



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

January 10, 2003
NOC-AE-02001445
File No.: G25
10CFR50.73
STI: 31538834

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

South Texas Project
Unit 1
Docket No. STN 50-498
Licensee Event Report 02-002
Electrical Auxiliary Building Supply Fans in a Condition
That Could Have Prevented the Fulfillment of a Safety Function

Pursuant to 10CFR50.73, South Texas Project submits the attached Unit 1 Licensee Event Report 02-002 regarding a condition involving the Electrical Auxiliary Building Supply Fans that may have prevented the fulfillment of a safety function. The condition affected both units. The condition was discovered on November 8, 2002 and was corrected on November 9, 2002. This event did not have an adverse effect on the health and safety of the public.

There are no commitments contained in this event report.

If there are any questions on this submittal, please contact S. M. Head at (361) 972-7136 or me at (361) 972-7849.


E. D. Halpin
Plant General Manager

kjt

Attachment: LER 02-002 (South Texas, Unit 1)

JE22

cc:

(paper copy)

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LICENSEE EVENT REPORT (LER)

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

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1. FACILITY NAME South Texas Unit 1	2. DOCKET NUMBER 05000 498	3. PAGE 1 OF 3
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4. TITLE

A condition that could have prevented the fulfillment of a safety function

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
11	14	2002	2002	02	00	01	10	2003	South Texas Unit 2	05000 499
									FACILITY NAME	DOCKET NUMBER
										05000
9. OPERATING MODE		1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR: (Check all that apply)							
10. POWER LEVEL		100	20.2201(b)		20.2203(a)(3)(ii)		50.73(a)(2)(ii)(B)		50.73(a)(2)(ix)(A)	
			20.2201(d)		20.2203(a)(4)		50.73(a)(2)(iii)		50.73(a)(2)(x)	
			20.2203(a)(1)		50.36(c)(1)(i)(A)		50.73(a)(2)(iv)(A)		73.71(a)(4)	
			20.2203(a)(2)(i)		50.36(c)(1)(ii)(A)		50.73(a)(2)(v)(A)		73.71(a)(5)	
			20.2203(a)(2)(ii)		50.36(c)(2)		50.73(a)(2)(v)(B)		OTHER	
			20.2203(a)(2)(iii)		50.46(a)(3)(ii)		50.73(a)(2)(v)(C)		Specify in Abstract below or in NRC Form 366A	
			20.2203(a)(2)(iv)		50.73(a)(2)(i)(A)		x 50.73(a)(2)(v)(D)			
			20.2203(a)(2)(v)		50.73(a)(2)(i)(B)		50.73(a)(2)(vii)			
			20.2203(a)(2)(vi)		50.73(a)(2)(i)(C)		50.73(a)(2)(viii)(A)			
			20.2203(a)(3)(i)		50.73(a)(2)(ii)(A)		50.73(a)(2)(viii)(B)			

12. LICENSEE CONTACT FOR THIS LER

NAME Kenneth J. Taplett	TELEPHONE NUMBER (Include Area Code) 361-972-8416
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13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED

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

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

On November 8, 2002, Unit 1 was operating at 100% reactor power and Unit 2 was defueled. Troubleshooting was in progress for a condition where the Unit 2 Electrical Auxiliary Building (EAB) supply fan 21C had tripped. It was determined that the fan motor breaker's Amptector long time overload trip setting may have been set too low and could result in tripping of the fan motor during an offsite degraded voltage condition. A subsequent investigation determined that the EAB HVAC supply fans in each unit would not have fulfilled their design safety function under specific analyzed conditions. The EAB Heating, Ventilation and Air Conditioning (HVAC) system's design safety function is to maintain ambient temperature conditions to provide operator comfort and to satisfy environmental requirements of safety equipment under normal operating, transient and postulated accident conditions. Each South Texas Project unit has three trains of EAB HVAC. The root cause of this event was setting the Amptector long time overcurrent setting at an amperage that did not allow sufficient margin for preventing inadvertent trips under all design voltage conditions. Corrective actions consisted of resetting the overcurrent setpoint to a higher value to meet fan motor design criteria under all analyzed conditions and verifying this condition was not generic to other breakers in the units.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
South Texas Unit 1	05000 498	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 3
		2002	02	00	

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

DESCRIPTION OF EVENT

On November 8, 2002, Unit 1 was operating at 100% reactor power and Unit 2 was defueled. Troubleshooting was in progress for a condition where the Unit 2 Electrical Auxiliary Building (EAB) supply fan 21C had previously tripped on overload on more than one occasion within the past few days. Running current data indicated that the fan motor breaker's Amptector long time overload trip setting may have been set too low and could result in tripping of the fan motor during an offsite degraded voltage condition.

