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### EVENT 1

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On June 24, 1997, at approximately 11:00 a.m., during a review of surveillance procedures involving testing of safety-related logic circuits, it was determined that plant surveillance procedures did not adequately test. on a quarterly basis, the Solid State Protection System (SSPS) P-11 input relays during Analog Channel Operational Tests (ACOTs). The cause of this condition is attributed to an incorrect previous interpretation of the Licensing Basis requirements related to testing for the SSPS P-11 input relays. Corrective actions taken include declaring the P-11 interlock inoperable, revising procedures to perform the quarterly surveillances, and performing all of the SSPS P-11 quarterly surveillances required by the Technical Specifications.

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ABS'IRACT (continued):

# EVENT 2

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On October 9, 1997, during a review of Generic Letter (GL) 96-01, "Testing of Safety-Related Logic Circuits." it was determined that a slave relay test for the Service Water Pump (SWP) (EIIS:(P)(BI)) non-1E motor space heaters required per the plant's Technical Specification were not performed. Corrective actions are to revise the applicable plant procedures and perform the test during the upcoming scheduled surveillances.

## EVENT 3

On November 18, 1997, during a review of Generic Letter (GL) 96-01. "Testing of Safety-Related Logic Circuits." it was determined that the logic for: a) source range block P-10; b) feedwater isolation from P-14, steam generator Hi-Hi level: and c) feedwater isolation on Safety Injection were not tested for all possible combinations of input. Corrective actions were to revise the applicable surveillance procedures to incorporate steps for testing the aforementioned circuits.

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# LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

Facility Name (1)

# COMANCHE PEAK STEAM ELECTRIC STATION UNIT 1

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#### DESCRIPTION OF THE REPORTABLE EVENT Ι.

#### REPORTABLE EVENT CLASSIFICATION A.

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

#### PLANT OPERATING CONDITIONS PRIOR TO THE EVENTS Β.

### EVENT 1

On June 24, 1997 at approximately 11:00 a.m., Comanche Peak Steam Electric Station (CPSES) Units 1 and 2 were both in Mode 1. Power Operation, at approximately 100% power.

## EVENT 2

On October 9, 1997, Comanche Peak Steam Electric Station (CPSES) Units 1 and 2 were both in Mode 1. Power Operation, at approximately 100% power.

# EVENT 3

On November 18, 1997, Comanche Peak Steam Electric Station (CPSES) Units 1 was in Mode 1. Power Operation, at approximately 100% power. CPSES Unit 2 was in its third refueling outage.

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

Not applicable - No structures, systems, or components were inoperable that contributed to the identified condition.

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# LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

Facility Name (1)

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### COMANCHE PEAK STEAM ELECTRIC STATION UNIT 1

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D.

NARRATIVE SUMMARY OF THE EVENT, INCLUDING DATES AND APPROXIMATE TIMES

## EVENT 1

On June 24, 1997 at approximately 11:00 a.m., during a review of surveillance procedures involving testing of safety-related logic circuits conducted in accordance with NRC Generic Letter 96-01 and during review of Operating Experience reports which describe incomplete quarterly surveillance testing of Solid State Protection System (SSPS) (EIIS:(JG)) P-11 permissive logic, I&C personnel (utility, non-licensed) determined that plant surveillance procedures had not adequately tested, on a quarterly basis, the SSPS P-11 input relays (EIIS:(RLY)(JG)) during Analog Channel Operational Tests (ACOTs). The P-11 interlock (EIIS:(IEL)(JG)) (1960 psig pressurizer pressure setpoint) permits a normal unit cooldown and depressurization without actuation of Safety Injection (SI) or Main Steam (MS) line isolation by permitting a manual block of these signals. Above the P-11 setpoint. Pressurizer Pressure-Low SI and Steamline Pressure-Low SI are automatically enabled.

Bypass testing design modifications of the SSPS were implemented at CPSES during the fifth refueling outage for Unit 1 (November 25, 1996) and during the second refueling outage for Unit 2 (May 30. 1996). With the bypass testing configuration, it was initially determined that the SSPS design and surveillance tests adequately addressed the Technical Specification surveillance requirements for the SSPS P-11 input relays and that only ACOT performances prior to the design modifications were inadequate However, on July 16. 1997, at approximately 3:30 p.m., it ... discovered that current SSPS ACOTs did not adequately address Technical Specification surveillance requirements. Specifically, it was discovered that the Trip Status Light Box windows for P-11 were not being verified in the OFF condition, which is the positive indication of the SSPS input relay functioning. Immediate corrective actions taken included declaring the Engineered Safety Features Actuation System (ESFAS) interlock P-11 on both Units 1 and 2 inoperable on July 16. 1997 at approximately 3:30 p.m.. Interlock P-11 operability was restored for both Units 1 and 2 on July 18, 1997, at approximately 6:00 p.m. by performing the revised ACOT procedures.

