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Ref: #10CFR50.73

CPSES-200601627  
Log #TXX-06139

August 24, 2006

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

**SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)  
DOCKET NO. 50-446 - LICENSEE EVENT REPORT 446/06-001-00  
CONDITION PROHIBITED BY TECHNICAL SPECIFICATIONS**

Gentlemen:

Enclosed is Licensee Event Report (LER) 06-001-00 for Comanche Peak Steam Electric Station Unit 2, "Condition Prohibited by Technical Specifications."

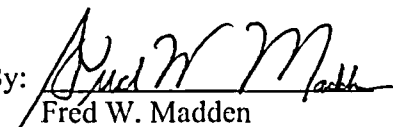
This communication contains no new licensing basis commitments regarding CPSES Units 1 and 2.

Sincerely,

TXU Generation Company LP

By: TXU Generation Management Company LLC  
Its General Partner

Mike Blevins

By:   
Fred W. Madden  
Director, Regulatory Affairs

RJK  
Enclosure

c - B. S. Mallett, Region IV  
M. C. Thadani, NRR  
Resident Inspectors, CPSES

A member of the STARS (Strategic Teaming and Resource Sharing) Alliance

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NRC FORM 366 (6-2004)		U.S. NUCLEAR REGULATORY COMMISSION				APPROVED BY OMB NO. 3150-0104 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-3 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.				EXPIRES 06/30/2007		
<b>LICENSEE EVENT REPORT (LER)</b>												
Facility Name (1) COMANCHE PEAK STEAM ELECTRIC STATION UNIT 2						Docket Number (2) 05000446		Page (3) 1 OF 6				
Title (4) CONDITION PROHIBITED BY TECHNICAL SPECIFICATIONS												
Event Date (5)			LER Number (6)			Report Date (7)			Other Facilities Involved (8)			
Month	Day	Year	Year	Sequential Number	Revision Number	Month	Day	Year	Facility Name	Docket Numbers		
06	25	2006	2006	001	00	08	24	06	N/A	05000		
Operating Mode (9)		This report is submitted pursuant to the requirements of 10 CFR : (Check all that apply) (11)										
1		20.2201(b)		20.2203(a)(3)(i)		50.73(a)(2)(i)(C)		50.73(a)(2)(vii)				
Power Level (10) 100%		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)(2)(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)		50.72(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)		X 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				
Licensee Contact For This LER (12)												
Name TIM HOPE, MANAGER, REGULATORY PERFORMANCE								Telephone Number (Include Area Code) (254) 897-6370				
Complete One Line For Each Component Failure Described in This Report (13)												
Cause	System	Component	Manufacturer	Reportable To EPIX		Cause	System	Component	Manufacturer	Reportable To EPIX		
B	LD	ISV	KEROTEST	N								
Supplemental Report Expected (14)								EXPECTED SUBMISSION DATE (15)		Month	Day	Year
YES (If YES, complete EXPECTED SUBMISSION DATE)										X	NO	
ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)												
<p>On June 25, 2006, Comanche Peak Steam Electric Station (CPSES) Units 1 and 2 were both in Mode 1 operating at approximately 100% power. While performing operator rounds on Unit 2, a Plant Equipment Operator (PEO) observed an oscillation in the air pressure supplied to the actuator of atmospheric relief valve (ARV) 2-PV-2328 on the #4 main steam line.</p> <p>Troubleshooting by the plant staff identified that the manual isolation valve in the instrument air supply from the accumulator to the air operator of the ARV was stuck closed. The valve was replaced and sent to an off site investigator for failure analysis. The results of this failure analysis indicated that a manufacturing defect and misalignment between the seat and disk led to the valve sticking closed. Due to the failure mode identified, this stuck closed condition had most likely existed since June 8, 2006, a period of time greater than that allowed by Technical Specifications.</p> <p>This report also includes voluntary reporting of data pursuant to the requirements of 10CFR21.</p> <p>All times in this report are approximate and Central Daylight Time unless noted otherwise.</p>												

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

**I. DESCRIPTION OF THE REPORTABLE EVENT****A. REPORTABLE EVENT CLASSIFICATION**

10CFR50.73(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**

On June 25, 2006, Comanche Peak Steam Electric Station (CPSES) Unit 2 was in Mode 1, operating at 100% power. The Reactor Coolant System (RCS) was at normal operating temperature and pressure (NOT/NOP).

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

There were no inoperable structures, systems, or components that contributed directly to the event.

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

On June 25, 2006 at 2000 hours, a Plant Equipment Operator (PEO) (utility, non-licensed) observed an oscillation in the air pressure supplied to the actuator of atmospheric relief valve (ARV) 2-PV-2328 [EIIS:(SB)(ACC)(RV)] on the #4 Main Steam [EIIS:(SB)] line. While the pressure reading was within specification, this oscillation was considered abnormal and was reported to the Control Room. At this point, troubleshooting by licensee staff commenced to determine the cause of the abnormal pressure oscillation.

