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February 29, 2000

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

**SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)  
DOCKET NOS. 50-445 AND 50-446  
ANNUAL OPERATING REPORT FOR 1999**

Gentlemen:

Attached is the CPSES Annual Operating Report for 1999 prepared and submitted pursuant to guidance provided in C.1.b of U.S. NRC Regulatory Guide 1.16, Revision 4. The attachment also submits the annual Occupational Radiation Exposure Report as required by Technical Specification 5.6.1 contained in Appendix A to the Comanche Peak Steam Electric Station Unit 1 Operating License NPF-87 and Unit 2 Operating License NPF-89 .

If you have any questions, please contact Mr. Douglas W. Snow at (254) 897-8448.

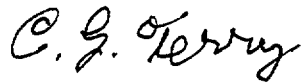
This communication contains no new licensing basis commitments regarding CPSES Units 1 and 2.

ADD

TXX-00034

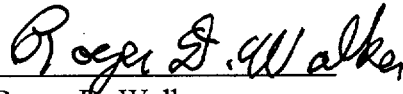
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Sincerely,



C. L. Terry

By:



Roger D. Walker  
Regulatory Affairs Manager

RDW/dws

Attachment

c - E. W. Merschoff, Region IV  
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D. H. Jaffe, NRR  
Resident Inspectors, CPSES

COMANCHE PEAK STEAM ELECTRIC STATION

ANNUAL OPERATING REPORT

1999

TXU ELECTRIC COMPANY

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## 1.0 SUMMARY OF OPERATING EXPERIENCE

The Comanche Peak Steam Electric Station (CPSES) is a dual unit pressurized water reactor power plant, Unit 1 is licensed at 3411 Megawatt thermal (MWt) and Unit 2 is licensed at 3445 MWt. It is located in Somervell County in North Central Texas approximately 65 miles southwest of the Dallas-Fort Worth Metropolitan area. The nuclear steam supply system was purchased from Westinghouse Electric Corporation and is rated for a 3425 MWt output. On October 7, 1999, Unit 2 implemented Technical Specification Amendment 72 and TRM Rev. 33, increasing the rating of Unit 2 from 3411 MWt to 3445 MWt output.

### 1.1 CPSES UNIT 1

CPSES Unit 1 achieved initial criticality on April 3, 1990. Initial power generation occurred on April 24, 1990, and the plant was declared commercial on August 13, 1990. Since being declared commercial, CPSES Unit 1 has generated 73,509,790 net Megawatt-hours (MWH) of electricity as of December 31, 1999, with a net unit capacity factor of 77.7% (using MDC). The unit and reactor availability factors were 84.9% and 89.0%, respectively, for the year 1999.

On September 15, 1999, the unit began the end-of-cycle coast down at the end of the seventh operating cycle. On September 24, 1999, the unit began the power ramp down for its seventh refueling outage. The unit entered the refueling outage on September 25.

During the refueling outage, 84 fresh fuel assemblies were loaded for Cycle 8. The refueling outage lasted 35 days and ended on October 29, 1999. Unit 1 was returned to 100% power on November 4, 1999.

During the refueling outage, the major work scope completed included:

- 10 Year Reactor Vessel Inservice Inspection
- Emergency Diesel Generator 5 and 10 year Inspections
- Emergency Diesel Generator replacement of four cylinder liners.
- Emergency Diesel Generators Turbo Overhaul
- Emergency Diesel Generators Clean and Inspect Fuel Tanks
- Modification and Replacement of the ECCS throttle valves
- Inspection of Low Pressure Turbine 1
- Low Pressure Turbine 1 and 2 Eddy Current Testing of Last Stage Blades
- 100% Eddy Current Testing on all four Steam Generators
- Inspection of Fuel Assemblies
- Reactor Coolant Pump Cartridge Seal Changeout 2 of 4

During this reporting period there were no failures or challenges to the Power Operated Relief Valves or Safety Valves.

