Nuclear Operating Company

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

September 14, 2009
NOC-AE-09002462
10 CFR 50.73

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

South Texas Project
Unit 2
Docket No. STN 50-499
Licensee Event Report 2-2009-001
Essential Chiller 22A Trip on Low Oil Pressure

Pursuant to 10 CFR 50.73, the STP Nuclear Operating Company (STPNOC) submits the attached Unit 2 Licensee Event Report 2-2009-001 as a result of the determination that Essential Chiller 22A had been inoperable longer than the time allowed by Technical Specifications. This condition is reportable under 10 CFR 50.73(a)(2)(i)(B).

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

There are no commitments contained in this Licensee Event Report. Corrective actions will be processed in accordance with the STP Corrective Action Program.

If there are any questions on this submittal, please contact either J. R. Morris at (361) 972-8652 or me at (361) 972-7158.

L. W. Peter
Plant General Manager

JRM

Attachment: LER 2-2009-01, Essential Chiller 22A Trip on Low Oil Pressure

STI: 32534415

IE22
NRR

cc:
(paper copy)

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NRC FORM 366 (9-2007) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 08/31/2010

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 Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@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.

LICENSEE EVENT REPORT (LER)

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

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4. TITLE

Essential Chiller 22A Trip on Low Oil Pressure

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
									N/A	
07	09	2009	2009	- 001 -	00	09	14	2009	FACILITY NAME: N/A	DOCKET NUMBER:

9. OPERATING MODE

1

10. POWER LEVEL

100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
☐ 20.2203(a)(2)(vi)	x 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
James R. Morris, Licensing Engineer	361-972-8652

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
X	KM	CHU	YORK	Y					

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* x NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

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

At 11:21 on July 9, 2009, Unit 2 Essential Chiller 22A tripped due to low oil pressure approximately 105 seconds into its startup sequence.

Technical Specification 3.7.14 requires that if one train of Essential Chilled Water is inoperable in Modes 1, 2, 3, and 4, it is to be restored to operability within seven days, or apply the requirements of the Configuration Risk Management Program, or the unit is to be in at least hot standby within the following six hours. An operability evaluation concluded that Essential Chiller 22A had been inoperable for greater than allowed under the Technical Specifications without taking the appropriate action, therefore this event is reportable under 10 CFR 50.73(a)(2)(i)(B).

The root cause of the Essential Chiller 22A low oil pressure trip was refrigerant saturation in the lube oil due to a long idle period prior to the attempted start. Refrigerant saturation reduced oil viscosity and the ability to develop normal oil pressure, which led to low pressure trip setpoint being reached.

Subsequent to the trip, Essential Chiller 22A was successfully started at 11:53. The B and C trains of Essential Chilled Water remained operable during this event. This event resulted in no personnel injuries, no offsite radiological releases, and no damage to other safety-related equipment.

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

I. DESCRIPTION OF EVENT

A. REPORTABLE EVENT CLASSIFICATION

This event is reportable pursuant to 10 CFR 50.73(a)(2)(i)(B). South Texas Project (STP) Technical Specification 3.7.14 allows one train of Essential Chilled Water to be inoperable in Modes 1 through 4 for seven days before taking action to begin shutdown without extending the allowed outage time using the Configuration Risk Management Program. However, STP Unit 2 Essential Chilled Water Train A was determined to have been inoperable longer than the allowed outage time. Consequently, STP Unit 2 was in a condition prohibited by Technical Specifications.

B. PLANT OPERATING CONDITIONS PRIOR TO EVENT

STP Unit 2 was in Mode 1 at 100% power.

C. STATUS OF STRUCTURES, SYSTEMS, AND COMPONENTS THAT WERE INOPERABLE AT THE START OF THE EVENT AND THAT CONTRIBUTED TO THE EVENT

No other inoperable structures, systems, or components contributed to the event.

D. NARRATIVE SUMMARY OF THE EVENT

On July 9, 2009, Unit 2 was in Mode 1. At 11:21, Essential Chiller 22A tripped due to low oil pressure approximately 105 seconds into its startup sequence. Prior to the event, Essential Chiller 22A had been idle for over 14 days. Station personnel were present during the start attempt. Chiller parameters were observed and a stopwatch was used to correlate chiller parameters such as lube oil pressure with known startup sequence actions such as the opening of the equalizing valve.