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# COMANCHE PEAK STEAM ELECTRIC STATION UN. 7.1

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The I&C test procedures for the ACOT did not adequately verify overlap from the 7300 channel test card through the SSPS P-11 input relays. This was due to these loops being de-energized at power (above the P-11 setpoint). In this configuration, tripping and/or restoring the instrument loop produced no change of state of the input relay and thus no indication of change on the trip status panel (EIIS:(PL)). Without a change in this indication, positive indication of the input relay operation could not be verified. Revised procedures associated with the bypass testing design modification did exercise the input relay, but did not contain a positive verification of the relay operation.

The ACOT surveillance procedures included verification that the P-11 interlocks were in the required state for the existing plant conditions which is equivalent to Technical Specification 3.3.2, Table 3.3-2, Item 10.a, Action 18. In addition, plant procedures also verified that P-11 properly transitioned to the correct state during plant shutdowns and plant startups.

### EVENT 2

Comanche Peak Steam Electric (CPSES) Technical Specification section 4.3.2.1.1.b requires that Engineered Safety Features Actuation System (ESFAS) for Safety Injection instrumentation channel, interlock, the automatic actuation logic, and relays shall be demonstrated OPERABLE by performance of the ESFAS instrumentation surveillance requirements specified in part to be a Slave Relay Test. On October 9, 1997 during a review (as specified via the GL 96-01), a plant operations person (Utility, Non-Licensed) identified that the CPSES Unit 1 and Unit 2 Slave Relay (EIIS:(RLY)(BI)) actuation test procedures did not include testing of associated contacts which open to isolate Service Water Pump non-1E motor space heaters from the supply 1E buses.

# EVENT 3

On November 18. 1997, during a review (as specified via the GL 96-01), plant personnel (Utility, Non-Licensed) identified that a potential existed that SSPS testing may be less than adequate. After analysis and discussions with the vendor (Westinghouse) and other utilities with similar systems, it was determined that the

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# LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

Facility Name (1)

### COMANCHE PEAK STEAM ELECTRIC STATION UNIT 1

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current Solid State Protection System (SSPS)(EIIS:(JG)) surveillance testing did not adequately test certain logic circuits. The circuits involved use Universal Logic Boards in a memory configuration. There are three functions which were inadequately tested: Source Range (EIIS:(IG)) Automatic P-10 Block, Feedwater Isolation on P-14 steam generator (EIIS:(SG)(AB)) Hi-Hi Level, and Feedwater (EIIS: (BA)) Isolation on a Safety Injection (E1IS:(BO)).

### THE METHOD OF DISCOVERY OF EACH COMPONENT OR SYSTEM FAILURE OR Ε. PROCEDURAL ERROR

### EVENT 1

Engineered Safety Features Actuation System (ESFAS) interlock P-11 for both Units 1 and 2 was declared inoperable from July 16, 1997 at approximately 3:30 p.m. to July 18, 1997 at approximately 6:00 Because the quarterly surveillance testing of SSPS P-11 D.M. permissive logic has never been adequately performed, the P-11 interlock for both Units has been technically inoperable since initial entry into Mode 3 on Units 1 and 2. However, TU Electric ieves that the P-11 interlock would have performed its intended salecy function during the period of inoperability as discussed in paragraph II.C below.

# EVENT 2

Operations support personnel discovered that slave relay testing was not performed, and was not included in the plant procedures. during the review and actions specified via GL 96-01.

## EVENT 3

Plant personnel discovered that the current SSPS testing was not performed for certain logic circuitry, and was not included in the plant procedures, during the review and actions specified via GL 96-01.

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#### ANALYSIS OF THE EVENT II.

#### SAFFTY SYSTEM RESPONSES THAT OCCURRED A

Not Applicable - No safety systems responded

#### DURATION OF SAFETY SYSTEM TRAIN INOPERABILITY Β.

### EVENT 1

Engineered Safety Features Actuation System (ESFAS) interlock P-11 for both Units 1 and 2 was declared inoperable from July 16, 1997 at approximately 3:30 p.m. to July 18, 1997 at approximately 6:00 p.m.. Because the guarterly surveillance testing of SSPS P-11 permissive logic has never been adequately performed, the P-11 interlock for both Units has been technically inoperable since initial entry into Mode 3 on Units 1 and 2. However, TU Electric believes that the P-11 interlock would have performed its intended safety function during the period of inoperability as discussed in paragraph II.C below.

### EVENT 2

Not Applicable- No safety system or train was deemed inoperable.

## EVENT 3

Not Applicable- No safety system or train was deemed inoperable. However, affected systems were considered to technically inoperable under the auspices of Technical Specification 4.0.3. The required surveillances were performed and the systems were technically declared operable within the allowed outage time.

