Nuclear Operating Company

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

February 7, 2000
NOC-AE-00000389
File No.: G02.06
10CFR50.36
STI: 31034714

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

South Texas Project
Unit 2
Docket No. STN 50-499
Unit 2 Cycle 8 Startup Testing Summary Report

South Texas Project Technical Specification 6.9.1.1 requires a summary report of appropriate plant startup and power escalation testing results following the installation of fuel that has a different design. During the recent Cycle 7 to Cycle 8 refueling outage, South Texas Project Unit 2 installed 76 feed fuel assemblies, each with reduced-enrichment annular axial blanket pellets in the top and bottom seven inches of the fuel stack.

The attachment to this letter is a summary report of the test results taken during startup and power ascension. No corrective actions were required to obtain satisfactory operation.

There are no new licensing commitments contained in this letter. If there are any questions, please contact Mr. R. F. Dunn at (361) 972-7743 or me at (361) 972-7795.

D. G. Leazar

D. A. Leazar
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jrm/
Attachment

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cc:

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ATTACHMENT
SOUTH TEXAS PROJECT
UNIT 2 CYCLE 8
STARTUP TESTING SUMMARY REPORT

I. Hot Rod Drop Time (seconds):

Acceptance Criteria (AC): ≤ 2.8 seconds

Measured (M)	Pass/Fail AC
1.7*	P

* Maximum value for 57 control rods

II. Rod Worth Measurements (Dynamic Rod Worth Measurement Method Used):

Design Review Criteria (DRC): Each bank within 15% or 100 pcm of the predicted value (whichever is greater)
Total rod worth within 8% of predicted

Acceptance Criteria (AC): Total rod worth ≥ 90% of Predicted

RCCA Bank	Measured Worth (pcm)	Predicted Worth (pcm)	Delta (M-P) (pcm)	Percent Difference (%)	Pass/Fail DRC	Pass/Fail AC
Shutdown A	335.6	324.1	11.5	3.5	P	-
Shutdown B	797.4	764.6	32.8	4.3	P	-
Shutdown C	411.4	403.0	8.4	2.1	P	-
Shutdown D	425.7	403.3	22.4	5.6	P	-
Shutdown E	460.2	460.7	-0.5	-0.1	P	-
Control A	797.8	815.1	-17.3	-2.1	P	-
Control B	738.4	694.9	43.5	6.3	P	-
Control C	917.6	899.1	18.5	2.1	P	-
Control D	475.3	463.3	12.0	2.6	P	-
Total	5359.4	5228.1	131.3	2.5	P	P

ARO: All Rods Out
% Difference = 100 × (M - P) / P

III. Hot Zero Power (HZP) Critical Boron Concentration (ppm):

Design Review Criteria (DRC): ±50 ppm

Acceptance Criteria (AC): ±1000 pcm (136.8 ppm)

Measured (M)	Predicted (P)	(M-P)	Pass/Fail DRC	Pass/Fail AC
1919	1930	-11	P	P

IV. HZP, ARO Isothermal Temperature Coefficient (ITC) (pcm/°F):

Design Review Criteria (DRC): ±2 pcm/°F

Acceptance Criteria (AC): none

Measured (M)	Predicted (P)	(M-P)	Pass/Fail DRC	Pass/Fail AC
0.2	-1.2	1.4	P	-

V. Inferred HZP, ARO Moderator Temperature Coefficient (pcm/°F)*:

Design Review Criteria (DRC): none

Acceptance Criteria (AC): < +5 pcm/°F, or rod withdrawal limits established

Measured	Predicted	Adjusted	Pass/Fail DRC	Pass/Fail AC
2.0	0.6	2.7**	-	P

* Inferred MTC is obtained by subtracting the design Doppler Temperature Coefficient (-1.8 pcm/°F) from the measured Isothermal Temperature Coefficient.

** Adjusted MTC includes measurement uncertainty and Integral Fuel Burnable Absorber burnout correction.

VI. POWER DISTRIBUTION MEASUREMENTS:

Design Review Criteria (DRC): Incore Quadrant Power Tilt ≤ 1.02
Assembly Power Error (M-P) ≤ ±0.1

Acceptance Criteria (AC): FDHN < Technical Specification (TS) 3.2.3 Limit
F_{xy} ≤ TS 3.2.2 Limit

Reactor Power	Incore Quadrant Power Tilts		Limiting FDHN	FDHN Limit	Limiting F_{xy}	F_{xy} Limit	Largest Assembly Power Error
Low Power (29.0%)	0.983	0.999	1.5591	1.8559	1.7124	2.0842	-0.059
	1.003	1.016					
Intermediate Power (77.3%)	0.991	1.002	1.4742	1.6342	1.6858	1.9183	0.051
	0.997	1.010					
Full Power (100.0%)	0.990	1.002	1.4595	1.5300	1.6282	1.8250	-0.055
	0.999	1.009					

FDHN: Nuclear Enthalpy Rise Hot Channel Factor
Incore Tilt: Measured Incore Tilt in Excess of Designed Core Asymmetry

VII. Reactor Coolant System Flow Measurement (gpm):

Design Review Criteria (DRC): none

Acceptance Criteria (AC): ≥ 392,300 gpm

Reactor Power	Measured Flow	Pass/Fail DRC	Pass/Fail AC
100.0%	396,620	-	P

VIII. Full Power Critical Boron (ppm):

Design Review Criteria (DRC): ±50 ppm

Acceptance Criteria (AC): ±1000 pcm (140.4 ppm)

Burnup (EFPD)	Measured (M)	Predicted (P)	(M-P)	Pass/Fail DRC	Pass/Fail AC
17.7	1335.0	1309.3	25.7	P	P