

## LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

South Texas, Unit 1

DOCKET NUMBER (2)

05000 498

PAGE (3)

1 OF 06

TITLE (4)

Technical Specification Violation due to Incorrect  
Settings of Several Molded Case Circuit Breakers

EVENT DATE (5)			LER NUMBER (6)			REPORT NUMBER (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
0	4	0	9	3	0	0	5	0	South Texas, Unit 2	05000 499
0	4	0	9	3	0	0	5	0	South Texas, Unit 2	05000
THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more) (11)										
OPERATING MODE (9) 5			20.402(b)			20.405(c)			50.73(a)(2)(iv)	
POWER LEVEL (10) 0			20.405(a)(1)(i)			50.36(c)(1)			50.73(a)(2)(iv)	
			20.405(a)(1)(ii)			50.36(c)(2)			50.73(a)(2)(vii)	
			20.405(a)(1)(iii)			50.73(a)(2)(i)			50.73(a)(2)(viii)(A)	
			20.405(a)(1)(iv)			50.73(a)(2)(ii)			50.73(a)(2)(viii)(B)	
			20.405(a)(1)(v)			50.73(a)(2)(iii)			50.73(a)(2)(ix)	

## LICENSEE CONTACT FOR THIS LER (12)

NAME

Jairo M. Pinzon - Senior Engineer

TELEPHONE NUMBER (Include Area Code)

(5 1 2) 9 7 2 - 8 0 2 7

## COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC

## SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
X			07	14	93

## ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On April 5, 1993, at 1100 hours, Unit 1 was in Mode 5 at 0% power and Unit 2 was defueled while in a refueling outage. Plant personnel determined that a reportable condition existed because the setpoints of the Class 1E 480 VAC magnetic adjustable molded case circuit breakers were incorrect which could cause potentially unexpected breaker trips. Unit 1 had five breakers which were declared inoperable until breaker testing could confirm otherwise. Unit 2 had seven breakers declared inoperable. These breakers feed safety related motor operated valves (MOVs) in various systems. The cause of this event was that the instructions for setting circuit breaker magnetic adjustable elements did not provide sufficient clarity to ensure consistent application. Corrective actions include revising the test procedure to clarify the methodology used to establish the breaker setpoints and conducting training on the procedure and test methodology.

LER 93124001.U1

REQUIRED NUMBER OF DIGITS/CHARACTERS  
FOR EACH BLOCK

BLOCK NUMBER	NUMBER OF DIGITS/CHARACTERS	TITLE
1	UP TO 46	FACILITY NAME
2	8 TOTAL 3 IN ADDITION TO 05000	DOCKET NUMBER
3	VARIES	PAGE NUMBER
4	UP TO 76	TITLE
5	6 TOTAL 2 PER BLOCK	EVENT DATE
6	7 TOTAL 2 FOR YEAR 3 FOR SEQUENTIAL NUMBER 2 FOR REVISION NUMBER	LER NUMBER
7	6 TOTAL 2 PER BLOCK	REPORT DATE
8	UP TO 18 - FACILITY NAME 8 TOTAL - DOCKET NUMBER 3 IN ADDITION TO 05000	OTHER FACILITIES INVOLVED
9	1	OPERATING MODE
10	3	POWER LEVEL
11	1 CHECK BOX THAT APPLIES	REQUIREMENTS OF 10 CFR
12	UP TO 50 FOR NAME 14 FOR TELEPHONE	LICENSEE CONTACT
13	CAUSE VARIES 2 FOR SYSTEM 4 FOR COMPONENT 4 FOR MANUFACTURER NPRDS VARIES	EACH COMPONENT FAILURE
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LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBR 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)	PAGE (3)
South Texas, Unit 1	05000 498	YEAR SEQUENTIAL NUMBER REVISION NUMBER	02 OF 06
		9 3 - 0 1 2 - 0 0	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

DESCRIPTION OF EVENT:

On April 5, 1993, at 1100 hours, Unit 1 was in Mode 5 at 0% power and Unit 2 was defueled while in a refueling outage. Upon completion of reportability review, plant personnel determined that a Technical Specification violation had occurred due to the fact that setpoints of the Class 1E 480 VAC magnetic adjustable molded case circuit breakers were incorrect which could cause potentially unexpected breaker trips. This rendered several Unit 1 and Unit 2 breakers, which feed safety related motor operated valves (MOVs) in various systems, inoperable.