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

# EVENT 1

The identified condition is similar to those examples presented in Generic Letter 96-01 where surveillance testing of the logic circuit was incomplete. In this case, a small portion of the circuit was omitted. The ACOT surveillance procedures in effect

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during this time period did include verification that the P-11 interlocks were in the required state for the existing plant condition which is equivalent to Technical Specification 3.3.2 Table 3.3-2. Item 10.a, Action 18. In addition, plant procedures also verified that P-11 properly transitioned to the correct state during plant shutdowns and plant startups Therefore, based on the above considerations, this event did not adversely affect the safety of plant operations or the health and safety of the public.

# EVENT 2

A Service Water Pump motor space heater is only energized through a contact that is closed when the motor supply breaker is open. The only concern for isolation of the non-qualified motor space heater is when the Service Water Pump motor's supply breaker is open. However, in this condition, if a safety injection signal would occur, and the untested isolation device failed to open, and a fault occurred in a the non-qualified motor space heater. The fault would still be prevented from propagating to the 1E power supply bus by a Class 1E circuit breaker which would trip open per the standard breaker coordination. Therefore, based on the aforementioned considerations or the health and safety of the public.

### EVENT 3

The inadequacy associated with this testing scheme is that when the set pushbutton is depressed, there are logic low signals provided at three of the card inputs. The actuation logic is based on "low" inputs at two of the three card inputs. Since the logic tested was equivalent to 3/3, the bimonthly surveillance did not adequately test the 2/3 logic. An internal card failure could be postulated (i.e., diode CR10 fails open) which would not be detected by the testing scheme. Assuming the presence of this undetectable failure plus the failure of another channel, an actual P-14 signal would not have actuated the Feedwater Isolation unless a P-4 Reactor Trip signal was also present. A similar scenario also exists for the other two memory functions listed above.

However, the Safety Injection Feedwater Isolation circuitry and the

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P-14 Feedwater Isolation circuitry are tested each refueling outage during the Time Response test. Proper operation of the cards is confirmed by simulating actual signals and timing the response through the circuits. Based on the successful tests performed during the previous outages and upon discovery of the condition. such a failure was confirmed to not exist. Therefore, based on the aforementioned considerations, this event did not adversely affect the safety of plant operations or the health and safety of the public.

## III. CAUSE OF THE EVENT

### EVENT 1

The cause of this condition is attributed to an incorrect previous interpretation of the Licensing Basis requirements related to testing for the SSPS P-11 input relays. The design of these relays, at the time the initial surveillance procedures were developed, did not allow for testing of the relays while the plant was in power operation. Based on this design configuration, and the interpretation at that time of the FSAR testing description, it was not recognized that the strict definition of the Technical Specification ACOT requirement included operation and verification of the SSPS input relays.

## EVENT 2

TU Electric believes that since qualified isolation devices were installed pursuant to the requirements of Regulatory Guide 1.75. It was believed by the procedure writers and the tecrnical reviewers that a ESFAS instrumentation surveillance was not required for these particular devices.

# EVENT 3

The Safety Injection Feedwater Isolation circuitry and the P-14 Feedwater Isolation circuitry are tested each refueling outage during the Time Response test. Proper operation of the cards is confirmed by simulating actual signals and timing the response through the circuits. However, the surveillance frequency of billionthly testing for the SSPS was not being

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# LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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satisfied for these three functions.

The original testing design for these three circuits was less than adequate and did not fully verify proper operation of the SSPS logic cards.

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#### CORRECTIVE ACTIONS IV.

## EVENT 1

Upon discovering that the Trip Status Light Box windows for P-11 were not being verified in the OFF condition. the Engineered Safety Features Actuation System (ESFAS) interlock P-11 for both Units 1 and 2 was declared inoperable on July 16, 1997 at 3:30 p.m. Interlock P-11 operability was restored for both Units 1 and 2 on July 18. 1997 at approximately 6:00 p.m.. Procedure revisions to perform the quarterly surveillances have been issued and all of the required Technical Specification quarterly surveillances have been performed. Reviews of surveillance procedures which involve testing of safety- slated logic circuits are continuing in accordance with NRC Generic Letter 96-01. These reviews provide additional assurance that any similar conditions will be identified.

# EVENT 2

Operations has placed the supply breakers to the Service Water Pump motor space heater in the open position until satisfactory surveillance testing of the contacts is completed. The surveillance testing will be performed during the upcoming scheduled surveillances. Applicable procedures are being revised to incorporate the required surveillance requirements.

# EVENT 3

The surveillance procedures at both CPSES Unit 1 and 2 were revised and both SSPS trains for both were tested, and the test results were acceptable.

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# V. PREVIOUS SIMILAR EVENTS

There have been other missed surveillance events during the previous two years. However, TU Electric will review the identified surveillance anomalies upon completion of the GL 96-01 required actions. Nonetheless, TU Electric believes that the corrective actions for the previous events have been generally effective and are not related to this event.