Figure 1.1-1 provides the generation profile of the average daily net electrical output of Unit 1 for 1999. Table 1.1-1 is a compilation of the monthly summaries of the operating data and Table 1.1-2 contains the yearly and total summaries of the operating data.

## 1.2 CPSES UNIT 2

CPSES Unit 2 achieved initial criticality on March 24, 1993. Initial power generation occurred on April 9, 1993, and the plant was declared commercial on August 3, 1993. Since being declared commercial, CPSES Unit 2 has generated 51,392,101 net Megawatt-hours(MWH) of electricity as of December 31, 1999, with a net unit capacity factor of 79.5% (using MDC). The unit and reactor availability factors were 86.2% and 91.1%, respectively, for the year 1999.

On March 19, 1999, the unit began the power ramp down for its fourth refueling outage. The unit entered the refueling outage on March 20.

During the refueling outage, 92 fresh fuel assemblies were loaded for Cycle 5. The refueling outage lasted 34 days and ended on April 22, 1999. Unit 2 was returned to 100% power on April 29, 1999.

During the refueling outage, the major work scope completed included:

- Replacement of the High Pressure Turbine and a major inspection of Low Pressure Turbine 1
- Replacement of Last Stage Blades for both LP Turbines
- Emergency Diesel Generator replacement of four cylinder liners.
- Emergency Diesel Generators 18 month Inspection
- Emergency Diesel Generators Clean and Inspect Fuel Tanks
- Modification and Replacement of the ECCS throttle valves
- 20% Eddy Current Testing on all four Steam Generators
- Heater Drain System Modifications for increased reliability
- Reactor Coolant Pump Motor Replacement
- Installation of Tilt-pad bearings for Main Feedwater Pumps and turbines
- Inspection of Fuel Assemblies
- Turbine Driven Aux Feedwater Pump Rebuild

On October 7, 1999, Unit 2 implemented Technical Specification Amendment 72 and TRM Rev. 33, increasing the rating of Unit 2 from 3411 MWt to 3445 MWt output.

Figure 1.2-1 provides the generation profile of the average daily net electrical output of Unit 2 for 1999. Table 1.2-1 is a compilation of the monthly summaries of the operating data and Table 1.2-2 contains the yearly and the total summaries of the operating data.

During this reporting period there were no failures or challenges to the Safety Valves, however, on January 3, 1999 an event did challenge the Power Operated Relief Valves. Reference Table 2.2 for additional details.

## 2.0 OUTAGES AND REDUCTIONS IN POWER

### 2.1 CPSES UNIT 1

Table 2.1 describes unit operating experience including unit shutdowns and provides explanations of significant dips in average power levels for CPSES Unit 1.

### 2.2 CPSES UNIT 2

Table 2.2 describes unit operating experience including unit shutdowns and provides

explanations of significant dips in average power levels for CPSES Unit 2.

### 3.0 EXPOSURE AND MONITORING REPORT

The personnel exposure and monitoring report for CPSES is provided in Table 3.0.

### 4.0 IRRADIATED FUEL INSPECTION RESULTS

#### 4.1 CPSES UNIT 1

The reactor coolant fission product activity levels were carefully monitored throughout Cycle 7 operation. Analysis of the activity levels indicated no leaking fuel. Nonetheless, visual inspections were performed by inspection personnel from the edge of the spent fuel pool during refueling outage 1RFO7 to assess the external condition of the fuel assemblies. All fuel assemblies inspected appeared to be in good condition with no anomalies observed.

#### 4.2 CPSES UNIT 2

As was the case for Unit 1, Cycle 7, the reactor coolant fission product activity levels were carefully monitored throughout Unit 2, Cycle 4 operation. Analysis of the activity levels also indicated no leaking fuel throughout the cycle. During refueling outage 2RFO4, visual inspections were performed by inspection personnel from the edge of the spent fuel pool to assess the external condition of the fuel assemblies. Underwater camera inspections of randomly selected fuel assemblies were also performed. All fuel assemblies inspected appeared to be in good condition with no anomalies observed.