On March 23, 1993, at 1655 hours, station personnel identified the possibility of a potential misapplication of the instructions contained in the Electrical Setpoint Index. These instructions establish the setpoint for the calibration of the Class 1E 480 VAC magnetic adjustable molded case circuit breakers. Operability and reportability reviews were initiated per procedure. A walkdown of all Class 1E 480 VAC motor control center breakers was performed to determine the existing trip setpoints. This walkdown was completed on March 30, 1993, for Unit 1 and March 31, 1993, for Unit 2.

At 1100 hours, on April 5, 1993, plant personnel determined, based on the reportability review, that incorrect breaker setpoints did exist and could cause potentially unexpected breaker trips.

Unit 1 contained seven Class 1E breakers with setpoints below the required setting, four Class 1E penetration breakers above the required setting and three Class 1E non-penetration breakers above the required setting. Of these 14 breakers, five of the breakers below the required settings were declared inoperable.

Unit 2 contained seven Class 1E breakers with setpoints below the required setting, one Class 1E penetration breaker above the required setting, and one Class 1E non-penetration breaker above the required setting. Of these nine breakers, only the seven below the required setting were declared inoperable.

LER\93124001.U1

## LICENSEE EVENT REPORT (LER)

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ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7734), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

South Texas, Unit 1

DOCKET NUMBER (2)

05000 498

PAGE (3)

1 OF 06

TITLE (4)

Technical Specification Violation due to Incorrect  
Settings of Several Molded Case Circuit Breakers

EVENT DATE (5)			LER NUMBER (6)			REPORT NUMBER (7)			OTHER FACILITIES INVOLVED (8)										
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER									
0	4	0	9	3	9	3	0	1	2	0	0	0	5	0	5	9	3	South Texas, Unit 2	05000 499
									FACILITY NAME		DOCKET NUMBER								
									South Texas, Unit 2		05000								
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											05000								
OPERATING MODE (9)		5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 4: (Check one or more) (11)																
POWER LEVEL (10)		0	20.402(b)			20.405(c)			50.73(a)(2)(iv)			73.71(b)							
			20.405(a)(1)(i)			50.36(c)(1)			50.73(a)(2)(v)			73.71(c)							
			20.405(a)(1)(ii)			50.36(c)(2)			50.73(a)(2)(vii)			OTHER							
			20.405(a)(1)(iii)			X 50.73(a)(2)(i)			50.73(a)(2)(vii)(A)			(Specify in Abstract below and in Text, NRC Form 365A)							
			20.405(a)(1)(iv)			50.73(a)(2)(ii)			50.73(a)(2)(vii)(B)										
			20.405(a)(1)(v)			50.73(a)(2)(iii)			50.73(a)(2)(k)										

## LICENSEE CONTACT FOR THIS LER (12)

NAME

Jairo M. Pinzon - Senior Engineer

TELEPHONE NUMBER (Include Area Code)

(5 1 2) 9 7 2 - 8 0 2 7

## COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

GRUPE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRCDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRCDS

## SUPPLEMENTAL REPORT EXPECTED (14)

YES	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
X			07	14	93

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On April 5, 1993, at 1100 hours, Unit 1 was in Mode 5 at 0% power and Unit 2 was defueled while in a refueling outage. Plant personnel determined that a reportable condition existed because the setpoints of the Class 1E 480 VAC magnetic adjustable molded case circuit breakers were incorrect which could cause potentially unexpected breaker trips. Unit 1 had five breakers which were declared inoperable until breaker testing could confirm otherwise. Unit 2 had seven breakers declared inoperable. These breakers feed safety related motor operated valves (MOV's) in various systems. The cause of this event was that the instructions for setting circuit breaker magnetic adjustable elements did not provide sufficient clarity to ensure consistent application. Corrective actions include revising the test procedure to clarify the methodology used to establish the breaker setpoints and conducting training on the procedure and test methodology.

