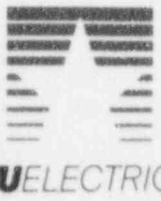

TUELECTRIC

Log # TXX-95320
File # 10200
Ref.
#10CFR50.73(a)(2)(iv)

C. Lance Terry
Group Vice President

December 18, 1995

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

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES) - UNIT 1
DOCKET NO. 50-445
MANUAL OR AUTOMATIC ACTUATION OF ENGINEERED SAFETY FEATURE
LICENSEE EVENT REPORT 445/95-007-00

Gentlemen:

Enclosed is Licensee Event Report (LER) 95-007-00 for Comanche Peak Steam Electric Station Unit 1, "ESF Actuation Caused by Feedwater Recirc Valve Failing Open Due to a Failure in the Power Supply Card

Sincerely,

C. L. Terry

By: J. A. Kelley Jr.
J. J. Kelley, Jr.
Vice President of Nuclear
Engineering & Support

OB:ob
Enclosure

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

IE22

Enclosure to TXX- 95320

NRC FORM 366 (4-95) U.S. NUCLEAR REGULATORY COMMISSION

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

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.

LICENSEE EVENT REPORT (LER)

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

Facility Name (1)	Docket Number (2)	Page (3)
COMANCHE PEAK STEAM ELECTRIC STATION 1	05000445	1 OF 6

Title (4)
ESF ACTUATION CAUSED BY FEEDWATER RECIRC VALVE FAILING OPEN DUE TO A FAILURE IN THE POWER SUPPLY CARD

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
11	19	95	95	- 007	- 00	12	18	95	CPSES UNIT 2	05000446
									N/A	05000

Operating Mode (9)	1
Power Level (10)	100

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

20.2201 (b)	20.2203 (a) (2) (v)	50.73 (a) (2) (i)	50.73 (a) (2) (viii)
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)	X 50.73 (a) (2) (iv)	OTHER
20.2203 (a) (2) (iii)	50.36 (c) (1)	50.73 (a) (2) (v)	Specify in Abstract below or in NRC Form 366A
20.2203 (a) (2) (iv)	50.36 (c) (2)	50.73 (a) (2) (vii)	

Licensee Contact For This LER (12)

Name	Telephone Number (Include Area Code)
RALPH FLORES - SYSTEM ENGINEERING MANAGER	(817)897-5590

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)			Expected Submission Date (15)	Month	Day	Year
YES (If yes, completed EXPECTED SUBMISSION DATE)	X	NO				

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

On November 19, 1995, at 5:22 p.m. a Balance of Plant (BOP) analog power supply for controller 1-FK-2289 failed causing 1-FV-2289 (Main Feedwater Pump(MFP) 1A(EIIS:(P)(SJ)) recirc valve) (EIIS:(V)(SJ)) to fail open. The failure of the recirc valve initiated a reduction of flow to the Steam Generators(SG) (EIIS:(SG)(SB)), and a decrease in feedwater suction pressure, resulting in a MFP trip. A restart of the pump and isolation of the recirc valve in combination with the feedwater transient resulted in overfeeding a SG. SG 2 level increased to a Hi Hi level initiating a turbine/reactor trip. Additionally, timer on the pole disagreement for the switch yard (W 3) Breaker 8010 (which is the Unit 1 generator output to the west bus) resulted in the breaker opening and isolation of the 345Kv switchyard west bus.

The failure of analog power supply for 1-FK-2289 was due to a blown fuse in a circuit card, which caused the MFP recirc valve to fail open. The card has been replaced with a new card containing a new fuse. A design modification has been issued to correct the cycle delay for the switch yard Breaker 8010.

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

I. DESCRIPTION OF THE REPORTABLE EVENT

A. REPORTABLE EVENT CLASSIFICATION

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

B. PLANT OPERATING CONDITIONS PRIOR TO THE EVENT

On November 19, 1995, prior to the event, Comanche Peak Steam Electric Station (CPSES) Unit 1 was in Mode 1, Power Operation, with reactor power at 100 percent.

C. STATUS OF STRUCTURE, 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 APPROPRIATE TIMES

At 5:22 p.m., on November 19, 1995 Unit 1 control room received a Balance of Plant analog power train C failure alarm. The alarm was initiated by a failure of a Balance of Plant (BOP) analog Power Supply (Train C) for controller 1-FK-2289, Main Feedwater Pump (MFP) 1A (EIIS:(P)(SJ)) recirc valve (EIIS:(V)(SJ)). The recirculation valve failed open initiating a reduction of feedwater flow available to the Steam Generators (SG) (EIIS:(SG)(SB)) and a reduction in main feedwater pump suction pressure. At approximately 5:25 p.m., a manual Turbine load reduction was initiated to compensate for the decrease in the feedwater suction pressure. MFP 1A and 1B increased to maximum speed to compensate for the recirc valve. At approximately 5:26 p.m., MFP 1B tripped due to low suction pressure, it was subsequently reset and restarted. SG levels had decreased to approximately 40 - 50 percent span, which fully opened the feedwater flow control valves. Upon the restart of the MFP and isolation of the recirc valve, SG levels increased rapidly to a Hi level set point before the flow control valves could throttle the flow and curtail the level rise.

