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Ref. # 50.73(a)(2)(iv)

May 16, 1991

William J. Cahill, Jr.  
Executive Vice President

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

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)  
DOCKET NO. 50-445  
MANUAL OR AUTOMATIC ACTUATION OF ANY ENGINEERED SAFETY FEATURE  
LICENSEE EVENT REPORT 91-015-00

Gentlemen:

Enclosed is Licensee Event Report 91-015-00 for Comanche Peak Steam Electric Station Unit 1, "Inadvertent Actuation of Control Room Air Conditioning Engineered Safety Feature Due to Spurious Signal."

Sincerely,

A handwritten signature in cursive script, appearing to read 'William J. Cahill, Jr.'.  
William J. Cahill, Jr.

JAA/bm

c - Mr. R. D. Martin, Region IV  
Resident Inspectors, CPSES (2)

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NRC FORM 366				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-590), 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>INADVERTENT ACTUATION OF CONTROL ROOM AIR CONDITIONING ENGINEERED SAFETY FEATURE DUE TO SPURIOUS SIGNAL</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																															
04	16	91	91	0115	010	05	16	91	N/A	015101010111																															
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Operating Mode (9) <b>5</b> This report is submitted pursuant to the requirements of 10 CFR 5 (Check one or more of the following) (11): <table style="width:100%; border: none;"> <tr> <td style="width:15%; border: none;">Power Level (10) <b>01010</b></td> <td style="width:15%; border: none;">20.402(b)</td> <td style="width:15%; border: none;">20.405(c)</td> <td style="width:15%; border: none;"><input checked="" type="checkbox"/> 50.73(a)(2)(iv)</td> <td style="width:15%; border: none;">73.71(b)</td> </tr> <tr> <td style="border: none;">20.405(a)(1)(i)</td> <td style="border: none;">50.36(c)(1)</td> <td style="border: none;">50.73(a)(2)(v)</td> <td style="border: none;">73.71(c)</td> <td style="border: none;"></td> </tr> <tr> <td style="border: none;">20.405(a)(1)(ii)</td> <td style="border: none;">50.36(c)(2)</td> <td style="border: none;">50.73(a)(2)(vi)</td> <td colspan="2" style="border: none;">Other (Specify in Abstract below and in Text, NRC Form 366A)</td> </tr> <tr> <td style="border: none;">20.405(a)(1)(iii)</td> <td style="border: none;">50.73(a)(2)(i)</td> <td style="border: none;">50.73(a)(2)(vii)(A)</td> <td colspan="2" style="border: none;"></td> </tr> <tr> <td style="border: none;">20.405(a)(1)(iv)</td> <td style="border: none;">50.73(a)(2)(ii)</td> <td style="border: none;">50.73(a)(2)(vii)(B)</td> <td colspan="2" style="border: none;"></td> </tr> <tr> <td style="border: none;">20.405(a)(1)(v)</td> <td style="border: none;">50.73(a)(2)(iii)</td> <td style="border: none;">50.73(a)(2)(viii)</td> <td colspan="2" style="border: none;"></td> </tr> </table>												Power Level (10) <b>01010</b>	20.402(b)	20.405(c)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)	73.71(b)	20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vi)	Other (Specify in Abstract below and in Text, NRC Form 366A)		20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(vii)(A)			20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(vii)(B)			20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(viii)		
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Licensee Contact For This LER (12)																																									
Name <b>T. A. HOPE</b>								Area Code <b>8117</b>		Telephone Number <b>819171-16131710</b>																															
Complete One Line For Each Component Failure Described in This Report (13)																																									
Cause	System	Component	Manufacturer	Reportable To NRC/JS	Cause	System	Component	Manufacturer	Reportable To NRC/JS																																
Supplemental Rep. Is 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 April 12, 1991, the pressure boundary door seals to the Control Room Heating, Ventilation, and Air Conditioning (HVAC) room were being replaced. The work required the use of a portable electric drill and saw. At 0427 on April 16, 1991, the Control Room HVAC system realigned to the emergency recirculation mode due to a high radiation signal from Radiation Monitor (XRE-5895A). The signal immediately returned to normal. The Reactor Operator (RO) responded to the event in accordance with the applicable procedure. An Auxiliary Operator (AO) was dispatched to investigate the possible cause of the spurious signal. The AO found electrical extension cords within the sensitive zone of XRE-5895A, with work in progress. The AO had the extension cords removed. At 0440 on April 16, 1991, the Control Room HVAC system was restored to original configuration.</p> <p>The root cause of the spurious signal has not been determined. The probable cause has been identified as an electromagnetically induced spike. Corrective actions include procedure revisions and training.</p>																																									