On June 26, 2006 at 1230 hours, while performing air drop testing of the accumulator check valves for ARV 2-PV-2328 to verify component operability, licensee staff observed air pressure dropping significantly as soon as the Instrument Air isolation valve (2-PV-2328-AS1) was closed. The isolation valve was reopened, valve 2MS-0705 (SG 2-04 ATMOS RLF VLV AIR ACCUM 2-04 ISOL VLV) [EIIS:(LD)(ISV)] was cycled closed and then opened to verify its position. Due to the assumed leak in the air supply to the actuator, the ARV was declared inoperable and Technical Specification 3.7.4 was entered. Technical Specification 3.7.4, CONDITION A (One required ARV line inoperable) requires that the inoperable ARV line be restored to OPERABLE status within 7 days or the Unit must be in Mode 3 in 6 hours and Mode 4 in 12 hours.

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On June 26, 2006 at 1654 hours, troubleshooting by plant staff had eliminated either the Instrument Air system tubing or the ARV itself as the source of an air leak, and other potential sources of air leakage were considered. After capping the Current to Pressure (I/P) converter (2-PV-2328-IP), the pressure oscillations disappeared and the I/P converter was replaced. However, upon restoration of the ARV line on June 26, 2006 at 2250 hours, the pressure oscillations returned and troubleshooting recommenced.

On June 27, 2006 at 0509 hours, plant staff determined that valve 2MS-0705 was the cause of the restriction between the ARV actuator and its accumulator. A review of past operating history related to 2MS-0705 was conducted and the valve was last closed on June 8, 2006 for maintenance and most likely did not reopen when the system was restored due to the stuck valve disk. This condition isolated the ARV from its associated air accumulator, rendered the ARV line inoperable, and was determined to be a reportable condition due to the ARV line being inoperable for a period greater than that allowed by the Technical Specifications.

On June 27, 2006 at 1536 hours, after replacing valve 2MS-0705 and completing all retests, the ARV line was declared OPERABLE.

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

While performing routine plant rounds, an operator (utility, non-licensed) observed an abnormal oscillation in the air pressure supplied to the actuator of atmospheric relief valve (ARV) 2-PV-2328. Subsequent troubleshooting determined that valve 2MS-0705 was the cause of the restriction between the ARV actuator and its accumulator.

**II. COMPONENT OR SYSTEM FAILURES**

**A. FAILURE MODE, MECHANISM, AND EFFECT OF EACH FAILED COMPONENT**

The failed valve, 2MS-0705, was sent to an off site investigator (Southwest Research Institute) for failure analysis. The investigator determined that this valve sticking closed was caused by a manufacturing defect and a misalignment between the seat and disk. This misalignment resulted in the smearing and deformation of the metal on engaged surfaces of the body and the disk.

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**B. CAUSE OF EACH COMPONENT OR SYSTEM FAILURE**

The failure evaluation report concludes that there was a misalignment of the disk with respect to the body, and that flash around the outlet port (present when the valve was new) also appeared to play a significant role in immobilization of the disk in the closed position. The report suggests that repeated closure of the misaligned disk led to accumulated damage that ultimately immobilized the disk in the closed position.

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

Not applicable - No failures of components with multiple functions have been identified.

**D. FAILED COMPONENT INFORMATION**

<u>Nomenclature</u>	<u>Manufacturer</u>	<u>Model Number</u>
½" Globe Valve	Kerotest	CP-4TE-D22S/2

**III. ANALYSIS OF THE EVENT****A. SAFETY SYSTEM RESPONSES THAT OCCURRED**

Not applicable - No safety system responses occurred as a result of this event.

**B. DURATION OF SAFETY SYSTEM TRAIN INOPERABILITY**

The Unit 2 ARV (2-PV-2328) was inoperable from June 8, 2006 till June 27, 2006, a period of approximately 19 days.

**C. SAFETY CONSEQUENCES AND IMPLICATIONS OF THE EVENT**

An ARV is considered OPERABLE when it is capable of providing controlled relief of the main steam flow and capable of fully opening and closing on demand using associated remote manual control. The automatic controls for the ARVs do not perform a safety function.

