



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

May 5, 2015
NOC-AE-15003252
10 CFR 50.73

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

South Texas Project
Unit 2
Docket No. STN 50-499
Licensee Event Report 2015-001-00
Technical Specification Action Statement Time Exceeded Due to
Turbine-Driven Auxiliary Feedwater Pump Test Failure Not Recognized

Pursuant to 10 CFR 50.73(a)(2)(i)(B) and 10 CFR 50.73(a)(2)(v)(B), STP Nuclear Operating Company (STPNOC) hereby submits the attached South Texas Project (STP) Unit 2 Licensee Event Report (LER) 2015-001-00. STPNOC is also reporting a condition that could have prevented the fulfillment of the safety function of systems to remove residual heat.

The event did not have an adverse effect on the health and safety of the public.

There are no commitments in this letter.

If there are any questions, please contact Drew Richards at (361) 972-7666 or me at (361) 972-7566.

G. T. Powell
Site Vice President

amr

Attachment: Unit 2 LER 2015-001-00

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MRK

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LICENSEE EVENT REPORT (LER)
(See Page 2 for required number of digits/characters for each block)

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 FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet 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.

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4. TITLE
Technical Specification Action Statement Time Exceeded Due to Turbine-Driven Auxiliary Feedwater Pump Test Failure Not Recognized

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	04	2015	2015	001	00	05	05	2015	N/A	N/A
									FACILITY NAME	DOCKET NUMBER
									N/A	N/A

9. OPERATING MODE 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)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
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)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<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)(C)	<input type="checkbox"/> OTHER
	<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)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT Drew Richards, Licensing Engineer	TELEPHONE NUMBER (Include Area Code) (361) 972-7666
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13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
B	BA	P	B260	Y					

14. SUPPLEMENTAL REPORT EXPECTED <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR

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

On March 11, 2015 at 1631 hours, a review performed by the Operations Surveillance Coordinator discovered that a surveillance performed on March 4, 2015 on the Unit 2 turbine-driven auxiliary feedwater (AFW) pump 24 did not meet the surveillance acceptance criteria for as-found discharge pressure. An operability review was subsequently performed and on March 12, 2015 it was determined that AFW pump 24 was inoperable as of March 4, 2015 at 1507 hours. As a result, the Technical Specification allowed outage time of 72 hours was exceeded and the Configuration Risk Management Program was not applied; this is reportable per 10CFR50.73(a)(2)(i)(B). During the period of AFW pump 24 inoperability, a second auxiliary feedwater pump was also inoperable on March 9, 2015 resulting in a condition that could have prevented the fulfillment of the safety function of systems that are needed to remove residual heat which is reportable per 10CFR50.73(a)(2)(v)(B). AFW pump 24 was not recognized as inoperable due to human error. As a corrective action, the operators were coached and counseled and remediated by Operations Management.

An actual demand for AFW did not occur during the period of inoperability; therefore, there was no adverse effect on the health and safety of the public.



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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 FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet 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.

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NARRATIVE

I. Description of reportable event

A. Reportable event classification

This event is reportable under §50.73(a)(2)(i)(B) as a condition prohibited by Technical Specifications and §50.73(a)(2)(v)(B) as an event that could have prevented the fulfillment of the safety function of systems that are needed to remove residual heat.

B. Plant operating conditions prior to event

On March 4, 2015 Unit 2 was operating in Mode 1 at 100% power.

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

There were no SSCs that were inoperable at the start of the event that contributed to the event.

D. Narrative summary of the event

On March 4, 2015 at 1417 hours, a scheduled surveillance test was performed on the Unit 2 turbine-driven auxiliary feedwater (AFW) pump 24. AFW pump 24 was declared inoperable for the surveillance at 1507 hours. During the test, the as-found pump discharge pressure was recorded by the STP Nuclear Operating Company (STPNOC) licensed Reactor Operator (RO) as 1430 pounds per square inch gauge (psig). The recorded pressure was below the surveillance acceptance criteria of greater than or equal to 1519 psig. The pump was declared operable again at 1608 hours. At 1646 hours, the RO logged the surveillance as completed satisfactorily and forwarded the surveillance to the Unit Supervisor (US) for review. The US, who is a STPNOC licensed Senior Reactor Operator (SRO), performed his review prior to the end of shift at 1800 hours and indicated on the surveillance package cover sheet that the test data was within acceptance criteria.

On March 11, 2015 the Operations Surveillance Coordinator, who is a STPNOC licensed SRO, performed a subsequent review of the March 4, 2015 AFW pump 24 surveillance and discovered that the acceptance criteria for the as-found discharge pressure had not been met. The Unit 2 Shift Manager was contacted and at 1631 hours AFW pump 24 was declared inoperable. A follow-up surveillance was performed at 1957 hours and the as-found discharge pressure was 1747 psig. Although this value is within the acceptance criteria, it was higher than expected. A prompt operability determination (POD) concluded that even though the March 11, 2015 surveillance acceptance criteria was met, the results indicated a degrading trend and there was no reasonable assurance that the acceptance criteria would be met during subsequent surveillance testing. The POD was accepted by the Unit 2 Shift Manager on March 12, 2015 resulting in AFW pump 24 being declared inoperable beginning on March 4, 2015 at 1417 hours.