Each South Texas Project unit has three trains of EAB HVAC. In order to correct this condition, the Amptector long time overcurrent settings for each fan motor in both units were set to a higher value to protect the motor and allow acceptable performance during the range of design grid voltage conditions. The last fan motor breaker was reset on November 9, 2002.

The EAB Heating, Ventilation and Air Conditioning (HVAC) system's design safety function is to maintain ambient temperature conditions to provide operator comfort and to satisfy environmental requirements of safety equipment under normal operating, transient and postulated accident conditions.

A subsequent investigation that was completed on November 14, 2002 determined that the EAB HVAC supply fans would not have fulfilled their design safety function if the following conditions existed:

- A reduced voltage grid condition existed,
- A Mode 1 (loss of offsite power does not occur) safety injection condition occurred, and
- The EAB HVAC supply fan overcurrent overloads were set sufficiently low so that the fans would trip on overload during the Mode 1 safety injection demand event.

Notification of this event was made to the Nuclear Regulatory Commission on November 14, 2002 at 1624 hours.

The EAB HVAC supply fans were upgraded with 190 horsepower motors during construction of the South Texas Project units. The Amptector long time overcurrent setting was adjusted to 100% of the maximum motor amperage rating of 204 amps with a -10% to +0.5% tolerance setting. Vendor documentation stated that the fan motor should not exceed design amperage during operation. Plant design documentation for this application specified that the Amptector long-time overcurrent setting comply with vendor instructions to not run the motors at an amperage above their operational rating. Setting the Amptector at 100% of the motor full load current for this application was inconsistent with the general instructions in the facility's design calculation document for the overcurrent setting of motor circuit breakers. The general instructions in the design calculation document requires that the Amptector long-time overcurrent setting be set at 115% to 130% of the motor rating to account for Amptector tolerances and potential undervoltage conditions. The original trip setpoints were set over fifteen years ago and little information was available in the documentation. As a result, it could not be determined why the specific design documentation instructions for the EAB HVAC supply fan motors deviated from the general instructions in the facility's design calculation document for setting motor long-time overcurrent settings.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE	
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		2002	02	00		

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

EVENT SIGNIFICANCE

This event resulted in no personnel injuries, radiation exposure, offsite radiological releases or damage to important safety related equipment. The event is reportable pursuant to 10CFR50.73(a)(2)(v)(D) because it resulted in a condition that could have prevented the fulfillment of a safety function.

The mitigative function that was affected by this condition was postulated to be the overheating of equipment in the EAB leading to a failure to the Class 1E Switchgear and Class 1E 120 volt AC power by exceeding their equipment qualification temperature limits over a 24-hour period. The Train-A EAB supply fan should not be lost under the conditions for the occurrence of this event because its power is regulated by the unit auxiliary transformer which should compensate for any degraded grid voltage conditions. Operator recovery from this event is very likely because the event is slow moving and plant procedures and operator training were in place to respond to a loss of EAB HVAC. Data from the offsite grid transmission provider conservatively concluded that the degraded grid voltage condition for this event existed no more than 10 days per year. These considerations resulted in a change in core damage frequency of $2.17\text{E-}7$ for Mode I safety injection demand events. This change in core damage frequency is less than the $1\text{E-}6$ threshold established in Regulatory Guide 1.174. Based on this small change, the risk significance of this event is considered low.

CAUSE OF EVENT

The root cause of this event was setting the Amprector long time overcurrent setting at an amperage that did not allow sufficient margin for preventing inadvertent trips under all design voltage conditions.

CORRECTIVE ACTIONS

1. The Amprector long time overcurrent settings for each EAB supply fan motor in both units were set to a higher value (i.e., 115% to 130% of motor full load amperage) that meets design criteria to protect the motor and allow acceptable performance during the range of design grid voltage conditions. The last fan motor breaker was reset on November 9, 2002.
2. Other load center breakers were verified to have sufficient trip setpoint margins to protect their associated loads and allow operation under all design voltage conditions.

ADDITIONAL INFORMATION

Safety and non-safety 480-volt load centers and 4160-volt switchgear were evaluated to ensure that the protection device trip settings provided adequate operating margin and component protection. A review was conducted to ensure that no other motors had been upgraded that could have resulted in a condition similar to that described in this event report.