



William J. Cahill, Jr.  
Executive Vice President

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April 22, 1991

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

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)  
DOCKET NO. 50-445  
CONDITION PROHIBITED BY THE PLANT'S TECHNICAL SPECIFICATIONS  
LICENSEE EVENT REPORT 91-010-00


Gentlemen:

Enclosed is Licensee Event Report 91-010-00 for Comanche Peak Steam Electric Station Unit 1, "Unit 1 Operated Outside Technical Specifications Due to Auxiliary Feedwater System Test Line Isolation Valve not Fully Closed."

Sincerely,

W. J. Cahill Jr.

By:

  
W. G. Gulderson  
Manager, Site Licensing

JAA/bm

c - Mr. R. D. Martin, Region IV  
Resident Inspectors, CPSES (3)

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NRC FORM 306				U.S. NUCLEAR REGULATORY COMMISSION				APPROVED OMB NO. 3150-0104 EXPIRES: 4/30/92						
<b>LICENSEE EVENT REPORT (LER)</b>								ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC. 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC. 20503.						
Facility Name (1) <b>COMANCHE PEAK - UNIT 1</b>								Docket Number (2) <b>015101010141415</b>		Page (3) <b>1</b> OF <b>016</b>				
Title (4) <b>UNIT 1 OPERATED OUTSIDE TECHNICAL SPECIFICATIONS DUE TO AUXILIARY FEEDWATER SYSTEM TEST LINE ISOLATION VALVE NOT FULLY CLOSED</b>														
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 Names	Docket Numbers				
03	22	91	91	0110	0	03	22	91	N/A	015101010111				
									N/A	015101010111				
This report is submitted pursuant to the requirements of 10 CFR § 1. (Check one or more of the following) (11)														
Operating Mode (9)		5		20.402(b)		20.405(a)(1)(i)		20.405(a)(1)(ii)		20.405(a)(1)(iii)				
Power Level (10)		0.1010		20.405(a)(1)(iv)		20.405(a)(1)(v)		20.405(a)(1)(vi)		20.405(a)(1)(vii)				
				20.405(a)(1)(viii)		20.405(a)(1)(ix)		20.405(a)(1)(x)		20.405(a)(1)(xi)				
				20.405(a)(1)(xii)		20.405(a)(1)(xiii)		20.405(a)(1)(xiv)		20.405(a)(1)(xv)				
				20.405(a)(1)(xvi)		20.405(a)(1)(xvii)		20.405(a)(1)(xviii)		20.405(a)(1)(xix)				
				20.405(a)(1)(xx)		20.405(a)(1)(xxi)		20.405(a)(1)(xxii)		20.405(a)(1)(xxiii)				
Licensee Contact For This LER (12)														
Name <b>T. A. HOPE</b>								Area Code <b>81117</b>						
COMPLIANCE SUPERVISOR								Telephone Number <b>819171-16131710</b>						
Complete One Line For Each Component Failure Described in This Report (13)														
Cause	System	Component	Manufacturer	Reportable To NPRDS	Cause	System	Component	Manufacturer	Reportable To NPRDS	Cause	System	Component	Manufacturer	Reportable To NPRDS
Supplemental Report Expected (14)										Expected Submission Date (15)		Month	Day	Year
<input type="checkbox"/> Yes (If yes, complete Expected Submission Date)										<input checked="" type="checkbox"/> No				
Abstract (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)														
<p>On March 22, 1991, an Auxiliary Operator discovered the Train B Motor-Driven Auxiliary Feedwater Pump Recirculation Test Line Isolation Valve one quarter turn open. The valve was last operated on March 13, 1991, during an Auxiliary Feedwater operability test. With the valve one quarter turn open, auxiliary feedwater flow is 8 gallons per minute less than assumed in the safety analysis; therefore, Train B Auxiliary Feedwater was inoperable from March 13 until the valve was closed on March 22. This exceeded the 72 hour Technical Specification Action Statement for one auxiliary feedwater pump or associated flow path inoperable.</p> <p>The root cause for why the valve was not fully closed could not be determined. Possibilities include the Operator failing to fully close the valve when restoring from the test, the valve being disturbed after it was closed on March 13, or vibration causing the valve to slightly back off its seat. Corrective actions include providing additional guidance to Operators on ensuring these type of valves are closed, having Operators monitor these type of valves during the next pump runs, and having Engineering take vibration readings on the valve.</p>														

