



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

May 11, 2017
NOC-AE-17003479
10 CFR 50.73

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

South Texas Project
Unit 1
Docket No. STN 50-498
Licensee Event Report 2017-001-00
Unit 1 Failure of a Timing Relay During a Technical Specification Surveillance

Pursuant to 10 CFR 50.73(a)(2)(i)(B), STP Nuclear Operating Company (STPNOC) hereby submits the attached South Texas Project (STP) Unit 1 Licensee Event Report (LER) 2017-001-00 for a condition prohibited by Technical Specifications.

The event was of very low risk significance and no radioactive release occurred; therefore, there was no adverse effect on the health and safety of the public.

There are no commitments in this letter.

If there are any questions, please contact Rafael Gonzales at (361) 972-4779 or me at (361) 972-7344.



A handwritten signature in black ink that reads "James Connolly". Below the signature, the name "James Connolly" is printed in a smaller, standard font, followed by "Site Vice President".

rjg

Attachment: Unit 1 LER 2017-001-00

STI: 34494823

cc:
(paper copy)

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LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

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<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME South Texas Unit 1	2. DOCKET NUMBER 05000498	3. PAGE 1 OF 7
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4. TITLE

Unit 1 failure of a timing relay during a Technical Specification surveillance

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
03	10	2017	2017	- 001	- 00	05	11	2017	N/A	N/A

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
10. POWER LEVEL 100	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.77(a)(1)
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(2)(i)
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(ii)
		<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> OTHER	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT

Rafael Gonzales, Licensing Engineer

TELEPHONE NUMBER (Include Area Code)

(361) 972-4779

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
A	EB	62	-	Y					

14. SUPPLEMENTAL REPORT EXPECTED YES (If yes, complete 15. EXPECTED SUBMISSION DATE) NO**15. EXPECTED SUBMISSION DATE**

MONTH	DAY	YEAR

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

On March 10, 2017, during a Technical Specification surveillance, the as-found operating time of one of four undervoltage timing relays in a Safety related 4.16kV switchgear was greater than the Technical Specification allowable value. The relay was retested without making any changes to the relay timing or the test configuration. The second test resulted in a lower value that was within the Technical Specification allowable value but outside the acceptance criteria of the procedure. A third test (and subsequent follow-up testing) resulted in values that met Technical Specification limits. The associated channel was declared Operable.

On March 14, 2017, an engineer reviewed the surveillance results and questioned the reliability of the relay based on its behavior. The Control Room was contacted and the relay was replaced. Based on the engineer's analysis, the Shift Manager determined that the relay should not have been declared Operable on March 10. The Technical Specification Action Statement required the inoperable channel to be placed in the tripped condition within 72 hours. This Action was not met and is reportable as a condition prohibited by Technical Specifications per 10 CFR 50.73(a)(2)(i)(B). The event was of very low risk significance and no radioactive release occurred; therefore, there was no adverse effect on the health and safety of the public.



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

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		YEAR	SEQUENTIAL NUMBER	REV NO.
South Texas Unit 1	05000-498	2017	- 001	- 00

NARRATIVE**I. Description of Event****A. Reportable event classification**

Since Technical Specification 3.3.2, Action 20A was not met, this event is reportable under 10 CFR 50.73(a)(2)(i)(B).

B. Plant operating conditions prior to event

Prior to the event at 1045 on March 10, 2017, Unit 1 was operating in Mode 1 at 100 percent power.

C. Status of structures, systems, and components (SSCs) that were inoperable at the start of the event and that contributed to the event

Other than the undervoltage relay being tested, there were no other systems, structures, or components that were inoperable at the start of the event that contributed to the event.

D. Narrative summary of the event

During a Technical Specification surveillance, the as-found operating time (3.295 seconds) of a timing relay (Undervoltage Agastat Timing Relay, model number ETR14D3A004, made by TE Connectivity, system identifier EB, component identifier 62), installed in a safety related 4160 kV switchgear, was greater than the Technical Specification allowable value equal to or less than 1.93 seconds. The performers of the surveillance measured the as-found test value and it was greater than the Technical Specification allowable value. The Control Room Unit Supervisor consulted with the Electrical Maintenance Supervisor and directed the performers to adjust the relay component as allowed by the procedure, and continue with the test.

Before continuing the surveillance, an inspection of the testing equipment was performed to ensure the equipment was functioning correctly. No issues were found and no changes were made to the testing equipment. The maintenance personnel retested the relay timing, without adjustment, and the result was 1.902 seconds. Due to the change in value, an additional test was performed with a result of 1.766 seconds, which was within the prescribed as-left procedure acceptance criteria of 1.715 to 1.785 seconds. Additional re-tests were performed with the same results, (i.e., a value of 1.766 seconds) obtained. Contrary to Control Room Unit Supervisor's directions, during relay retesting, no adjustments were made to the timing relay.

The Surveillance Test was completed and logged as satisfactory at 1202 on March 10, 2017, and the component was declared Operable.



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E. Method of discovery

On March 14, 2017, an STP engineer completed a review of the condition report documenting the surveillance test for the relay and determined that the relay reliability was questionable. This was based on the relay timing found outside Technical Specification limits and returned to Operable status with no adjustments. The Control Room was contacted and, based on the System Engineer's analysis, the Unit 1 Shift Manager determined that the relay should not have been declared Operable on March 10 and declared it inoperable on March 14, 2017 at 1500 hours. Technical Specification 3.3.2, Action 20A, was entered.

The Shift Manager determined that the relay should have remained Inoperable on March 10 until replaced. Technical Specification 3.3.2, Action 20A, requires the channel to be placed in the tripped condition within 72 hours. The failed undervoltage timing relay was subsequently replaced, satisfactory completion of surveillance test was performed, and the component was declared Operable.

