

The Light company

Houston Lighting & Power South Texas Project Electric Generating Station P. O. Box 289 Wadsworth, Texas 77483

June 11, 1997
ST-HL-AE-5654
File No.: G03.03
10CFR50

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

South Texas Project
Unit 1 and Unit 2
Docket No. STN 50-498
Results of Unit 2 Control Rod Drop Testing Performed on May 1, 1997
in Response to NRC Bulletin 96-01

- References: 1) NRC Bulletin 96-01 dated March 8, 1996, "Control Rod Insertion Problems"
- 2) Letter from T. H. Cloninger to the U. S. Regulatory Commission dated April 4, 1996, "Response to Nuclear Regulatory Commission Bulletin 96-01," (ST-HL-AE-5333)

Attached are the South Texas Project's results for the hot, full flow rod drop testing in Unit 2 Cycle 6, which was performed on May 1, 1997 (Attachment 3). A core map is provided in Attachment 1 to assist in understanding the test data provided. In addition, Attachment 2 is provided to show the current Unit 2 specific core design data.

A chronological history of correspondence regarding NRC Bulletin 96-01 and subsequent testing between the South Texas Project and the Nuclear Regulatory Commission is provided in Attachment 4.

If you have any questions regarding this subject, please contact Mr. R. F. Dunn at (512) 972-7743 or me at (512) 972-7795.



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- Attachments:
1. Unit 2 Core Map of Control Rod Locations
 2. Unit 2 Core Design Data
 3. Unit 2 Cycle 6, May 1, 1997, Hot Rod Drop Test Results
 4. NRC Bulletin 96-01 Correspondence Table

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Core Map of Control Rod Locations

	R	P	N	M	L	K	J	H	G	F	E	D	C	B	A
1															
2			SA		B		C		B		SA				
3				SD		SB		SB		SC					
4	SA		D				SE				D		SA		
5			SC		A					A		SD			
6		B				C		A		C				B	
7			SB										SB		
8		C		SE		A		D		A		SE		C	
9			SB										SB		
10		B				C		A		C				B	
11			SD		A					A		SC			
12		SA		D				SE				D		SA	
13				SC		SB		SB		SD					
14			SA		B		C		B		SA				
15															

SA - Shutdown Bank A	A - Control Bank A
SB - Shutdown Bank B	B - Control Bank B
SC - Shutdown Bank C	C - Control Bank C
SD - Shutdown Bank D	D - Control Bank D
SE - Shutdown Bank E	

Unit 2 Core Design Data

Unit 2 Cycle 6 Fuel Burnup Data								
Core Loc	Fuel ID	B/U BOC	B/U EOC*		Core Loc	Fuel ID	B/U BOC	B/U EOC*
Cycle B/U →		0.0	20.2		Cycle B/U →		0.0	20.2
		(GWD/MTU)	(GWD/MTU)				(GWD/MTU)	(GWD/MTU)
SA					A			
D-2	N17	14.1	23.7		E-5	V24	0.0	25.4
B-12	N51	14.1	23.7		E-11	V13	0.0	25.4
M-14	N29	14.1	23.7		L-11	V14	0.0	25.4
P-4	N32	14.1	23.7		L-5	V18	0.0	25.4
B-4	N19	14.1	23.7		H-6	N40	13.8	31.9
D-14	N26	14.1	23.7		F-8	N06	13.8	31.9
P-12	N11	14.1	23.7		H-10	N02	13.8	31.9
M-2	N45	14.1	23.7		K-8	N33	13.8	31.9
SB					B			
G-3	V16	0.0	26.3		F-2	V68	0.0	23.6
C-9	V17	0.0	26.3		B-10	V73	0.0	23.6
J-13	V27	0.0	26.3		K-14	V70	0.0	23.6
N-7	V28	0.0	26.3		P-6	V69	0.0	23.6
C-7	V22	0.0	26.3		B-6	V74	0.0	23.6
G-13	V26	0.0	26.3		F-14	V71	0.0	23.6
N-9	V19	0.0	26.3		P-10	V72	0.0	23.6
J-3	V11	0.0	26.3		K-2	V66	0.0	23.6
SC					C			
E-3	V82	0.0	25.6		H-2	V54	0.0	24.5
C-11	V83	0.0	25.6		B-8	V64	0.0	24.5
L-13	V77	0.0	25.6		H-14	V59	0.0	24.5
N-5	V84	0.0	25.6		P-8	V53	0.0	24.5
SD					D			
C-5	V78	0.0	25.6		F-6	N21	11.5	29.9
E-13	V89	0.0	25.6		F-10	N24	11.5	29.9
N-11	V85	0.0	25.6		K-10	N30	11.5	29.9
L-3	V79	0.0	25.6		K-6	N25	11.5	29.9
SE					D			
H-4	V32	0.0	25.9		D-4	N08	13.6	30.8
D-8	V40	0.0	25.9		M-12	N01	13.6	30.8
H-12	V34	0.0	25.9		D-12	N38	13.6	30.8
M-8	V29	0.0	25.9		M-4	N58	13.6	30.8
					H-8	N37	11.7	30.6