### 5.0 OUTAGE RELATED SINGLE RADIOACTIVITY RELEASE OR RADIATION EXPOSURE TO AN INDIVIDUAL THAT ACCOUNTS FOR MORE THAN 10 PERCENT OF ALLOWABLE ANNUAL VALUES

CPSES Units 1 and 2 did not experience any single release of radioactivity greater than 10% of an allowable dose limit during an outage or forced reduction in power of over 20% of designed power level during 1999.

During 1999 CPSES Units 1 and 2 both conducted a refueling outage (see section 1.1 and 1.2). During the outage activities, one individual received radiation exposure exceeding 10% of an allowable dose limit in a single exposure event. This exposure is tabulated in Table 6.0.

FIGURE 1.1-1  
COMANCHE PEAK STEAM ELECTRIC STATION - UNIT 1  
GENERATION PROFILE  
AVERAGE DAILY UNIT POWER LEVEL for 1999

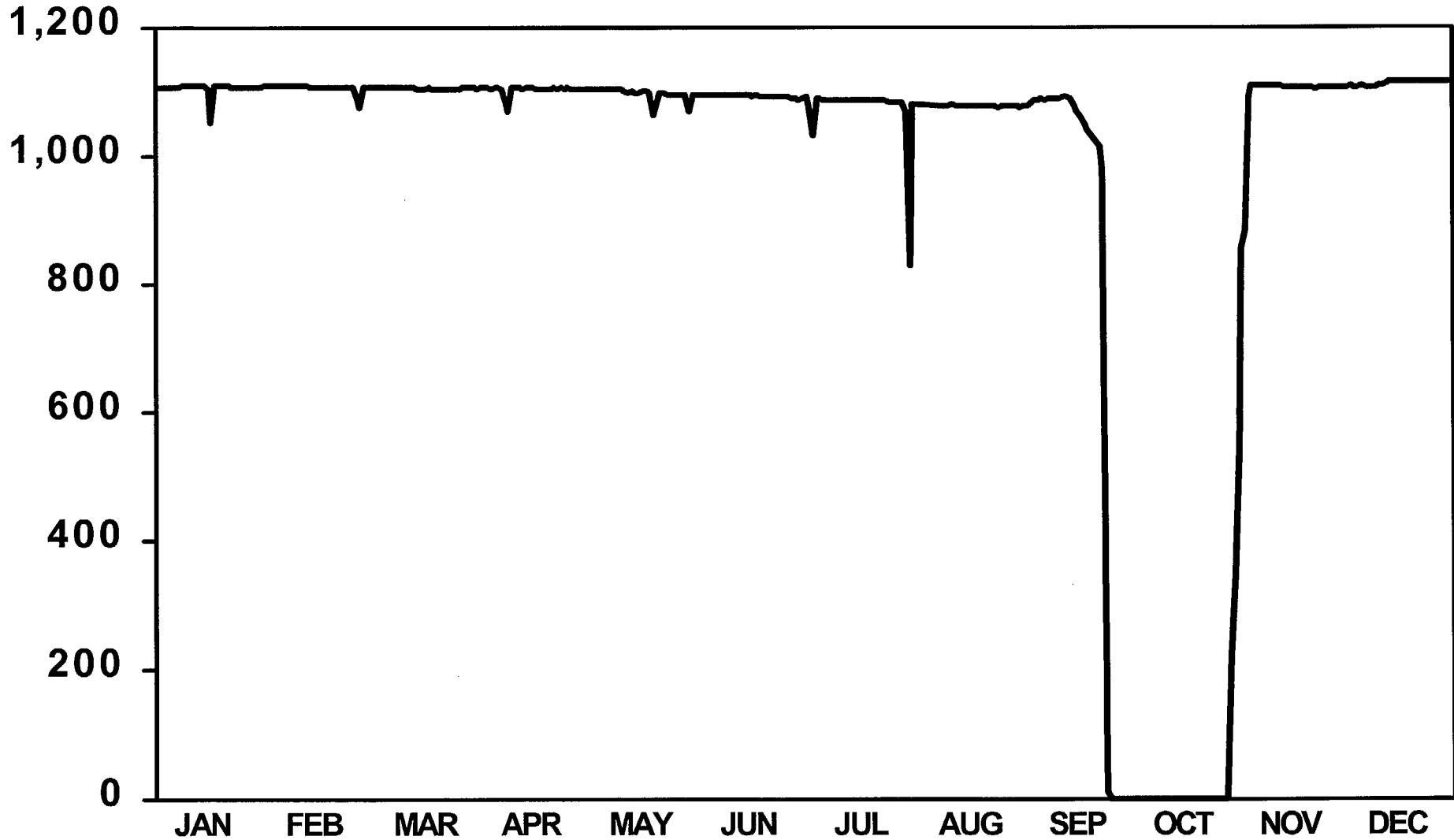








TABLE 1.1-2  
 COMANCHE PEAK STEAM ELECTRIC STATION - UNIT 1  
 ANNUAL ELECTRIC POWER GENERATION DATA (1999)

	YEAR	CUMULATIVE
Hours RX was Critical	7,966	6706601
RX Reserve Shutdown Hours	0	2,632
Hours Generator On-Line	7,922	69,881
Unit Reserve Shutdown Hours	0	0
Gross Thermal Energy Generated (MWH)	26,731,411	229,971,855
Gross Electric Energy Generated (MWH)	8,972,631	76,923,108
Net Electric Energy Generated (MWH)	8,601,515	73,509,790
RX Service Factor (%)	90.9	85.8
RX Availability Factor (%)	90.9	89.0
Unit Service Factor (%)	90.4	84.9
Unit Availability Factor (%)	90.4	84.9
Unit Capacity Factor (% , using MDC net)	85.4	77.7
Unit Capacity Factor (% , using DER net)	85.4	77.7
Unit Forced Outage Rate (%)	0.0	3.3
Hours in Reporting Period	8,760	82,265

FIGURE 1.2-1  
COMANCHE PEAK STEAM ELECTRIC STATION - UNIT 2  
GENERATION PROFILE  
AVERAGE DAILY UNIT POWER LEVEL for 1999