NRC FORM 365A

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0106

EXPIRES: 4/30/92

# **LICENSEE EVENT REPORT (LER)** **TEXT CONTINUATION**

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 60.0 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 (3150-0106), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC. 20503.

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				010	012 OF 016

Text (If more space is required, use additional NRC Form 365A's) (17)

## **I. DESCRIPTION OF THE REPORTABLE EVENT**

### **A. REPORTABLE EVENT CLASSIFICATION**

Any event or condition that resulted in an automatic actuation of any Engineered Safety Feature (ESF).

### **B. PLANT OPERATING CONDITIONS PRIOR TO THE EVENT**

On April 16, 1991, Comanche Peak Steam Electric Station (CPSES) Unit 1 was in Mode 5, Cold Shutdown, with the Reactor Coolant System (RCS)(EIS:(AB)) at a temperature of 100 degrees Fahrenheit and pressure of approximately 28 pounds per square inch-gage.

### **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 April 12, 1991, Construction personnel (contractor, non-licensed) began replacing the seals of the pressure boundary door to the Control Room Heating, Ventilation, and Air Conditioning (HVAC) room which contains Radiation Monitor (XRE-5895A) (EIS:(MON)(IL)). The work required the use of a portable electric drill and saw. Power for the drill and saw was provided via extension cords plugged into a 120 VAC receptacle directly adjacent to XRE-5895A. The extension cord used for the drill was lying on the floor adjacent to XRE-5895A, while the extension cord for the saw was draped above XRE-5895A. Both cords were within the marked area around XRE-5895A identified as sensitive to bumping, jarring, or radio interference where a possible hazard to the equipment or unit operation could exist if these activities occur. This area was identified as the sensitive zone for XRE-5895A.

NRC FORM 895A U.S. NUCLEAR REGULATORY COMMISSION  <b>LICENSEE EVENT REPORT (LER)</b> <b>TEXT CONTINUATION</b>		APPROVED OMB NO. 3150-0104 EXPIRES: 4/30/92 ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.6 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>0151010101415911</b>	LER Number (6) <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 10%;">Year</th> <th style="width: 10%;">Sequential Number</th> <th style="width: 10%;">Revision Number</th> </tr> <tr> <td style="text-align: center;">1991</td> <td style="text-align: center;">0115</td> <td style="text-align: center;">010</td> </tr> </table>	Year	Sequential Number	Revision Number	1991	0115	010	Page (3)  <b>013 OF 016</b>
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Text (If more space is required, use additional NRC Form 895A's) (17)

At 0427 on April 16, 1991, the Control Room HVAC system (EHS:(VI)) automatically realigned to the emergency recirculation mode due to a high radiation signal from XRE-5895A. The signal immediately returned to normal. The Reactor Operator (RO)(utility, licensed) recognized this as a spurious signal and began restoration of the Control Room HVAC system in accordance with the applicable procedure. The RO dispatched an Auxiliary Operator (AO) (utility, non-licensed) to investigate the possible cause of the spurious signal. The AO found electrical extension cords within the sensitive zone of XRE-5895A, with work on the pressure boundary door seals in progress. The AO instructed the Construction personnel to relocate the extension cords and to use another power receptacle. At 0440 on April 16, 1991, the Control Room HVAC system was restored to original configuration.