During the prelube portion of the startup cycle, the oil pressure was noted to be approximately 36 psig. When the compressor started approximately 30 seconds later, the oil supply pressure dropped to 16 psig and then started to recover to about 24 psig. At the point where the lube oil equalizing solenoid valve is timed to open (i.e., at approximately 105 seconds after the Control Room started the chiller), the oil supply pressure was observed to rapidly drop past 8 psig and the chiller tripped. The trip setpoint for low oil pressure occurs when the pressure differential between the lube oil supply and the compressor suction vacuum is less than 15 psid so the trip occurred approximately when expected.

Following the Essential Chiller 22A trip, a second start was attempted at 11:53. The observed oil pressures remained higher this time and the chiller started successfully. Despite the successful start on the second attempt, Chiller 22A was declared inoperable pending resolution of any material conditions associated with the chiller.

Subsequent investigation determined that there were no material conditions or degraded components associated with this event. However, it was determined that the Essential Chillers are sensitive to long idle conditions, especially during warmer weather conditions and a maximum idle time limit of 6 days was imposed on all Essential Chillers. Because Essential Chiller 22A had been idle for greater than 14 days prior to the event, and Engineering concluded that low pressure trips of the type experienced could occur after 6 days, the 22A Essential Chiller was considered to be inoperable for longer than the action times permitted in

Technical Specifications.

E. METHOD OF DISCOVERY OF EACH COMPONENT FAILURE, SYSTEM FAILURE, OR PROCEDURAL ERROR

The trip of Essential Chiller 22A occurred during its planned start as part of routine equipment rotation of the Essential Chilled Water trains.

II. EVENT-DRIVEN INFORMATION

A. SAFETY SYSTEMS THAT RESPONDED

No safety systems were required to respond during this event.

B. DURATION OF SAFETY SYSTEM INOPERABILITY

Prior to the trip of Essential Chiller 22A, the chiller had been idle for over 14 days (secured on June 24, 2009 at 20:41). Assuming that the Chiller became inoperable after 6 days of idle time, and the Chiller was declared operable on July 11, 2009 at 16:48, this would result in a maximum of approximately 11 days of inoperability time.

The B and C trains of Essential Chilled Water remained operable during this event.

C. SAFETY CONSEQUENCES AND IMPLICATIONS OF THE EVENT

System Information:

There are three Essential Chilled Water trains for each Unit. The Essential Chilled Water system is designed to provide chilled water to certain supply air handling units during normal and emergency conditions.

Technical Specification 3.7.14 requires at least three independent Essential Chilled Water trains to be operable in Modes 1, 2, 3, and 4. With only two Essential Chilled Water loops operable, the inoperable loop is to be restored to operable status within seven days or the Configuration Risk Management Program applied to justify an extension. Otherwise, the unit is to be in at least hot standby within the next six hours and in cold shutdown within the following 30 hours.

Because Unit 2 Essential Chilled Water Train A was inoperable longer than allowed under the Technical Specifications without entering the appropriate action statements, this event is reportable pursuant to 10 CFR 50.73(a)(2)(i)(B).

Risk Assessment:

This event resulted in no personnel injuries, no offsite radiological releases, and no damage to other safety-related equipment. The other two trains of Essential Chilled Water remained operable for the duration of the event. The non-functional time of Essential Chiller 22A did not result in an increase in incremental core damage probability greater than 1 E-6.

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

III. CAUSE OF THE EVENT

The root cause of the Essential Chiller 22A trip on low oil pressure was refrigerant saturation in the lube oil due to a long idle period prior to the attempted start.

IV. CORRECTIVE ACTIONS

A 6-day idle time maximum has been implemented for all Essential Chillers.

Purge and equalizing solenoid valve timing changes have been implemented on all Essential Chillers, which are expected to mitigate the effects of refrigerant saturation. Startup lube oil pressure profile data will be collected and evaluated, and if supported by the data, the idle time restrictions will be relaxed or removed. If not supported by the data, appropriate idle time restrictions will be implemented. (Expected completion 11/16/2009)

V. PREVIOUS SIMILAR EVENTS

Essential Chiller 12A (Unit 1) tripped on low oil pressure twice in 2007 and twice in 2008. Prior to this event, Chiller 22A had not experienced a trip due to low oil pressure, and other than Chiller 12A, none of the other essential chillers had tripped on low oil pressure since 2003.

VI. ADDITIONAL INFORMATION

In addition to the Essential Chiller 22A trip on low oil pressure, there have been several other issues with Essential Chillers in 2009 that challenged chiller reliability. An Essential Chiller Task Force has been established to evaluate current station practices and industry experience to make recommendations to improve the reliability of the Essential Chillers.