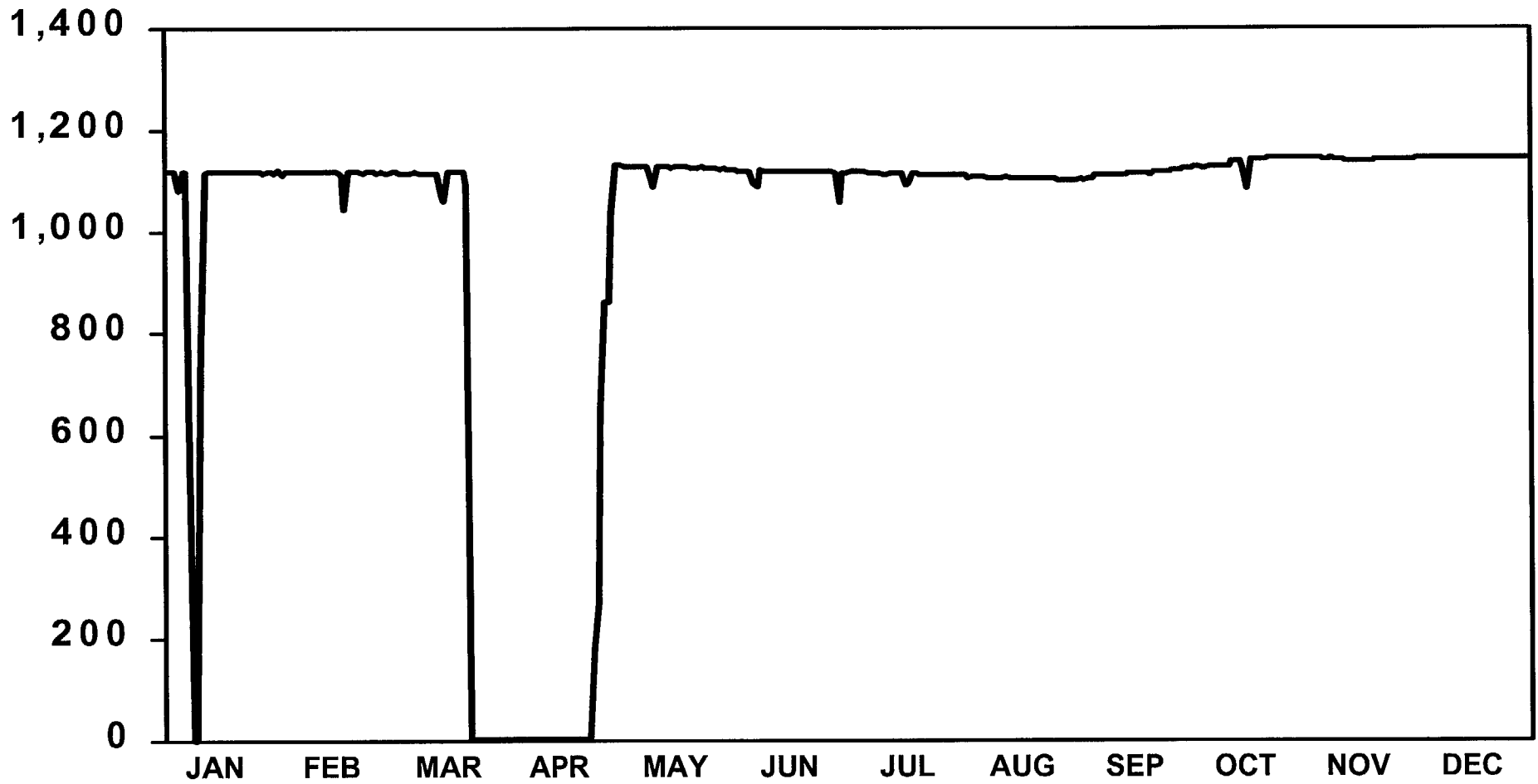






TABLE 1.2-2  
 COMANCHE PEAK STEAM ELECTRIC STATION - UNIT 2  
 ANNUAL ELECTRIC POWER GENERATION DATA (1999)

	YEAR	CUMULATIVE
Hours Rx was Critical	7,958	48.807
RX Reserve Shutdown Hours	40	2,366
Hours Generator On-Line	7,900	48,430
Unit Reserve Shutdown Hours	0	0
Gross Thermal Energy Generated (MWH)	26,711,769	158,578,782
Gross Electric Energy Generated (MWH)	9,117,720	53,652,453
Net Electric Energy Generated (MWH)	8,756,024	51,392,101
RX Service Factor (%)	90.8	86.8
RX Availability Factor (%)	91.3	91.1
Unit Service Factor (%)	90.2	86.2
Unit Availability Factor (%)	90.2	86.2
Unit Capacity Factor (% , using MDC net)	86.9	79.5
Unit Capacity Factor (% , using DER net)	86.9	79.5
Unit Forced Outage Rate (%)	0.7	4.0
Hours in Reporting Period	8,760	56,200

TABLE 2.1 (PAGE 1 OF 1)  
 COMANCHE PEAK STEAM ELECTRIC STATION - UNIT 1  
 UNIT OPERATING EXPERIENCE INCLUDING SHUTDOWNS AND POWER REDUCTIONS DURING 1999