NRC FORM 366A		U.S. NUCLEAR REGULATORY COMMISSION		APPROVED OMB NO. 3150-0104 EXPIRES 4/30/92	
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Text (If more space is required, use additional NRC Form 366A's) (17)

# I. DESCRIPTION OF THE REPORTABLE EVENT

## A. REPORTABLE EVENT CLASSIFICATION

Any operation or condition prohibited by the plant's Technical Specifications.

## B. PLANT OPERATING CONDITIONS PRIOR TO THE EVENT

On March 22, 1991, Comanche Peak Steam Electric Station Unit 1 was in Mode 5, Cold Shutdown, with reactor coolant temperature at 135 degrees Fahrenheit and pressure at 325 pounds per square inch gage. Steam Generator 04 (EIS:(SG)(SB)) was being filled with the Train B Motor-Driven Auxiliary Feedwater Pump (MDAFW) (EIS:(P)(BA)).

## 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 to the event.

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

At 0145, March 22, 1991, while filling Steam Generator 04, the Auxiliary Operator (AO) (utility, non-licensed) heard an unusual noise in the vicinity of the Train B MDAFW Pump. Investigation determined that 1AF-0055, Train B MDAFW Pump Recirculation Test Line Isolation Valve (EIS:(ISV)(BA)), was one quarter turn open. The valve was closed and the noise stopped.

1AF-0055 was last opened during an Auxiliary Feedwater operability test on March 13, 1991. The valve was opened, closed and independently verified closed at the conclusion of the test. There have been no work clearances or tests performed between March 13, 1991, and March 22, 1991, that would require 1AF-0055 to be operated.

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Facility Name (1)	Docket Number (2)	LER Number (6) <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">Year</td> <td style="width: 10%;"></td> <td style="width: 10%;">Sequential Number</td> <td style="width: 10%;"></td> <td style="width: 10%;">Revision Number</td> <td style="width: 10%;"></td> </tr> </table>	Year		Sequential Number		Revision Number		Page (3)
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The valve is operated by a floor stand with a 24 inch diameter handwheel. There are three drive shafts connecting four gear boxes from the hand wheel to the valve. The handwheel is required to be turned counterclockwise to close the valve and this is clearly labeled. Also, due to the diameter of the handwheel and the gear reduction, the use of a leverage device is not permitted. The valve was opened and closed for this evaluation by the AO (utility, non-licensed) that operated the valve during the March 13 test. The valve stroked without the need of a second person or leverage device. The closing feel was "spongy" due to the extensive linkage, but there did not appear to be any binding or extraordinary effort required to close the valve.

An engineering evaluation determined that with 1AF-0055 one quarter turn open, flow from Train B MDAFW Pump would be 8 gallons per minute less than assumed in the safety analysis; therefore, Train B Auxiliary Feedwater was inoperable from March 13 to March 22, when 1AF-0055 was closed. CPSES Unit 1 Technical Specifications require three independent steam generator auxiliary feedwater pumps and associated flow paths be operable during modes 1,2, or 3. Unit 1 was in modes 1, 2, or 3 from March 13 to March 20; therefore, the 72 hour Action Statement for one auxiliary feedwater pump or associated flow path inoperable was exceeded.

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

The AO heard an unusual noise in the vicinity of the Train B MDAFW Pump. Investigation determined that 1AF-0055 was one quarter turn open.

**II. COMPONENT OR SYSTEM FAILURES**

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

No failed components contributed to this event.

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

No failed components contributed to this event.