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Manual control of 1-FCV-510 (EIIS:(FCV)(BA) was taken to reduce the flow and was successful in preventing a Hi Hi level on SG1. However, at approximately 5:35 p.m., SG2 reached the Hi Hi set point before manual action could be taken. Upon generation of the Hi Hi signal, safety systems responded as designed and an ESF/RPS actuation occurred tripping the turbine and the reactor, tripping both the main MFPs and starting both motor driven Auxiliary Feedwater Pumps (EIIS:(P)(BA)).

Timer on the pole disagreement for the switch yard (W 3) Breaker 8010 (which is the Unit 1 generator output to the west bus) resulted in the breaker opening and isolation of the 345Kv switchyard west bus. This isolation was as designed in the event of a generator output breaker failing to open. Breaker 8010 opened but a failed sensor 50-1 sensed the breaker not open and initiated a west bus isolation.

Following the trip at approximately 5:35 p.m. on November 19, 1995, Control Room personnel (utility, licensed) responded in accordance with plant procedures. Plant systems responded as expected. At approximately 5:44 p.m. the plant was stabilized in Mode 3, Hot Standby.

An event or condition that results in an automatic actuation of any ESF, including the RPS, is reportable within 4 hours pursuant to the requirements of 10CFR50.72(b)(2)(ii). At 8:25 p.m. on November 19, 1995, the Nuclear Regulatory Commission Operations Center was notified of the event via Emergency Notification System.

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

The alarm was initiated by a failure of a Balance of Plant (BOP) analog Power Supply (PS) [Train C] for 1-FK-2289, Feedwater Pump (MFP) 1A controller. The reactor trip was annunciated by numerous alarms in the Control Room.

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II. COMPONENT OR SYSTEM FAILURES

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

The 7300 card fuse blew, which caused the card output to zero which caused the valve to fully open and subsequently resulted in a main feedwater pump trip.

B. CAUSE OF EACH COMPONENT OR SYSTEM FAILURE

Preliminary information received from the fuse manufacturer indicates that the fuse blew at 110 percent to 135 percent rated current (1 amp). The manufacturer of the Tracking Driver Card did not identify any cause which would have resulted in the fuse failure. Additional evaluation by the manufacturer of the Tracking Driver Card is still in progress.

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

Tracking Driver Card Fuse
Manufacturer: Littlefuse Inc.
Part Number: M 192

III. ANALYSIS OF THE EVENT

A. SAFETY SYSTEM RESPONSES THAT OCCURRED

Both Motor Driven Auxiliary Feedwater Pumps started as expected.

B. DURATION OF SAFETY SYSTEM TRAIN INOPERABILITY

No safety system trains were inoperable during this transient.

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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 Steam Generator overfill event is also bounded by the analyses of the secondary-induced overcooling events presented in FSAR section 15.1. The Steam Generator Hi Hi level (P-14) interlock is provided for turbine protection and to mitigate the effects of an overcooling event initiated by overfeeding the steam generators. In Modes 1 and 2, the actuation of the P-14 interlock would normally result in a turbine stop valve closure and feedwater isolation.

Additionally, the loss of 345 Kv (preferred offsite power supply) along with one unit tripping at full power and a design bases accident occurring on the other unit has been analyzed in CPSES FSAR section 8.2 and 8.3.

Based on the above, it was concluded that the event had no impact on the health and safety of the public.

IV. CAUSE OF THE EVENT

The event was caused by the failure of the Westinghouse 7300 system Tracking Card Driver, which provides the signal to control the Feedwater recirc valve position. When the fuse failed the valve failed in the open position.

The ITE 345 Kv breakers have a problem of pole closing time disagreement on closure, causing the breakers to trip immediately on closure at times. A pole disagreement timer was added to aid in the breaker closure operation, this change corrected the problem with closure of the breakers. However, this change did not fully examine the cases during breaker tripping, i.e., when a breaker is slow to trip (pole disagreement). Less than adequate design change review led to the implementation of the design which resulted in a backup bus shedding relay to clearing the bus before the pole disagreement relay times out. This resulted in the isolation of the 345Kv switchyard west bus.

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V. CORRECTIVE ACTIONS

A new Tracking Driver Card with a new M192 fuse has been installed and the system was monitored for a period of time to assure proper functionality.

All pole disagreement timers have been removed/isolated from all the switchyard ITE breakers. TU Electric believes that this action, and development of a preventive maintenance program for the breaker operating mechanisms will prevent recurrence of the switchyard bus isolations.

VI. PREVIOUS SIMILAR EVENTS

There have been previous events which involved failure of the Feedwater Pumps. However, the causes of these events were sufficiently different, such that the corrective actions for the previous events may not have prevented the November 19, 1995 event.

VII. ADDITIONAL INFORMATION

All times provided are approximated and are Central Standard Time.

On December 5, 1995 CPSES Unit 2 experienced a plant trip due to loss of main feedwater speed control. During this event a 'pole disagreement' on Breaker 8020 caused a loss of 345Kv switchyard east bus. It should be noted that the corrective action described in Section V for the ITE breakers were not in place. Additional information regarding the Unit 2 event and the east bus isolation will be submitted via LER-50/446-95-004-00.