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FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
South Texas, Unit 1	05000 498	1 OF 06

Technical Specification Violation due to Incorrect Settings of Several Molded Case Circuit Breakers

EVENT DATE (5)			LER NUMBER (6)			REPORT NUMBER (7)			OTHER FACILITIES INVOLVED (8)	
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									South Texas, Unit 2	05000 499
									FACILITY NAME	DOCKET NUMBER
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LICENSEE CONTACT FOR THIS LER (12)	
NAME	TELEPHONE NUMBER (Include Area Code)
Jairo M. Pinzon - Senior Engineer	(5 1 2) 9 7 2 - 8 0 2 7

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
X	YES If yes, complete EXPECTED SUBMISSION DATE)	NO			07	14	93

On April 5, 1993, at 1100 hours, Unit 1 was in Mode 5 at 0% power and Unit 2 was defueled while in a refueling outage. Plant personnel determined that a reportable condition existed because the setpoints of the Class 1E 480 VAC magnetic adjustable molded case circuit breakers were incorrect which could cause potentially unexpected breaker trips. Unit 1 had five breakers which were declared inoperable until breaker testing could confirm otherwise. Unit 2 had seven breakers declared inoperable. These breakers feed safety related motor operated valves (MOVs) in various systems. The cause of this event was that the instructions for setting circuit breaker magnetic adjustable elements did not provide sufficient clarity to ensure consistent application. Corrective actions include revising the test procedure to clarify the methodology used to establish the breaker setpoints and conducting training on the procedure and test methodology.

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**LICENSEE EVENT REPORT (LER)**  
**TEXT CONTINUATION**

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (INBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)	PAGE (3)
South Texas, Unit 1	05000 498	YEAR SEQUENTIAL NUMBER REVISION NUMBER	02 OF 06
		9 3 - 0 1 2 - 0 0	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

**DESCRIPTION OF EVENT:**

On April 5, 1993, at 1100 hours, Unit 1 was in Mode 5 at 0% power and Unit 2 was defueled while in a refueling outage. Upon completion of reportability review, plant personnel determined that a Technical Specification violation had occurred due to the fact that setpoints of the Class 1E 480 VAC magnetic adjustable molded case circuit breakers were incorrect which could cause potentially unexpected breaker trips. This rendered several Unit 1 and Unit 2 breakers, which feed safety related motor operated valves (MOVs) in various systems, inoperable.

On March 23, 1993, at 1655 hours, station personnel identified the possibility of a potential misapplication of the instructions contained in the Electrical Setpoint Index. These instructions establish the setpoint for the calibration of the Class 1E 480 VAC magnetic adjustable molded case circuit breakers. Operability and reportability reviews were initiated per procedure. A walkdown of all Class 1E 480 VAC motor control center breakers was performed to determine the existing trip setpoints. This walkdown was completed on March 30, 1993, for Unit 1 and March 31, 1993, for Unit 2.

At 1100 hours, on April 5, 1993, plant personnel determined, based on the reportability review, that incorrect breaker setpoints did exist and could cause potentially unexpected breaker trips.

Unit 1 contained seven Class 1E breakers with setpoints below the required setting, four Class 1E penetration breakers above the required setting and three Class 1E non-penetration breakers above the required setting. Of these 14 breakers, five of the breakers below the required settings were declared inoperable.

Unit 2 contained seven Class 1E breakers with setpoints below the required setting, one Class 1E penetration breaker above the required setting, and one Class 1E non-penetration breaker above the required setting. Of these nine breakers, only the seven below the required setting were declared inoperable.

LER\93124001.U1

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 80.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
South Texas, Unit 1	05000 498	9 3	- 0 1 2 -	0 0	03 OF 06

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

DESCRIPTION OF EVENT (Con't)

Therefore, a total of 12 breakers of a population of 552 were declared inoperable, until breaker testing could confirm otherwise. All the inoperable breakers are associated with MOVs in various safety related systems.

Unit 1 MOVs affected are:

Supplemental Containment Purge Supply Isolation (MOV0003)  
Auxiliary Feedwater to Steam Generator 1B Isolation (MOV0065)  
Containment Normal Purge Isolation (MOV0083)  
Fire Protection Containment Isolation (MOV0756)  
Accumulator 1C Discharge Isolation (MOV0039C)

The Unit 2 MOVs affected are:

Residual Heat Removal Inlet Isolation (MOV0060A)  
RCPC Chilled Water (MOV0070, MOV0137)  
Accumulator 2B Discharge Isolation (MOV0039B)  
Component Cooling Water RCDT Heat Exchanger Isolation (MOV0392)  
Fire Protection Containment Isolation (MOV0756)  
Component Cooling Water Containment Isolation (MOV0404)

The USNRC was notified on April 6, 1993, at approximately 0955 hours.

CAUSE OF EVENT:

The cause of this event was that the instructions for setting circuit breaker magnetic adjustable elements did not provide sufficient clarity to ensure consistent application. At some point during the maintenance history of these circuit breakers the trip setpoints were incorrectly set based on this misapplication. A contributing cause was that training materials are not clear relative to this matter.