NO	DATE	TYPE F: FORCED S: SCHEDULED	DURATION* (HOURS)	REASON	METHOD OF SHUTTING DOWN THE REACTOR OR REDUCING POWER	CORRECTIVE ACTION/COMMENTS
1	990730	F	NA	H	4	At 1553, on July 30, 1999 while troubleshooting an Electro Hydraulic Control failure alarm, a transient occurred that caused the main turbine control valves to go full open. During this transient the MFP-1B control valve jammed open. At 0358, on July 31, 1999, during the power reduction to 50% to repair the pump, a rod control urgent failure alarm was received. At 1935, the dispatcher released the unit to resume downpower to 50%. At 2156, the unit was at 50% power for repairs to the MFP-1B control valve. The unit ended the month at 50% power with MFP-1B repairs in progress.
1a	990801	F	NA	H	4	Unit began the month at 50% power with MFP 1B control valve repairs in progress. On July 30, 1999 while troubleshooting an Electro Hydraulic Control failure alarm, a transient occurred that caused the main turbine control valves to go full open. During this transient the MFP-1B control valve jammed open. Repairs were completed on August 01 and the unit was returned to 100% power at 1427, on August 01, 1999.
2	990925	S	143	C	4	At 0100 on September 25, 1999 a preplanned reactor trip as a normal shutdown began 1RF07 refueling outage. This unit ended the month in Mode 6 with 1RF07 in progress.

1) REASON

- A: EQUIPMENT FAILURE (EXPLAIN)
- B: MAINT OR TEST
- C: REFUELING
- D: REGULATORY RESTRICTION

- E: OPERATOR TRAINING AND LICENSE EXAMINATION
- F: ADMINISTRATIVE
- G: OPERATIONAL ERROR (EXPLAIN)
- H: OTHER (EXPLAIN)

2) METHOD

- 1: MANUAL
- 2: MANUAL SCRAM
- 3: AUTOMATIC SCRAM
- 4: OTHER (EXPLAIN)

\* INDICATES SHUTDOWN HOURS/OTHERWISE "NA" FOR NOT APPLICABLE



TABLE 2.1 (PAGE 1 OF 2)  
 COMANCHE PEAK STEAM ELECTRIC STATION - UNIT 1  
 UNIT OPERATING EXPERIENCE INCLUDING SHUTDOWNS AND POWER REDUCTIONS DURING 1999

NO	DATE	TYPE F: FORCED S: SCHEDULED	DURATION* (HOURS)	REASON	METHOD OF SHUTTING DOWN THE REACTOR OR REDUCING POWER	CORRECTIVE ACTION/COMMENTS
2a	991001	S	693.98	C	4	Continuation of 1RF07 refueling outage. The refueling outage was completed and the unit sync to the grid at 2159 on 10/29/99.
2b	991101	S		H	4	The unit began the month at 73% power ramping to 100% power after completion of 1RF07 refueling outage at 2327 on October 29, 1999. The unit returned to 100% power at 0805 on November 4, 1999.
3	991029	F	1.03	H	4	At 2225, on October 29, 1999, the turbine was manually tripped due to high primary water temperature which was the result of a cooler outlet isolation valve being closed. The valve was re-positioned and the unit was synced to the grid at 2327 on October 29, 1999 and began the ramp to full power.

1) REASON

- A: EQUIPMENT FAILURE (EXPLAIN)
- B: MAINT OR TEST
- C: REFUELING
- D: REGULATORY RESTRICTION

- E: OPERATOR TRAINING AND LICENSE EXAMINATION
- F: ADMINISTRATIVE
- G: OPERATIONAL ERROR (EXPLAIN)
- H: OTHER (EXPLAIN)

2) METHOD

- 1: MANUAL
- 2: MANUAL SCRAM
- 3: AUTOMATIC SCRAM
- 4: OTHER (EXPLAIN)

