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

South Texas Project
Units 1 & 2
Docket Nos. STN 50-498, STN 50-499
10CFR50.46 Thirty Day Report of Significant Changes
to The Accepted Emergency Core Cooling System Model

References:
1) Letter from D. A. Leazar to NRC Document Control Desk, "10CFR50.46 Annual Report of Emergency Core Cooling System Model Revisions," dated December 11, 1996 (ST-HL-AE-5514).

2) WCAP 13451 "Westinghouse Methodology For Implementation of 10 CFR 50.46 Reporting," October 1992.

3) WCAP 10054-P-A "Westinghouse Small Break ECCS Evaluation Model Using The NOTRUMP Code," August 1985.

4) Letter from T. H. Cloninger to NRC Document Control Desk, "Proposed Amendment of Technical Specifications 5.3.1 and 6.9.1.6 to Allow Use of ZIRLO Fuel Cladding and Limited Substitution of ZIRLO Filler Rods", dated April 22, 1997 (ST-HL-AE-5622)

Pursuant to 10CFR50.46(a)(3)(ii), South Texas Project is submitting this 30 day report concerning significant changes to the accepted Small Break Loss of Coolant Accident (SBLOCA) Emergency Core Cooling System (ECCS) evaluation model for South Texas Project Units 1 and 2. Following the identification of a potentially non-conservative Peak Cladding Temperature assessment associated with safety injection into the broken loop during a SBLOCA, Westinghouse reperformed the South Texas Project SBLOCA analysis. In the new SBLOCA analysis, unlike the previous analysis, credit is taken for the automatic function of the Class 1E powered Steam Generator Power Operated Relief Valves. Actions have been taken at the South Texas Project to ensure continued operability of the Steam Generator Power Operated Relief

Valves. A Technical Specification amendment addressing the requirements for Steam Generator Power Operated Relief Valves operability is being prepared for submittal to the Nuclear Regulatory Commission.

The revised SBLOCA Peak Cladding Temperature including all Peak Cladding Temperature assessments is 1860°F. Since a reanalysis has already been performed and the revised SBLOCA Peak Cladding Temperature is below the regulatory limit of 2200°F, a schedule for reanalysis is not being provided.

Background:

During the development of a four loop SBLOCA ECCS evaluation model for the South Texas Project, Westinghouse determined that the calculated Peak Cladding Temperature resulting from safety injection into the broken loop was non-conservative. Initial indications were that a revised assessment of the penalty associated with safety injection into the broken loop would result in the existing South Texas Project SBLOCA Peak Cladding Temperature above the regulatory limit of 2200°F. In accordance with WCAP-13451 (Reference 2), Westinghouse identified the issue as Potential Issue PI-97-007.

Westinghouse recently completed the investigation of PI-97-007. The investigation included a complete plant-specific reanalysis of the existing Analysis Of Record using the 1985 Westinghouse Small Break LOCA Evaluation Model with the NOTRUMP Code. The reanalysis included the modeling of asymmetric ECCS and Auxiliary Feedwater flows using the currently approved noding. The reanalysis credits the automatic actuation of the Class 1E powered Steam Generator Power Operated Relief Valves. The modeling for the Steam Generator Power Operated Relief Valves was performed consistent with the modeling of secondary atmospheric relief valves as described in the NOTRUMP EM Topical, WCAP-10054-P-A (Reference 3). South Texas Project is pursuing a Technical Specification change to require operability of the automatic actuation function of these valves in Modes 1 and 2. The plant-specific reanalysis reconsidered various limiting single failure scenarios and break locations which were unique to the South Texas Project units. The revised South Texas Project SBLOCA analysis results in a base Peak Cladding Temperature of 1671°F.

Peak Cladding Temperature margin allocations for three old issues and two new issues modify the base Peak Cladding Temperature value, yielding a total peak cladding temperature SBLOCA of 1860°F.

