



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

April 27, 2005
NOC-AE-05001868
10CFR50.73

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

South Texas Project
Unit 2
Docket No. STN 50-499
Licensee Event Report 2005-02
Essential Chiller 22C Inoperable Longer Than Allowed By Technical Specifications

Pursuant to 10CFR50.73(a)(2)(i)(B), the STP Nuclear Operating Company submits the attached Licensee Event Report 2005-02 regarding the inoperability of Essential Chiller 22C for a time period longer than allowed by Technical Specifications.

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. Resulting corrective actions will be implemented in accordance with the Corrective Action Program.

If there are any questions regarding this submittal, please contact S. M. Head at (361) 972-7136 or me at (361) 972-7800.

A handwritten signature in black ink, appearing to read "G. L. Parkey", with a long, sweeping horizontal stroke extending to the right.

G. L. Parkey
Vice President, Generation
and Plant General Manager

wem/

Attachment: LER 2005-02

JE22

STI: 31872604

cc:
(paper copy)

Bruce S. Mallett
Regional Administrator, Region IV
U. S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 400
Arlington, Texas 76011-8064

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

Richard A. Ratliff
Bureau of Radiation Control
Texas Department of State Health Services
1100 West 49th Street
Austin, TX 78756-3189

Jeffrey Cruz
U. S. Nuclear Regulatory Commission
P. O. Box 289, Mail Code: MN116
Wadsworth, TX 77483

C. M. Canady
City of Austin
Electric Utility Department
721 Barton Springs Road
Austin, TX 78704

(electronic copy)

A. H. Gutterman, Esquire
Morgan, Lewis & Bockius LLP

David H. Jaffe
U. S. Nuclear Regulatory Commission

Jack A. Fusco
Michael A. Reed
Texas Genco, LP

C. A. Johnson
AEP Texas Central Company

C. Kirksey
City of Austin

Jon C. Wood
Cox Smith Matthews

J. J. Nesrsta
R. K. Temple
E. Alarcon
City Public Service

NRC FORM 366 (6-2004)		U.S. NUCLEAR REGULATORY COMMISSION			APPROVED BY OMB: NO. 3150-0104			EXPIRES: 06/30/2007		
LICENSEE EVENT REPORT (LER) (See reverse for required number of digits/characters for each block)					Estimated burden per response to comply with this mandatory collection request: 50 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.					
1. FACILITY NAME South Texas Project Unit 2				2. DOCKET NUMBER 05000 499		3. PAGE 1 OF 4				
4. TITLE Essential Chiller 22C Inoperable Longer Than Allowed By Technical Specifications										
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
2	28	2005	2005	- 02 -	00	4	27	2005	FACILITY NAME	DOCKET NUMBER
9. OPERATING MODE 1		11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check all that apply)								
10. POWER LEVEL 100		<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)		
		<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 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										
FACILITY NAME W. E. Mookhoek							TELEPHONE NUMBER (Include Area Code) 361-972-7274			
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	
14. SUPPLEMENTAL REPORT EXPECTED						15. EXPECTED SUBMISSION DATE				
<input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE)						<input checked="" type="checkbox"/> NO				
						MONTH	DAY	YEAR		
ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)										
<p>On February 28, 2005 at 0207, a start of Essential Chiller 22C was attempted. The chiller failed to start. Concurrently, the "C" train Essential Chilled Water expansion tank low level alarm annunciated and low discharge pressure on Essential Chilled Water pump 2C was observed. The cause of the chiller failure to start was that "C" train Essential Chilled Water had been partially drained to the point that air binding of the chilled water pump occurred. Periodic draining of the system was determined to have started 10 days prior to the attempted start of the chiller, at which time the chiller became inoperable. Because the chiller allowed outage time is 7 days, this condition was in violation of the plant Technical Specifications. This event is being reported in accordance with 10 CFR 50.73(a)(2)(i)(B), "Any operation or condition which was prohibited by the plant's Technical Specifications." The "C" train of the Essential Chilled Water System was filled and vented in accordance with plant procedures and returned to service on February 28, 2005 at 2048. No loss of safety function occurred.</p> <p>The cause of this event was the action taken to drain the expansion tank level back into the normal operating band to keep the level alarm clear caused an unknown amount of water to be drained from the system. This resulted in air binding in the system upon startup. The need to establish additional controls on draining this system was identified by this event.</p> <p>The core damage risk impact associated with the inoperability of Essential Chiller 22C is 1.6E-7. The analysis assumes that train "C" Essential Chilled Water was non-functional for 10 days.</p>										

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
South Texas Unit 2	05000 -499	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 4
		2005	02		

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

I. DESCRIPTION OF REPORTABLE EVENT

A. REPORTABLE EVENT CLASSIFICATION

This event is being reported in accordance with 10 CFR 50.73(a)(2)(i)(B), "Any operation or condition, which was prohibited by the plant's Technical Specifications."

B. PLANT OPERATING CONDITIONS PRIOR TO THE EVENT

Unit 2 operated in Mode 1 at 100% power for the duration of this event.

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

NA

D. NARRATIVE SUMMARY OF THE EVENT, INCLUDING DATES AND APPROXIMATE TIMES

When an Essential Chilled Water loop is secured, a corresponding temperature increase and consequent volume expansion results. This will raise the level in the expansion tank, causing alarms. Draining the tank back into the normal band below the alarm set point is the usual action taken. This resets the alarm and allows future level alarms to remain valid. Draining to restore normal level and clear the alarm is not directed by procedure. It is considered good operating practice to keep alarms cleared so that system status can be properly monitored.