II. Event-Driven Information

A. Safety Systems that Responded

This event did not initiate any automatic or manual safety system responses.

B. Duration of Safety System Inoperability

The failed relay was determined to be inoperable per Technical Specifications for approximately 99 hours prior to discovery. The failed component was discovered as a result of reviewing surveillance test results. Following discovery, the relay was replaced and the channel declared operable within 24 hours. Based on the last successful surveillance test, the last time the equipment was determined to be capable of performing its safety function is September 22, 2016.

C. Safety Consequences and Implications of the Event

During the event, the condition of the system was in a 2 out of 4 logic scheme. Protection for an under voltage condition remained intact for a 2 out of 3 logic, and thus maintained the safety function of the system. If an actual undervoltage condition occurred, the other relays would have performed as designed.

The event was of very low risk significance and no radioactive release occurred; therefore, there was no adverse effect on the health and safety of the public.



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III. Cause of the Event

Based on the conditions identified and using information collected during discussions with the relay manufacturer subject matter expert, the cause of the component failure is not known. The relay was retained following the event, and inspected with satisfactory results. The failure could not be recreated, and the failure mode and mechanism is not known.

The causes for the event were the following:

1. Unidentified Material Condition with the failed component (i.e. relay)
2. Less than adequate questioning attitude by Electrical Maintenance Personnel
3. Less than adequate questioning attitude by Operations Personnel

The start of this event consisted of the undervoltage relay as-found operating time being outside the Technical Specification required value. After retesting, the surveillance test timing improved as observed in subsequent retests. The failed condition could not be recreated upon further testing.

The Electrical Maintenance Supervisor did not exhibit sufficient questioning attitude when consulted on this task. The relay did not exhibit the reliability to perform within limits through the next surveillance interval, and this was not recognized. Though the electricians did request clarification from the supervisor as expected, a proper questioning attitude from the supervisor would have determined that further expertise was needed to proceed. In addition, a misinterpretation of the procedure allowed the actions as performed, but the procedure intent was not maintained.

In addition, the Control Room staff displayed an inadequate questioning attitude regarding the adverse performance of the relay. When the information was shared with the Control Room that no adjustment was made to the timing relay, both individuals should have confirmed adequate information was collected to ensure that it was appropriate to proceed with closing out the surveillance rather than simply agreeing with the results of the completed test.



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IV. Corrective Actions

The Table 1 below contains the corrective actions planned as a result of the event:

Table 1: Corrective Actions

Corrective Actions	Description	Status
1	Relay was replaced and Surveillance Test completed Satisfactory. (Relay replaced by PM WAN 560042)	Complete
2	Perform one on one sessions with EM personnel involved in this event to determine the reason for the shortfall on questioning the reliability of the subject relay device and any other corrective actions required to include coaching opportunities.	Complete
3	Perform coaching session with individuals involved to ensure clear understanding of 0POP01-ZO-0011 procedure requirements	In process
4	Discuss event and refresh on procedure requirements of 0POP01-ZO-0011 with all Licensed Operations Personnel	In process



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V. Previous Similar Events

A review of similar events at STP was performed by reviewing the STP Corrective Action Program and Licensee Event Reports submitted for the previous 10 years. The review concluded that there have been many occurrences where the as-found condition of this or similarly functioning timing relays were found out of acceptance criteria or outside Technical Specification criteria. However all events involved the old model E7000 timers. It is important to note that the older model relays are diaphragm type designs, while the new relay timers are solid state designs. Since these timers were replaced (starting in 2012) this condition is the first case of its kind. In all occasions identified, the proper notifications and corrective actions were performed.

A search for License Event Reports was performed that focused on events deemed similar reportable under 50.73(a)(2)(i)(B). Several events were found to meet this criteria, but none were directly applicable to this event.

VI. Additional Information

The discovery date is March 14, 2017 when Unit 1 discovered the need to perform a reportability evaluation on the event. The event date is March 10, 2014, the date when the relay failed to pass the surveillance test. The report date is May 11, 2017, within 60 days after discovery of the event, as required per 10 CFR 50.73(a)(1).

Dates and approximate times of occurrences:

3/10/17 1045: Surveillance Test commenced for the Unit 1 E1B undervoltage relay (Relay declared inoperable for planned testing).

3/10/17: Electrician's initial as-found measurement (3.295 Seconds) of the timing relay was found outside Technical Specification and Acceptance Criteria (1.715 to 1.785 seconds) per procedure.

3/10/17: Electrician notification and discussion with Unit 1 Control Room Supervisor. Direction given to continue in accordance with procedure and make adjustments to within band (acceptance criteria).

3/10/17: Electrician's retest of timing relay was performed. (Retest 1: 1.902 seconds, retest 2-9: 1.766 seconds). No adjustment was made. No issues identified with test equipment.

3/10/17: Electrician's discussion with Electrical Maintenance Supervisor. Direction given to continue with test and document findings in Condition Report.

3/10/17: Electrician requested Control Room staff to log surveillance as Satisfactory. Discussion held on steps performed. All involved were aware that no adjustment was made.



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3/10/17 1202: Unit 1 E1B Undervoltage Channel 4, including relay, declared Operable.

3/10/17: Condition Report 17-12616 documented conditions as identified during test.

3/13/17 1045: Technical Specification 3.3.2, Action 20A, time exceeded.

3/14/17: Review of Condition Report performed by STP Engineering (CR Action 17-12616-1), and recommendation made to the Control Room to declare E1B Undervoltage Channel 4 inoperable.

3/14/17 1500: Shift manager concurrence with engineering recommendation, relay declared inoperable, and Technical Specification 3.3.2, Action 20A, entered

3/15/17 0246: Relay replaced, Surveillance Test re-preformed, and E1B Undervoltage Channel 4 declared Operable.