\* INDICATES SHUTDOWN HOURS/OTHERWISE "NA" FOR NOT APPLICABLE

TABLE 2.2 (PAGE 1 OF 3)  
 COMANCHE PEAK STEAM ELECTRIC STATION - UNIT 2  
 UNIT OPERATING EXPERIENCE INCLUDING SHUTDOWNS AND POWER REDUCTIONS DURING 1999

NO	DATE	TYPE F: FORCED S: SCHEDULED	DURATION* (HOURS)	REASON	METHOD OF SHUTTING DOWN THE REACTOR OR REDUCING POWER	CORRECTIVE ACTION/COMMENTS
1	990103	F	52.32	A	2	On January 3, at 1115, a Electro-Hydraulic Control (EHC) failure caused a loss of electric load to approximately 200 MWe. Operators manually scrammed the reactor. After extensive trouble shooting, the cause of the EHC failure could not be determined. The unit synced to the grid on January 5, at 1534 and returned to 100% power on January 6, at 1657. During the event there was a challenge to the PORV. LER 446 99-002-00
2	990312	F		A	4	At 0515 on March 12, 1999, the Feedwater Heater Normal Drain Valve stuck open. Power was reduced approximately 26 MWe while troubleshooting the valve. At 1400, power was reduced to 95% to repair the valve. The valve was repaired and the unit returned to 100% power at 1920 on March 13, 1999.
3	990320	S	286.37	C	1	Unit began downpower for start of the Fourth Refueling Outage at 2153 on March 19, 1999. The main turbine was tripped at 0138 on March 20, 1999 and the unit entered the Fourth Refueling Outage (2RFO4). The unit ended the month with the core offloaded for 2RFO4.

1) REASON

- A: EQUIPMENT FAILURE (EXPLAIN)
- B: MAINT OR TEST
- C: REFUELING
- D: REGULATORY RESTRICTION

- E: OPERATOR TRAINING AND LICENSE EXAMINATION
- F: ADMINISTRATIVE
- G: OPERATIONAL ERROR (EXPLAIN)
- H: OTHER (EXPLAIN)

2) METHOD

- 1: MANUAL
- 2: MANUAL SCRAM
- 3: AUTOMATIC SCRAM
- 4: OTHER (EXPLAIN)

\* INDICATES SHUTDOWN HOURS/OTHERWISE "NA" FOR NOT APPLICABLE

TABLE 2.2 (PAGE 2 OF 3)  
 COMANCHE PEAK STEAM ELECTRIC STATION - UNIT 2  
 UNIT OPERATING EXPERIENCE INCLUDING SHUTDOWNS AND POWER REDUCTIONS DURING 1999

NO	DATE	TYPE F: FORCED S: SCHEDULED	DURATION* (HOURS)	REASON	METHOD OF SHUTTING DOWN THE REACTOR OR REDUCING POWER	CORRECTIVE ACTION/COMMENTS
3a	990401	S	521	C	1	Unit began the month with the core offloaded for 2RFO4. The Unit synced to the grid at 1803 on April 22, 1999, ending 2RFO4. The unit returned to 100% power at 1455 on April 28, 1999.
4	990628	F		H	4	At 1500 on 06/28, the unit began a power reduction to 80% power due to Chemistry identification of sodium in hotwell A. Chemistry investigated and identified the sodium as a one time addition resulting from I&C calibrations on the vacuum transmitters of both aux condensers. The Unit was returned to 100% power at 2330 on the same day.