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<p><b>C. SYSTEMS OR SECONDARY FUNCTIONS THAT WERE AFFECTED BY FAILURE OF COMPONENTS WITH MULTIPLE FUNCTIONS</b></p> <p>No failed components contributed to this event.</p> <p><b>D. FAILED COMPONENT INFORMATION</b></p> <p>No failed components contributed to this event.</p>					
<p><b>III. ANALYSIS OF THE EVENT</b></p> <p><b>A. SAFETY SYSTEM RESPONSES THAT OCCURRED</b></p> <p>There were no safety system actuations associated with this event.</p> <p><b>B. DURATION OF SAFETY SYSTEM TRAIN INOPERABILITY</b></p> <p>Train B MDAFW Pump was inoperable from March 13 through March 22.</p> <p><b>C. SAFETY CONSEQUENCES AND IMPLICATIONS OF THE EVENT</b></p> <p>The Auxiliary Feedwater System (EISS:(BA)) is designed to provide a supply of high-pressure feedwater to the secondary side of the steam generators for reactor coolant heat removal following a loss of normal feedwater. After a loss of the main feedwater system (EISS:(SJ)), either the two motor-driven auxiliary feedwater pumps together, the turbine-driven pump alone, or any combination are capable of providing sufficient flow to the steam generators to allow the plant to be taken to a safe shutdown condition.</p> <p>The Train A MDAFW Pump and the Turbine-Driven Auxiliary Feedwater Pump (TDAFW) (EISS:(P)(BA)) were operable during the time that the Train B MDAFW Pump was inoperable; therefore, the Auxiliary Feedwater System could perform its intended safety function. At no time did a condition exist that required the operation of the Auxiliary Feedwater System to mitigate the event. At no time during this period did an actual condition exist that threatened the health or safety of the public.</p>					

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#### IV. CAUSE OF THE EVENT

##### ROOT CAUSE

The investigation could not determine how the valve became one quarter turn open; however, three possibilities are:

1. The AO and independent verifier failed to fully close the valve when restoring from the test on March 13, 1991.
2. The valve was disturbed after it was closed on March 13, 1991.
3. Vibration caused the valve to slightly back off its seat.

#### V. CORRECTIVE ACTIONS

##### CORRECTIVE ACTIONS TO PREVENT RECURRENCE

##### ROOT CAUSE (POTENTIAL)

1. The AO and the independent verifier (utility, non-licensed) failed to fully close the valve when restoring from the test on March 13, 1991.

##### CORRECTIVE ACTION

A Lesson's Learned memo has been issued to Shift Operations personnel describing the problem as well as additional instruction to ensure that the auxiliary feedwater pump recirculation test line isolation valves are closed.

2. The valve was disturbed after it was closed on March 13, 1991.

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### CORRECTIVE ACTION

No additional corrective actions can be added to the above actions. The Lesson's Learned memo will make operators more sensitive to these valves.

3. Vibration caused the valve to back slightly off its seat.

### CORRECTIVE ACTION

Auxiliary Operators will check 1AF-0055 the next two times the Train B MDAFW Pump is run with 1AF-0055 closed to determine the possibility of a vibration problem. This check will also include 1AF-0042, Train A MDAFW Pump Recirculation Test Line Isolation Valve and 1AF-0069, TDAFW Pump Recirculation Test Line Isolation Valve.

A Lesson's Learned memo has been issued to alert Shift Operations personnel of the possibility of auxiliary feedwater pump recirculation test line isolation valves vibrating open. It also alerts Operators of ways the test valves can be monitored to be closed and to be aware of the sounds in the auxiliary feedwater pump rooms.

Engineering will take vibration readings on 1AF-0055 during the next Train B MDAFW Pump run test. If vibration is determined to cause valve movement, then additional corrective actions will be taken to secure the valves.

### VI. PREVIOUS SIMILAR EVENTS

There have been no previous similar events reported pursuant to 10CFR50.73.

### VII. ADDITIONAL INFORMATION

The times listed in the report are approximate and Central Standard Time.