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Ref. # 10CFR50.73(a)(2)(iv)

C. Lance Terry
Group Vice President

March 5, 1996

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

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)-UNIT 1
DOCKET NOS. 50-445
MANUAL OR AUTOMATIC ACTUATION OF ENGINEERED SAFETY FEATURES
LICENSEE EVENT REPORT 445/96-003-00

Gentlemen:

Enclosed is Licensee Event Report (LER) 96-003-00 for Comanche Peak Steam Electric Station Unit 1, "ESF Actuation Caused by Tripping of both the Main Feedwater Pumps due to Low Suction Pressure".

Sincerely,

C. L. Terry
C. L. Terry

By: *Roger D. Walker*
Roger D. Walker
Regulatory Affairs Manager

OB:ob
Enclosure

cc: Mr. L. J. Callan, Region IV
Mr. W. D. Johnson, Region IV
Resident Inspectors, CPSES

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NRC FORM 366
(4-95)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 4/30/98

LICENSEE EVENT REPORT (LER)

(See reverse for required number of
digits/characters for each block)ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY
INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED
ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO
INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE
INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR
REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE
PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND
BUDGET, WASHINGTON, DC 20503.

Facility Name (1)

COMANCHE PEAK STEAM ELECTRIC STATION UNIT 1

Docket Number (2)

05000445

Page (3)

01 OF 05

Title (4)

ESF ACTUATION CAUSED BY TRIPPING OF BOTH THE MAIN FEEDWATER PUMPS DUE TO LOW SUCTION PRESSURE

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																			
0	2	0	4	9	6	9	6	-	0	0	3	-	0	0	0	3	0	5	9	6	CPSES UNIT 2	0	5	0	0	0	4	4	6
										N/A	0	5	0	0	0														

Operating Mode (9) ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12 ☐ 13 ☐ 14 ☐ 15 ☐ 16 ☐ 17 ☐ 18 ☐ 19 ☐ 20 ☐ 21 ☐ 22 ☐ 23 ☐ 24 ☐ 25 ☐ 26 ☐ 27 ☐ 28 ☐ 29 ☐ 30 ☐ 31 ☐ 32 ☐ 33 ☐ 34 ☐ 35 ☐ 36 ☐ 37 ☐ 38 ☐ 39 ☐ 40 ☐ 41 ☐ 42 ☐ 43 ☐ 44 ☐ 45 ☐ 46 ☐ 47 ☐ 48 ☐ 49 ☐ 50 ☐ 51 ☐ 52 ☐ 53 ☐ 54 ☐ 55 ☐ 56 ☐ 57 ☐ 58 ☐ 59 ☐ 60 ☐ 61 ☐ 62 ☐ 63 ☐ 64 ☐ 65 ☐ 66 ☐ 67 ☐ 68 ☐ 69 ☐ 70 ☐ 71 ☐ 72 ☐ 73 ☐ 74 ☐ 75 ☐ 76 ☐ 77 ☐ 78 ☐ 79 ☐ 80 ☐ 81 ☐ 82 ☐ 83 ☐ 84 ☐ 85 ☐ 86 ☐ 87 ☐ 88 ☐ 89 ☐ 90 ☐ 91 ☐ 92 ☐ 93 ☐ 94 ☐ 95 ☐ 96 ☐ 97 ☐ 98 ☐ 99 ☐ 100

Power Level (10) 17

This report is submitted pursuant to the requirements of 10 CFR 6. (Check one or more) (11)

20.2201 (b) ☐ 20.2203 (a) (2) (v) ☐ 50.73 (a) (2) (i) ☐ 50.73 (a) (2) (vii) ☐

20.2203 (a) (1) ☐ 20.2203 (a) (3) (i) ☐ 50.73 (a) (2) (ii) ☐ 50.73 (a) (2) (x) ☐

20.2203 (a) (2) (i) ☐ 20.2203 (a) (3) (ii) ☐ 50.73 (a) (2) (iii) ☐ 73.71 ☐

20.2203 (a) (2) (ii) ☐ 20.2203 (a) (4) ☐ 50.73 (a) (2) (iv) ☒ OTHER ☐

20.2203 (a) (2) (iii) ☐ 50.36 (c) (1) ☐ 50.73 (a) (2) (v) ☐ Specify in Abstract below

20.2203 (a) (2) (iv) ☐ 50.36 (c) (2) ☐ 50.73 (a) (2) (vii) ☐ or in NRC Form 366A

Licensee Contact For This LER (12)

Name

David C. Kross - Operations Support Manager

Telephone Number (Include Area Code)

(817)897-8603

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
				N					

Supplemental Report Expected (14)

YES

(If yes, completed EXPECTED SUBMISSION DATE)

X

NO

EXPECTED
SUBMISSION
DATE (15)

Month	Day	Year

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On February 4, 1996, at approximately 4:26 p.m. Central Standard Time (CST), Comanche Peak Steam Electric Station (CPSES) Unit 1 was at 17 percent power. At approximately 4:27 p.m. operators were valving in a string of low pressure feedwater heaters, which had been bypassed for some time since January 22, 1996, when both Motor Driven Auxiliary Feedwater Pumps auto started in response to a low suction pressure trip of both Main Feedwater Pumps.

TU Electric believes that this event was caused due to an oversight with respect to complete restoration of the system prior to placing it in service. TU Electric is enhancing the existing guidance for the system lineup and system restoration.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

Facility Name (1)	Docket	LER Number (6)						Page (3)			
COMANCHE PEAK STEAM ELECTRIC STATION UNIT 1	05000445	Year	Sequential Number	Revision Number					02	OF	05
9	6	-	0	0	3	-	0	0			

Text (if more space is required, use additional copies of NRC Form 365A) (17)

1. DESCRIPTION OF THE REPORTABLE EVENT

A. REPORTABLE EVENT CLASSIFICATION

An event or condition that resulted in a manual or automatic actuation of any Engineered Safety Feature (ESF) including the Reactor Protection System (RPS).