1) REASON

- A: EQUIPMENT FAILURE (EXPLAIN)
- B: MAINT OR TEST
- C: REFUELING
- D: REGULATORY RESTRICTION

- E: OPERATOR TRAINING AND LICENSE EXAMINATION
- F: ADMINISTRATIVE
- G: OPERATIONAL ERROR (EXPLAIN)
- H: OTHER (EXPLAIN)

2) METHOD

- 1: MANUAL
- 2: MANUAL SCRAM
- 3: AUTOMATIC SCRAM
- 4: OTHER (EXPLAIN)

\* INDICATES SHUTDOWN HOURS/OTHERWISE "NA" FOR NOT APPLICABLE

TABLE 3.0  
COMANCHE PEAK STEAM ELECTRIC STATION - UNITS 1 AND 2  
1999 PERSONNEL EXPOSURE AND MONITORING REPORT

<u>Work &amp; Job Function</u>	<u>Station</u>	<u>#Personnel</u>		<u>Total</u>	<u>Person -</u>	<u>rem</u>
		<u>Utility</u>	<u>Contract</u>			
Reactor Operations & Surveillance						
Maintenance & Construction	191	0	295	0.527	.000	0.416
Operations	299	3	188	7.971	.000	0.777
Health Physics & Lab	57	0	69	1.946	.000	0.440
Supervisory & Office Staff	45	2	15	0.085	.000	0.019
Engineering Staff	152	0	137	0.540	.000	0.259
Routine Plant Maintenance						
Maintenance & Construction	202	0	668	11.640	.000	65.856
Operations	79	0	41	1.423	.000	1.839
Health Physics & Lab	25	0	58	1.073	.000	3.381
Supervisory & Office Staff	28	1	2	0.342	.000	0.001
Engineering Staff	78	0	254	0.994	.000	15.798
In-service Inspection						
Maintenance & Construction	60	0	234	0.782	.000	15.637
Operations	41	1	14	0.697	.019	0.399
Health Physics & Lab	25	0	26	1.402	.000	2.332
Supervisory & Office Staff	3	0	0	0.069	.000	0.000
Engineering Staff	26	0	221	0.149	.000	37.216
*Special Plant Maintenance						
Maintenance & Construction	57	0	270	0.214	.000	16.518
Operations	34	0	15	0.571	.000	0.738
Health Physics & Lab	15	0	3	0.070	.000	0.178
Supervisory & Office Staff	7	0	0	0.084	.000	0.000
Engineering Staff	27	0	146	2.489	.000	20.046
Waste Processing						
Maintenance & Construction	23	0	42	0.081	.000	0.893
Operations	23	0	6	0.467	.000	0.755
Health Physics & Lab	31	0	1	1.131	.000	0.008
Supervisory & Office Staff	1	0	0	0.000	.000	0.000
Engineering Staff	1	0	4	0.027	.000	0.001
Refueling						
Maintenance & Construction	99	0	152	1.323	.000	5.899
Operations	88	1	17	4.425	.000	0.181
Health Physics & Lab	53	0	82	6.617	.000	7.111
Supervisory & Office Staff	10	0	1	0.067	.000	0.001
Engineering Staff	39	1	148	0.315	.000	21.015
Totals						
Maintenance & Construction	632	0	1661	14.567	.000	105.219
Operations	564	5	281	15.554	.019	4.689
Health Physics & Lab	206	0	239	12.239	.000	13.451
Supervisory & Office Staff	94	3	18	0.648	.000	0.021
Engineering Staff	323	1	910	4.514	.002	94.335
Grand Totals	1819	9	3109	47.522	.019	217.715

\* Coating repairs in all radiologically controlled areas.  
Installation of U1 steam generator inspection ports.  
Pipe whip restraints removed in loop rooms

TABLE 6.0

## 1999 COMANCHE PEAK STEAM ELECTRIC STATION - UNITS 1 AND 2

OUTAGE RELATED RADIATION EXPOSURE TO AN INDIVIDUAL FOR A SINGLE MAINTENANCE ACTIVITY WHICH EXCEEDS 10 PERCENT OF AN ALLOWABLE ANNUAL DOSE LIMIT\*

<u>Maintenance Activity</u>	<u>Department</u>	<u>Individual's Single Event Exposure (mrem)</u>	<u>Total Annual Exposure (mrem)</u>
Nozzle Dam	Westinghouse	549	1156

\* Subject annual dose limit is 5000 mrem deep dose equivalent