The ARVs provide a method for cooling the unit to residual heat removal (RHR) entry conditions should the preferred heat sink via the Steam Dump System to the condenser not be available, as discussed in the FSAR, Section 10.3. This is done in conjunction with the Auxiliary Feedwater System providing cooling water from the condensate storage tank (CST). The ARVs may also be required to meet the design cooldown rate during a normal cooldown when steam pressure drops too low for maintenance of a vacuum in the

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condenser to permit use of the Steam Dump System. One ARV line for each of the four steam generators is provided. Each ARV line consists of one ARV, its associated remote manual controls and an associated block valve. The ARVs are provided with upstream block valves to permit their being tested at power and to provide an alternate means of isolation. The ARVs are equipped with pneumatic controllers to permit control of the cooldown rate and are provided with pressurized air accumulators that, on a loss of pressure in the normal instrument air supply, automatically supply air to operate the ARVs. With 80 psig pressure, the air accumulators have sufficient capacity to operate the ARVs for the time required for Steam Generator Tube Rupture mitigation. The failure of the manual isolation valve (2MS-0705) to open would result in the loss of the accumulator back-up to provide this control capability for the associated ARV.

The design basis for the minimum relief capacity of the ARVs is established by the capability to cool the unit to RHR entry conditions and the capability to mitigate a steam generator tube rupture (SGTR). The design basis for the maximum relief capacity is established by the 10CFR100 limits for SGTR and the capacity of the MSSVs assumed in the accident analyses. The design rate of 50°F per hour is applicable for a natural circulation cooldown using two steam generators, each with one ARV. The unit can be cooled to RHR entry conditions with only one steam generator and one ARV, utilizing the cooling water supply available in the CST. In the safety analysis, the ARVs are assumed to be used by the operator to cool down the unit to RHR entry conditions for events accompanied by a loss of offsite power. Prior to operator actions to cool down the unit, the main steam safety valves (MSSVs) are assumed to operate automatically to relieve steam and maintain the steam generator pressure below the design value. For the recovery from a SGTR event, the operator is also required to perform a limited cooldown to establish adequate subcooling as a necessary step to terminate the primary to secondary break flow into the ruptured steam generator. The time required to terminate the primary to secondary break flow for an SGTR is more critical than the time required to cool down to RHR conditions for this event and also for other accidents. Thus, the SGTR is the limiting event for the ARVs. Four ARVs are required to be OPERABLE to satisfy the SGTR accident analysis requirements based on consideration of single failure assumptions regarding the failure of one or two ARVs to open on demand.

Since the normal Instrument Air supply was available for the duration in which 2MS-0705 was closed, it is concluded that the health and safety of the public was unaffected by this condition. This event has been evaluated to not meet the definition of a safety system functional failure per 10CFR50.73(a)(2)(v) in that this single component failure would not have prevented fulfillment of the safety function as discussed above.

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		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 25%;">Year</th> <th style="width: 25%;">Sequential Number</th> <th style="width: 25%;">Revision Number</th> </tr> <tr> <td style="text-align: center;">2006</td> <td style="text-align: center;">001</td> <td style="text-align: center;">00</td> </tr> </table>	Year	Sequential Number	Revision Number	2006	001	00	6 OF 6
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### IV. CAUSE OF THE EVENT

Evidence in the failure evaluation report suggests that the preexisting flash around the outlet port and repeated closure of the misaligned disk led to accumulated damage that ultimately immobilized the disk in the closed position. This combination of manufacturing defect and misalignment was not sufficiently gross to have caused an immediate failure of the valve. However, damage accumulated through use of the valve during normal operation until sufficient resistance existed to overcome the opening force of the spring.

### V. CORRECTIVE ACTIONS

The valve that failed (2MS-0705) is located in-line between the ARV air accumulator and the instrument air supply. This valve was replaced. Comanche Peak has a total of eight components in this same configuration. The remaining seven valves were verified by the system engineer to be operating correctly (not remaining closed). The verification was performed by a visual confirmation that the pressure indicators associated with each safety related accumulator were not exhibiting oscillations that were characteristic of a closed isolation valve as noted in this condition. The valves verified were 1MS-0702, 1MS-0703, 1MS-0704, 1MS-0705, 2MS-0702, 2MS-0703, and 2MS-0704.

As part of the site's corrective action program, CPSES Engineering personnel are developing a method to verify Kerotest valve position. The valves to be considered would be limited to those in applications where the failure to open would have an adverse impact on operability or the ability to mitigate loss of a safety function. In addition, the current "run-to-failure" Preventive Maintenance classification of these Kerotest valves is being reviewed to determine if it is adequate to prevent event recurrence.

### VI. PREVIOUS SIMILAR EVENTS

There have been no previous similar reportable events at CPSES in the last three years. However, among the approximately 500 Kerotest globe valves of similar design installed in both units at CPSES, there have been at least three previous non-reportable events in the last 6 years documented in the CPSES Corrective Action Program where a the valve has failed to open after being closed during an evolution. In each of these instances, the failure was immediately obvious due to the system response, the failed valve was replaced, and the condition was considered a low significance failure.