B. PLANT OPERATING CONDITIONS PRIOR TO THE EVENT

On February 4, 1996, at 4:27 p.m. CST, Comanche Peak Steam Electric Station (CPSES) Unit 1 was in Mode 1, Power Operations, Reactor Power was at approximately 17 percent.

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

On January 22, 1996 Comanche Peak Steam Electric Station (CPSES) Unit 1 was shutdown (see CPSES LER 445/96-002-00 for details). On February 4, 1996, at approximately 2:11 p.m. CST, CPSES Unit 1 entered Mode 1, power operation. The Unit was at approximately 17 percent power, Main Feedwater Pump A (MFP) (EIIS:(P)(SJ)) was in service supplying feedwater to all 4 Steam Generators (EIIS:(SG)(SB)), Main Feedwater Pump B was reset in standby.

On February 4, 1996, at approximately 4:26 p.m. CST, as part of the system lineup evolution, the Reactor Operator (RO) (utility, licensed) established flow through low pressure Feedwater Heaters (EIIS:(HTR)(BA) 5A and 6A. At approximately 4:27 p.m., both Motor Driven Auxiliary Feedwater Pumps (EIIS:(P)(BA)) auto started in response to a low suction pressure trip of both MFPs. The operators tripped the main turbine and manually inserted the rods to reduce reactor power.

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An event or condition that results in an automatic or manual actuation of any ESF, including the RPS, is reportable within 4 hours under 10CFR50.72(b)(2)(ii). At approximately 5:45 p.m. on February 4, 1996, the Nuclear Regulatory Commission Operations Center was notified of the event via the Emergency Notification System.

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

The Control Room Staff received a low pressure heater bypass trouble alarm which was followed by MFP trip alarms.

II. COMPONENT OR SYSTEM FAILURES

- A. FAILED COMPONENT INFORMATION

Not applicable - there were no component failures associated with this event.

- B. FAILURE MODE, MECHANISM, AND EFFECT OF EACH FAILED COMPONENT

Not applicable - there were no component failures associated with this event.

- C. CAUSE OF EACH COMPONENT OR SYSTEM FAILURE

Not applicable - there were no component failures associated with this event.

- D. SYSTEMS OR SECONDARY FUNCTIONS THAT WERE AFFECTED BY FAILURES OF COMPONENTS WITH MULTIPLE FUNCTIONS

Not applicable - there were no component failures associated with this event.

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													04	OF	05

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III. ANALYSIS OF THE EVENT

A. SAFETY SYSTEM RESPONSES THAT OCCURRED

Both Auxiliary Feedwater (AFW) (EIIS:(P)(BA)) pumps started in response to a low suction pressure trip of the MFPs.

B. DURATION OF SAFETY SYSTEM TRAIN INOPERABILITY

Not applicable - there was no safety system train inoperability that resulted from this event.

C. SAFETY CONSEQUENCES AND IMPLICATIONS OF THE EVENT

A loss of normal feedwater resulting from pump failure, valve malfunction, or loss of offsite power leads to a reduction in the capability of the secondary system to remove heat generated in the reactor core. These events are analyzed in section 15.2.7 of the CPSES Final Safety Analysis Report (FSAR) which used conservative assumptions in the analysis to minimize the energy removal capability of the Auxiliary Feedwater system.

The February 4, 1996, event occurred with the reactor at approximately 17 percent power. All systems and components functioned as designed. The event is bounded by the FSAR accident analysis which assumes an initial power level of 102 percent and the worst single failure in the Auxiliary Feedwater system for a loss of feedwater event. The FSAR analysis shows that a loss of normal feedwater does not adversely affect the core, the reactor coolant systems, or the steam system; therefore, this event posed no threat to the health and safety of the public.

IV. CAUSE OF THE EVENT

During Unit 1 shutdown(see CPSES LER 445/96-002-00), auxiliary steam loads (e.g., turbine seal steam, etc.) are supplied from CPSES Unit 2. This evolution results in a significant net transfer of condensate from Unit 2 to

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the Unit 1 Condensate Storage Tank/hotwell. This transfer results in excess inventory in the Unit 1 Condensate Storage Tank as well as high hotwell level. The normal means of reducing hotwell inventory under these circumstances is to reject to the Condensate Storage Tank. When the Condensate Storage Tank level or the condensate Dissolved Oxygen level is higher than desired, the reject is directed to the Turbine building sump by opening the drains to dump the water to the Turbine building sump and finally to the low volume waste. TU Electric believes that during the January 22, 1996 shutdown, when hotwell level was being reduced by draining from drain cooler 1-6A, air entrapment may have occurred in the low pressure feedwater heater string 'A' when it was isolated. Later during the startup, when the operators were valving in the string, an air slug was introduced upstream to the suction of the MFPs. This phenomena yielded a sharp downward pressure transient which was sufficient to trip the MFPs.

TU Electric believes that due to the lack of guidance for this evolution, the operators did not perform a fill and vent on the isolated low pressure feedwater heater string 'A'. Had the operators performed the filling and venting of the system, any air which may have entered the system would have been eliminated.

V. CORRECTIVE ACTIONS

TU Electric will enhance the applicable procedures to provide guidance with respect to valve lineup, and fill and vent of the system.

VI. PREVIOUS SIMILAR EVENTS

There have been no previous events at CPSES, where the cause of the event was similar to the February 4, 1996 event.