The Essential Chilled Water expansion tanks are not located at the highest point in the system. Nitrogen is used to maintain a minimum system pressure to keep the piping system normally full and to prevent air in-leakage. In the case of "C" train, the highest point in the system is at elevation 78' and the normal level of the expansion tank is at approximately 30' elevation. A difference of 48' of head or approximately 21 psig must be maintained on the expansion tank to prevent a vacuum from forming at the 78' elevation when the pump is secured.

Following the securing of Essential Chiller 22C at 1318 on 2/16/05, three "Chilled Water Expansion Tank HI/LO" alarms were received in the control room. The alarms prompted at least three draining evolutions of the Essential Chilled Water Expansion tank "C" to clear the "Hi Level" alarm. These draining evolutions occurred over a three-day period and were performed by three different shift crews.

The nitrogen supply to Essential Chilled Water was isolated on 2/19/05 at 1451 to repair a nitrogen leak in the system. The maintenance activity on the nitrogen system was completed and nitrogen was restored at approximately 0136 on 2/20/05. This resulted in the chilled water expansion tanks going without a nitrogen supply for approximately 11 hours. Unknown to the Operations staff, the relief valve on the "C" train Essential Chilled Water expansion tank was leaking by the seat, resulting in a loss of the overpressure on the tank.

During the period of the nitrogen outage, a "Chilled Water Expansion Tank "HI/LO" alarm was received in the control room several times. In all cases, a Plant Operator was dispatched to check the level in the Essential Chilled Water "C" expansion tank. The Plant Operator was then instructed to "restore level to the normal band".

The Plant Operator drained the tank to restore level to the normal band in the usual manner. The Plant Operator construed the directions to mean, "maintain level in the normal band" and continued to monitor the tank level for some time after that. The Plant Operator subsequently drained water from the tank

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several more times on their shift. This resulted in multiple draining evolutions of this tank during the period since the chiller was last in operation. No fill evolutions occurred during this time period.

When nitrogen pressure was restored to the expansion tank, the level lowered out of sight glass range; and make-up water was added to restore level to normal operating band.

The volume of water drained from and added to the expansion tank could not be determined exactly, but the chiller was assumed to be inoperable from the time of nitrogen isolation on 2/19/05 until the attempted chiller start on 2/28/05.

After a failure to start of Essential Chiller 22C on 2/28/05, at 0209 Essential Chilled Water train "C" was declared INOPERABLE per Tech Spec 3.7.14.

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

Essential Chiller 22C failed to start due a low chilled water flow condition caused by air binding of the chilled water pump.

II. COMPONENT OR SYSTEM FAILURES

A. FAILURE MODE, MECHANISM, AND EFFECTS OF EACH FAILED COMPONENT

NA

B. CAUSE OF EACH COMPONENT OR SYSTEM FAILURE

NA

C. SYSTEMS OR SECONDARY FUNCTIONS THAT WERE AFFECTED BY FAILURE OF COMPONENTS WITH MULTIPLE FUNCTIONS

NA

D. FAILED COMPONENT INFORMATION

NA

III. ANALYSIS OF THE EVENT

A. SAFETY SYSTEM RESPONSES THAT OCCURRED

NA

B. DURATION OF SAFETY SYSTEM TRAIN INOPERABILITY

The "C" Train Essential Chilled Water System was inoperable for a period of nine to ten days due to voids in the system.

C. SAFETY CONSEQUENCES AND IMPLICATIONS

This event is significant since it rendered the "C" train of Essential Chilled Water INOPERABLE for greater than the Technical Specification 3.7.14 allowed outage time of seven days. Essential Chilled

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Water maintains habitability for personnel and environmental conditions for the Engineered Safety Features equipment it serves during postulated accident conditions.

A risk analysis of this event was performed. The analysis assumed that the "C" Train Essential Chilled Water System was not functional for a period of ten days. The result of this analysis showed that the conditional core damage probability was 1.6E-7.

This event did not adversely affect the safety of the public or station personnel. There was no release of radiation as a result of this incident. There was no loss of safety function as a result of this event.

IV. CAUSE OF THE EVENT

The cause of this event was the action taken to drain the expansion tank level back into the normal operating band to keep the level alarm clear caused an unknown amount of water to be drained from the system. This resulted in air binding in the system upon startup. The need to establish additional controls on draining this system was identified by this event.

V. CORRECTIVE ACTIONS

1. Revise POP09-AN-22M3, Annunciator Lampbox 22M03 Response Instructions, actions for window B4 to clearly identify appropriate operator response to level alarms in the expansion tank. This revision will include:
 - Specifications based on expansion tank pressure
 - Requirements to log filling and draining evolutions
 - Criteria for performing system vent per OPOP02-CH-0001
 - Enhanced probable causes
2. Revise the Pre-job Briefing expectations in Conduct of Operations to require review of the Annunciator Response Procedure as part of the briefing if a valid alarm is "expected" as a result of the activities being performed.
3. Revise OPOP01-ZQ-0022, Plant Operations Shift Routines, to reflect the requirement to log local actions to correct alarm conditions in the control room narrative log and the individual watchstation log.
4. Cover this event (associated LER) in Licensed Operator Requalification (LOR & POR) Training.
5. Include this event (associated LER) in the Essential Chilled Water lesson plan for initial Licensed and Non-Licensed Operator training programs.
6. Verify the repair of the leaking safety valve.

VI. PREVIOUS SIMILAR EVENTS

There have been no similar events at STP within the last 3 years.

VII. ADDITIONAL INFORMATION

Engineering will determine proper tank operating level to prevent "normal alarms" from occurring during periods of idle train conditions. Normal expansion should not routinely result in alarms prompting operator action.