The old issues are:

1) Safety injection into the broken loop,
2) Cold Leg Temperature Measurement Uncertainty, and
3) The Burst and Blockage/Time in Life

The new issues are:

1) The use of ZIRLO clad fuel in South Texas Project cores, and
2) An error in the initial pressurizer pressure used in the revised SBLOCA analysis.

Of the old issues, only the Peak Cladding Temperature assessments for safety injection into the broken loop and the Burst and Blockage/Time in Life Penalty change. A South Texas Project specific calculation to assess the effects of safety injection into the broken loop was performed by Westinghouse using a more detailed four-loop explicit noding scheme. The final results showed that safety injection into the broken loop resulted in a 136 °F Peak Cladding Temperature penalty. Due to the overall reduction in SBLOCA Peak Cladding Temperature, which includes all peak cladding temperature assessments, the Burst and Blockage/Time in Life Penalty drops to 30 °F.

Two new issues have been identified since the last 10CFR50.46 annual report of ECCS model changes (Reference 1). These issues are the future use of ZIRLO clad fuel in South Texas Project cores and an error in the initial pressurizer pressure used in the revised SBLOCA analysis.

The use of ZIRLO clad fuel in future South Texas Project cores results in an estimated SBLOCA Peak Cladding Temperature increase of 1°F. The South Texas Project cores currently do not contain ZIRLO clad fuel. South Texas Project is currently seeking Nuclear Regulatory Commission approval of Technical Specification changes related to the use of ZIRLO clad fuel in future cores (Reference 4). The penalty associated with ZIRLO is, however, being incorporated at this time.

Following the completion of the SBLOCA reanalysis, Westinghouse discovered an error in the new analysis. An old issue pertaining to the uncertainty of the VERITRACK pressure transmitters was not properly accounted for in the SBLOCA analysis. In particular, an initial pressurizer pressure uncertainty of 30 psi was used instead of the correct initial pressurizer uncertainty of 46 psi. Westinghouse performed an assessment of the effect of the error on the SBLOCA analysis and determined it to represent a +2 °F Peak Cladding Temperature penalty. In addition, Westinghouse performed reviews of the current South Texas Project Large Break LOCA Analysis of Record, the Large Break LOCA Forcing Function Analysis of Record, the

Post LOCA long-term cooling analysis and the Hot Leg Switchover analysis in order to determine if an identical error was made. It was determined that the error was not made in any of the additional analyses.

The net SBLOCA Peak Cladding Temperature (PCT) changes since the last annual 10CFR50.46 report (ST-HL-AE-5514) are summarized below.

Previous SBLOCA Analysis PCT	2158 °F
New SBLOCA Analysis PCT	1860 °F
Net SBLOCA PCT Change	- 198 °F

The new Peak Cladding Temperature remains below the 10CFR50.46 limit of 2200 °F.

If you should have any questions concerning this matter, please contact Mr. Charles R. Albury at (512) 972-8901 or me at (512) 972-7795.

D. A. Leazar
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KJT/jmw

Attachment: SMALL BREAK LOCA ECCS EVALUATION MODEL PEAK CLADDING TEMPERATURE

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ATTACHMENT
SMALL BREAK LOCA ECCS EVALUATION MODEL
PEAK CLADDING TEMPERATURE

SMALL BREAK LOCA ECCS EVALUATION MODEL
PEAK CLADDING TEMPERATURE

The SBLOCA ECCS evaluation model Peak Cladding Temperature (PCT) and PCT assessments applied to issues not addressed in the ECCS model are summarized below.

Revised Licensing Basis PCT (SBLOCA Reanalysis PCT)	1671 °F
Impact of ZIRLO Cladding	+ 1 °F
Safety Injection into the Broken Loop	+136 °F
Cold Leg Temperature Measurement Uncertainty	+ 20 °F
Burst and Blockage/Time in Life Penalty	+ 30 °F
Error in VERITRACK Transmitter uncertainty	+2 °F
Future Licensing Basis PCT + Margin Allocations	1860 °F
Previous PCT result	2158 °F
Net change in SBLOCA PCT	-198 °F