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The AFW pump 24 governor and servo actuator were replaced on March 12, 2015. Following a satisfactory surveillance test, AFW pump 24 was declared operable on March 14, 2015 at 0315 hours. The total duration of AFW pump 24 being inoperable was approximately 229 hours which exceeds the Technical Specification Allowed Outage Time of 72 hours; additionally, the Configuration Risk Management Program was not applied. This condition is reportable under §50.73(a)(2)(i)(B) as a condition prohibited by Technical Specifications.

A review of equipment availability during the period of AFW pump 24 inoperability was conducted. On March 9, 2015 at 0300 hours, one of the Unit 2 motor-driven auxiliary feedwater pumps (AFW pump 21) was declared inoperable for planned maintenance and was returned to operable status on March 9, 2015 at 1634 hours (duration of approximately 13.5 hours). Although plant Technical Specifications allow two auxiliary feedwater pumps to be inoperable for up to 72 hours, this period of inoperability occurred after AFW pump 24 had exceeded its Allowed Outage Time of 72 hours. This condition is also reportable under §50.73(a)(2)(i)(B) as a condition prohibited by Technical Specifications.

The STP Updated Final Safety Analysis Report (UFSAR) Chapter 15 analysis for the Condition II loss of normal feedwater event assumes that operator action is performed within fifteen minutes after a reactor trip to start a third AFW pump to deliver flow to a third steam generator. During the AFW pump 21 maintenance on March 9, 2015 the pump motor's breaker was racked out from 0348 hours until 1006 hours. During this period of time, the two remaining operable AFW trains would not have been capable of mitigating a loss of normal feedwater flow event as analyzed in UFSAR Chapter 15. This condition is reportable pursuant to §50.73(a)(2)(v)(B) as a condition that could have prevented the fulfillment of the safety function of systems to remove residual heat.

Prior to being declared inoperable on March 4, 2015, AFW pump 24 was previously demonstrated operable via surveillance testing on February 5, 2015.

E. Method of discovery

The AFW pump 24 surveillance acceptance criteria not being met was discovered during a post-surveillance review by the Operations Surveillance Coordinator. The condition that could have prevented the fulfillment of the safety function of systems to remove residual heat was discovered during a review of equipment availability during the period of AFW pump 24 inoperability. Note that for this event, the discovery date is different than the event date because the inoperable component was discovered on March 11, 2015 a week after the surveillance test was performed. Therefore, the event date is March 4, 2015 and the discovery date is March 11, 2015.

II. Component failures

A. Failure mode, mechanism, and effects of failed component

The AFW pump 24 failure mode was the inability to reliably maintain adequate pump discharge pressure. Degradation of the AFW pump 24 governor was the failure mechanism leading to the inoperable condition. The effect of the degraded component was inoperability of AFW Pump 24; no other dependent systems or components were rendered inoperable or degraded. During the period of inoperability, there were three redundant motor-driven AFW pumps operable and available except for a 13.5 hour period on March 9, 2015 when only two

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redundant motor-driven AFW pumps were operable and available. During these time periods, no event occurred that would have required an AFW actuation.

B. Cause of component failure

Preliminary investigation by an offsite vendor identified that the AFW pump 24 governor was degraded. A combination of as-found compensation needle valve position being too low and blemishes found on the pilot valve plunger likely contributed to the variability in governor speed response.

C. Systems or secondary functions that were affected by failure of components with multiple functions

As stated in the narrative summary above, during the 13.5 hours that two AFW pumps were inoperable, the UFSAR described operator action to start a third AFW pump would not have been able to be performed following a loss of normal feedwater event.

D. Failed component information (Energy Industry Identification System (EIIS) designators provided in {brackets})

Auxiliary feedwater system {BA}

Turbine-drive auxiliary feedwater pump: {P}

Manufacturer: Suizer Bingham Pumps, Inc.

Model: 4X6X9C-MSD

Turbine-driven auxiliary feedwater pump governor: {65}

Manufacturer: Woodward Governor Company

Model: PGA

III. Analysis of the event

A. Safety system responses that occurred

There were no safety systems that responded during this event.

B. Duration of safety system inoperability

AFW pump 24 was declared inoperable for 228 hours and 58 minutes.

C. Safety consequences and implications

AFW pump 24 was demonstrated operable per surveillance testing on February 5, 2015 and was declared inoperable on March 11, 2015. Since the AFW pump 24 failure could have occurred at any time between February 5, 2015 and March 4, 2015, the actual failure duration cannot be conclusively determined. The STP Probabilistic Risk Assessment (PRA) was used to estimate the Incremental Core Damage Probability (ICDP) and Incremental Large Early Release Probability (ILERP) associated with this AFW pump 24 condition. The ICDP and ILERP were determined to be less than 1E-06 and 1E-07 respectively, indicating a very small increase in safety risk.

An actual demand for AFW did not occur during the period of inoperability; therefore, there was no adverse effect on the health and safety of the public.

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IV. Cause of the event

On March 4, 2015, AFW pump 24 was not recognized as inoperable due to human error. The two Control Room operators involved used ineffective verification practices of surveillance acceptance criteria. There were no other extenuating circumstances (e.g., time or situational pressures) surrounding the failure to recognize that the acceptance criteria was not met.

V. Corrective actions

The RO and SRO involved in the event were coached and counseled and remediated by Operations Management. A lessons learned bulletin was issued to all operations crew for dissemination and review.

After AFW pump 24 was declared inoperable, corrective maintenance was performed to replace the turbine governor and servo actuator. Post-maintenance surveillance testing restored AFW pump 24 to operable status.

VI. Previous similar events

There are no previous STP LERs with a cause similar to failing to recognize that surveillance acceptance criteria were not met.