An event or condition that results in a manual or automatic actuation of any ESF is reportable within 4 hours under 10CFR50.72(b)(2)(ii). At 0559 on April 16, 1991, the Nuclear Regulatory 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 ERROR**

The Control Room HVAC system realignment was annunciated by several alarms in the Control Room. The RO recognized the signal was spurious, and began restoration procedures. At 0440 on April 16, 1991, the Control Room HVAC system was restored to original configuration.

**II. COMPONENT OR SYSTEM FAILURES**

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

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

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

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

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

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

**D. FAILED COMPONENT INFORMATION**

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

**III. ANALYSIS OF THE EVENT**

**A. SAFETY SYSTEM RESPONSES THAT OCCURRED**

The Control Room HVAC system automatically realigned to the emergency recirculation mode; all associated dampers (EIS:(PMP)(VI)) and fans (EIS:(FAN)(VI)) responded as designed.

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

Not applicable - there were no safety systems which were rendered inoperable as a result of this event.

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

The ESF associated with the Control Room HVAC system is the ability of the system to automatically realign into the emergency recirculation mode in response to a loss of offsite power, a safety injection, or a high radiation condition at any one of four radiation monitors located in the Control Room air intake ducts. This ESF actuation was the result of a spurious signal from XRE-5895A.

During realignment of the Control Room HVAC system to the emergency recirculation mode, all equipment functioned as designed. The operating makeup air supply fan shut down, the Control Room exhaust fan and the kitchen and toilet exhaust fans shut down, the emergency pressurization units started, the emergency filtration units started, and all associated dampers positioned as required. The successful realignment demonstrated that the system would have performed its



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<p>intended function if the actuation had been in response to one of the accident conditions for which it was designed. It is concluded that the event did not adversely affect the safe operation of CPSES Unit 1 or the health and safety of the public.</p>													
<p><b>IV. <u>CAUSE OF THE EVENT</u></b></p> <p><b><u>ROOT CAUSE</u></b></p> <p>The root cause of the spurious signal has not been conclusively determined. The probable cause has been identified as an electromagnetically induced spike, due to either the use of the adjacent 120 VAC power receptacle and/or the placement and use of electrical extension cords within the sensitive zone of XRE-5895A. These electrical extension cords were in the same configuration for three days, with work in progress, prior to receiving the spurious signal.</p>													
<p><b>V. <u>CORRECTIVE ACTIONS</u></b></p> <p><b>A. <u>IMMEDIATE</u></b></p> <p>The RO responded to the event in accordance with the applicable procedure. The RO dispatched an AO to investigate the possible cause of the spurious signal. The AO found electrical extension cords within the sensitive zone of XRE-5895A, with work in progress. The AO instructed the Construction personnel to relocate the extension cords and to use another power receptacle. The Control Room HVAC system was restored to original configuration.</p> <p><b>B. <u>CORRECTIVE ACTIONS TAKEN TO PREVENT RECURRENCE</u></b></p> <p><b><u>ROOT CAUSE</u></b></p> <p>The root cause of the spurious signal has not been conclusively determined. The probable cause has been identified as an electromagnetically induced spike, due to either the use of the adjacent 120 VAC power receptacle and/or the placement and use of electrical extension cords within the sensitive zone of XRE-5895A.</p>													

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**CORRECTIVE ACTION**

The procedure identifying sensitive equipment will be revised to prohibit access to identified sensitive zones without prior authorization. Training will be provided emphasizing this requirement.

**VI. PREVIOUS SIMILAR EVENTS**

LER 90-007-00 and LER 91-001-00 describe events in which the Control Room HVAC system automatically realigned to the emergency recirculation mode as a result of a loss of power to one of the radiation monitors in the Control Room air intake. However, the details of these events and the resultant corrective actions are sufficiently different from the details of this event to conclude that the previous corrective actions could not have been expected to prevent the actuation described in this report. Therefore, no previous similar events have been reported pursuant to 10CFR50.73.

**VII. ADDITIONAL INFORMATION**

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