* EOC burnup assumes no coastdown operations

Unit 2 Cycle 6 Rodded Fuel Assembly Data (14 foot active fuel and 10 grids)	
21 x "N" Region Standard Assemblies	36 x "V" Region V5H Assemblies
Inconel grids	Inconel top/bottom grids, zirconium mid grids
Zirconium guide tubes	Zirconium guide tubes
Stainless steel grid sleeves	Zirconium grid sleeves
Guide tube ID (above dashpot) = 0.450 inches	Guide tube ID (above dashpot) = 0.442 inches
Guide tube ID (dashpot) = 0.397 inches	Guide tube ID (dashpot) = 0.397 inches

Unit 2 Cycle 6, May 1, 1997, Hot Rod Drop Test Results

Rod drop time testing was performed on all 57 control rods. The plant was in Mode 3 with the Reactor Coolant System temperature greater than 561°F and four reactor coolant pumps running. All rods fully inserted to rod bottom. Rod drop times were comparable to beginning of cycle testing performed at this condition. Test results satisfied all Technical Specification and safety evaluation limits during the test.

Core Loc	Fuel ID	B/U 5/1/97 (GWD/MTU)	DE Time (sec)	Recoils		Core Loc	Fuel ID	B/U 5/1/97 (GWD/MTU)	DE Time (sec)	Recoils
Cycle B/U →		2.12				Cycle B/U →		2.12		
	SA						A			
D-2	N17	15.0	1.595	4		E-5	V24	2.7	1.545	3
B-12	N51	15.0	1.586	5		E-11	V13	2.7	1.540	3
M-14	N29	15.0	1.634	5		L-11	V14	2.7	1.550	4
P-4	N32	15.0	1.597	5		L-5	V18	2.7	1.560	3
B-4	N19	15.0	1.611	5		H-6	N40	15.7	1.617	4
D-14	N26	15.0	1.624	4		F-8	N06	15.7	1.578	3
P-12	N11	15.0	1.616	5		H-10	N02	15.7	1.552	4
M-2	N45	15.0	1.592	5		K-8	N33	15.7	1.556	5
	SB						B			
G-3	V16	2.8	1.555	4		F-2	V68	2.4	1.579	3
C-9	V17	2.8	1.562	4		B-10	V73	2.4	1.564	5
J-13	V27	2.8	1.571	4		K-14	V70	2.4	1.559	4
N-7	V28	2.8	1.561	5		P-6	V69	2.4	1.585	5
C-7	V22	2.8	1.554	4		B-6	V74	2.4	1.553	3
G-13	V26	2.8	1.567	4		F-14	V71	2.4	1.577	5
N-9	V19	2.8	1.555	5		P-10	V72	2.4	1.560	5
J-3	V11	2.8	1.550	4		K-2	V66	2.4	1.566	5
	SC						C			
E-3	V82	2.6	1.571	4		H-2	V54	2.6	1.570	5
C-11	V83	2.6	1.562	3		B-8	V64	2.6	1.568	5
L-13	V77	2.6	1.570	4		H-14	V59	2.6	1.553	4
N-5	V84	2.6	1.559	4		P-8	V53	2.6	1.552	5
	SD					F-6	N21	13.5	1.551	4
C-5	V78	2.6	1.566	4		F-10	N24	13.5	1.543	4
E-13	V89	2.6	1.577	3		K-10	N30	13.5	1.539	5
N-11	V85	2.6	1.542	4		K-6	N25	13.5	1.542	5
L-3	V79	2.6	1.573	4			D			
	SE					D-4	N08	15.4	1.576	4
H-4	V32	2.7	1.536	4		M-12	N01	15.4	1.563	5
D-8	V40	2.7	1.572	4		D-12	N38	15.4	1.566	4
H-12	V34	2.7	1.540	4		M-4	N58	15.4	1.562	5
M-8	V29	2.7	1.564	4		H-8	N37	13.7	1.613	5

NRC Bulletin 96-01 Correspondence Table

DATE	TO	FROM	SUBJECT	LETTER #
March 8, 1996	All Licensees	NRC	NRC Bulletin 96-01 "Control Rod Insertion Problems"	
April 4, 1996	NRC	STP (T. H. Cloninger)	Response to NRC Bulletin 96-01 - Control Rod Insertion Problems	ST-HL-AE-5333
June 5, 1996	STP	NRC	Public Meeting to Discuss Incomplete Control Rod Insertion	
July 3, 1996	NRC	STP (D. A. Leazar)	Results of Control Rod Testing in Response to NRC Bulletin 96-01	ST-HL-AE-5408
November 27, 1996	NRC	STP (D. A. Leazar)	Results of Fuel Assembly Testing In Response To NRC Bulletin 96-01	ST-HL-AE-5516
April 23, 1997	NRC	STP (M. A. McBurnett)	Results of Control Rod Testing In Response To NRC Bulletin 96-01	ST-HL-AE-5605
June 11, 1997	NRC	STP (D. A. Leazar)	Results of Unit 2 Control Rod Drop Testing Performed on May 1, 1997 in Response to NRC Bulletin 96-01	ST-HL-AE-5654 (This Letter)