LER\93124001.U1

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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FACILITY NAME (1)		DOCKET NUMBER (2)		LER NUMBER (6)			PAGE (3)
South Texas, Unit 1		05000 498		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	04 OF 06
				9 3	- 0 1 2 -	0 0	

TEXT (If more space is required, use additional copies of NRC Form 365A, (17))

ANALYSIS OF EVENT:

The utilization of different methodologies for the determination of magnetic adjustable molded case circuit breaker instantaneous overcurrent setpoints resulted in several suspect safety related breaker setpoints. As a conservative measure the targeted breakers were considered to be inoperable. Determination of the time of the setpoint changes revealed that certain breakers, if in fact inoperable, would have resulted in failure to comply with the associated Technical Specification action statement and reportable pursuant to 10CFR50.73(a)(2)(i)(B).

In the cases where the breakers supply MOVs, the low as-found trip settings could potentially result in a breaker trip during normal valve operations. Whether the subject MOV breakers will trip under these conditions is unknown, until the actual as-found trip current is established through breaker tests. Therefore, the MOVs served by the breakers were considered to be inoperable until testing confirms otherwise. In the cases where the breakers supply fan motors or traveling screen motors, the as-found trip settings are high enough to preclude inadvertent breaker trips on motor starting current. This was verified by an actual start of these loads from the Unit 1 Control Room on March 31, 1993. The as-found trip settings are also high enough that the current required to trip the breakers would only be present during actual fault conditions. Therefore, the breakers which serve fan motors and traveling screen motors were considered operable.

In the cases where the breakers were set high, a review of appropriate design and vendor documents indicated that the higher as-found trip settings for the penetration breakers do not present a detrimental condition affecting the operability of the loads, and therefore do not render the associated loads inoperable. At the higher trip settings, the loads will continue to function as per design. The higher settings of the subject circuit breakers are well within the limits established by the penetration calculation and by the penetration breaker thermal magnetic breaker surveillance test program. These limits and the backup thermal magnetic trips ensure that the associated penetration conductors are protected.

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South Texas, Unit 1	05000 498	9 3	- 0 1 2 -	0 0	05 <sup>OF</sup> 06

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

ANALYSIS OF EVENT: (Cont'd)

Therefore, it is determined that the Class 1E penetration breakers remained operable. The molded case magnetic adjustable circuit breakers provide protection to the feeder cables for high current faults. The setting and function of the overcurrent thermal relays and backup thermal magnetic breakers are not affected by the increase in the primary breaker trip settings.

The non-penetration magnetic adjustable circuit breakers provide protection to feeder cables under instantaneous current conditions. Raising the trip settings for the Class 1E non-penetration breakers does not impact the operability of the associated loads. At the higher setting, the breakers continue to allow for the starting surge of motors and motor operated valves. A higher current is required to trip the breakers at this setting than what would be required with the optimum trip settings. These loads will thus perform their safety related shutdown functions. Based on this reasoning, the Class 1E non-penetration breakers were determined to remain operable.

A total of 12 safety related breakers of a population of 552 breakers were found to be inoperable. Analysis of safety-related molded case circuit breakers will be performed to determine if the breakers were, in fact, actually inoperable. A revision to the LER report will be submitted documenting the results and the impact on the safety analysis.

CORRECTIVE ACTIONS:

1. HL&P will revise the test procedure to clarify the methodology used to establish the molded case circuit breaker setpoints. The revised procedure will be in effect by August 30, 1993.
2. Interim guidance has been provided to Electrical Maintenance on the proper use of the Electrical Setpoint Index.

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South Texas, Unit 1	05000 498	9 3	- 0 1 2 -	0 0	06 <sup>OF</sup> 06

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

CORRECTIVE ACTIONS: (Con't)

3. HL&P will conduct training on the test methodology used to establish the molded case circuit breaker setpoints. This training will be completed by July 23, 1993.
4. A review of the circuit breaker maintenance qualification training will be performed to identify any enhancements which should be made to this training. This review will be completed by July 1, 1993.
5. Analysis of safety-related molded case circuit breakers will be performed to determine if the breakers were, in fact, actually inoperable. A revision of the LER report will be submitted documenting the results and the impact on the safety analysis. The revision will be submitted by July 14, 1993.

ADDITIONAL INFORMATION:

During the past two years there have been no events reported to the NRC which involved insufficient clarity of circuit breaker setpoint selection guidelines.

LER\93124001.U1