Error (Reference 4)
- LOCBART Cladding Emissivity Errors (Reference 2)

The previous LBLOCA PCT rack-ups included unit specific PCT benefits for the use of reduced Gamma Energy Deposition Model (GEDM) factors. In the limited scope reanalysis performed during 2002, the default GEDM factors were used. The PCT benefits associated with the use of reduced GEDM factors were therefore eliminated.

In addition, the limited scope reanalysis did not include an assessment for potential conditions in which the accumulator water temperatures would exceed 90°F. The previously reported 26°F PCT assessment for operation with safety injection accumulator water temperature temperatures between 90°F and 110°F (Reference 5) has been eliminated. An STP evaluation demonstrates that the original LBLOCA assumption of a maximum accumulator water temperature of 90°F is valid for STP Units 1 and 2. The evaluation demonstrates that the containment temperature would exceed the Technical Specification 3.6.1.5 limit of 110°F prior to any accumulator temperature reaching 90°F.


Significance Determination

10CFR50.46(a)(3)(i) requires the holder of an operating license to determine if any change to or error in an evaluation model or in the application of such a model is significant based on guidelines identified in 10CFR50.46. For the significance determination, the changes associated with the elimination of the GEDM factor benefit and the elimination of the PCT assessment for accumulator water temperatures in excess of 90 °F are not considered. Neither of these changes represents changes to the evaluation model, nor are the changes associated with an error in the evaluation model or the evaluation model inputs. The GEDM model benefit was a benefit

associated with a self-imposed reload limitation made to gain PCT margin. The accumulator water temperature assessment was included to address a potential condition which has since been found to be not credible. For the downcomer boiling issue, a single 46°F PCT assessment is added to the result of the analysis of record, resulting in a revised Unit 1 / Unit 2 LBLOCA PCT of 2136°F. The revised Peak Clad Temperature (PCT) represents a 39°F reduction for Unit 1 from the last year-end report and a 42°F reduction for Unit 2 from the last year-end report. Since the impact of this change is less than 50 °F, the change is not significant in accordance with 10CFR50.46.

Attachment 1 provides the current ECCS evaluation model PCT rack-ups. The acceptance criteria for all models continue to be satisfied.

If you should have any questions concerning this matter, please contact Mr. Safdar Hafeez at (361) 972-8906 or me at (361) 972-7795.


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Director
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jmw/kaw

Attachment: 2002 Year End PCT Rack-ups

cc:

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ATTACHMENT 1

2002 YEAR END PCT RACK-UPS

Unit 1 and Unit 2 Large Break LOCA:

Large Break LOCA Analysis of Record (Reference 5)	2090 °F
Limited Scope Reanalysis to Address Boiling in the Downcomer	+ 46 °F
Revised Year End Large Break LOCA PCT	2136 °F

Unit 1 and Unit 2 Small Break LOCA:

2002 Reanalysis (Reference 1)	1578 °F
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