

COMANCHE PEAK
STEAM ELECTRIC STATION

UNIT 2

CONTROL ROOM SIMULATOR

10CFR55 CERTIFICATION

INITIAL REPORT

DATE 3/26/92

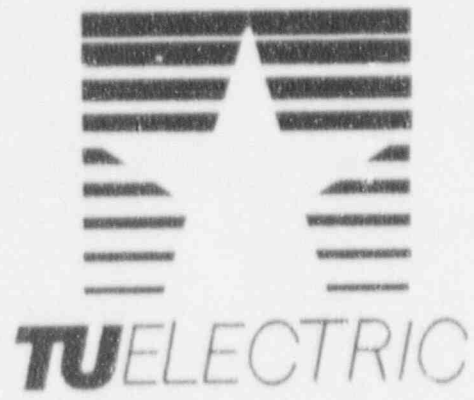
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UNIT 2 CERTIFICATION INITIAL REPORT

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SECTION 9

UNIT 1/2 DIFFERENCES

UNIT 1/2 DIFFERENCES

Plant Systems

The plant systems, controls, and indications between Unit 1 and Unit 2 are essentially identical with the exceptions listed in Attachments 9-A and 9-B. The most notable differences between Unit 1 and Unit 2 are:

1. Westinghouse Model D4 Steam Generators are used in Unit 1 while Westinghouse Model D5 Steam Generators are used in Unit 2.
2. Unit 2 will begin operations with an optimized fuel load.

These differences are not considered to be of major significance to the training or examination process. A discussion of this determination is provided in the Operational Characteristics section of this certification report.

Unit 1 and Unit 2 have some shared equipment (i.e., HVAC, Chilled Water, Instrument Air, etc.). This shared equipment is controlled from the Unit 1 Main Control Boards, common HVAC panels, and local panels. The Unit 2 Main Control Boards display redundant instrumentation and annunciation for any shared equipment important for safe operation.

In summary, there are no significant plant or system differences that would impact the training or examination of USNRC licensed operators and those in license training for dual unit operator licenses.

Technical Specifications

Comanche Peak Steam Electric Station will utilize one set of Technical Specifications for Unit 1 and Unit 2. No major differences exist which would interfere with the training or examination of USNRC licensed operators or those in license training for dual unit operator licenses.

Operating Procedures

Since the equipment and systems utilized in Unit 1 and Unit 2 are essentially the same, the operating procedures are essentially identical. There are some minor procedural differences due to equipment variations that are generally equipment maintenance items versus operating characteristics.

The Unit 2 Emergency Operating Procedures and Abnormal Operating Procedures are essentially the same as Unit 1 with minor differences existing in the setpoints for annunciation and actuation. These differences have been determined to be of minor significance.

In summary, there are no significant differences in Operating, Emergency or Abnormal procedures that would impact the training or examination of USNRC licensed operators and those in license training for dual unit operator licenses.

Control Room Layout

The Unit 1 and 2 Main Control Boards share a common Control Room with a central command and communications platform and common back panels. The Main Control Boards are rotated 180 degrees from each other and are not mirror images. The layout of controls and indications on the boards are the same for both units except for the common equipment operated from the Unit 1 boards as discussed in the Plant Systems section. There are minor differences in board engravings and labels that do not impact the information presented to the operators.

In summary, there are no significant control room layout differences that would impact the training or examination of USNRC licensed operators and those in license training.

Operational Characteristics

The minimal differences in the plant systems, technical specifications, operating procedures, and control room layout of Unit 1 and Unit 2 allow a transparent transfer of operator knowledge and skills between units.

Because of the differences in Steam Generator design, some operational differences are anticipated, particularly during operations which cause the phenomenon known as "Shrink and Swell."

CPSES has undertaken efforts to minimize the operator impact by relocating the water level taps on the Unit 2 Steam Generators. Annunciation and reactor protection system trips associated with the Steam Generator water level are slightly higher than those in Unit 1, and the shrink and swell in Unit 2 Steam Generators is anticipated to be somewhat more noticeable than in the Unit 1 Steam Generators.

Since the effects of "shrink and swell" are well known and operator anticipated, the Steam Generator model difference is not considered to be of a major significance in the training or examination of USNRC licensed operators and those in license training for dual unit operator licenses.

Use of an optimized fuel design in Unit 2 actually relaxes core operating limits. CPSES has elected to operate under the more conservative limits used in Unit 1. This minimizes operator impact and requires knowledge of only one set of limits during plant operation. Therefore, the training or examination of USNRC licensed operators and those in license training will not be significantly impacted by this difference.

In summary, there are no significant operational differences that would impact the training or examination of USNRC licensed operators and those in license training for dual unit operator licenses.

ATTACHMENT 9-A
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UNIT DIFFERENCE SUMMARY
PART A

<u>Item</u>	<u>Difference</u>	<u>Training Assessment</u>
1	Use existing BIW connectors with the Rockbestos cables for the Unit 2 heated junction thermocouple system outside containment.	No impact. Transparent to students.
2	Unit 2 Hot Leg Thermowells will not be installed.	No impact. Transparent to students.
3	The Unit 2 condensate transfer pumps for the Auxiliary Boiler will not be installed.	No impact. Simulator design assumes Unit 2 to be at full power.
4	Unit 2 will maintain the existing "Rowser" unit for continuous oil purification for Turbine Lube Oil System.	No impact. Not simulated.
5	Maintenance enhancement for Unit 2 pressure seal valves (BW check valve modifications). Maintenance procedure for assembly/disassembly will differ between Unit 1 and Unit 2.	No impact. Not simulated.
6	Modify the Unit 2 personnel air lock.	No impact. Not simulated.
7	Cap stem leak off lines, replace packing on valves.	No impact. Not simulated.
8	Add a four inch gate valve in line 4-CH-2-938-152-5.	No impact. Not simulated.
9	Instrument air compressor in Unit 2 is fed from a different motor control center than the corresponding compressor in Unit 1.	No impact. MCC's are locally controlled by the instructor. Transparent to students.
10	Use Rockbestos Firezone Appendix R one hour fire rated cables in Unit 2.	No impact. Not simulated.
11	Delete and plug mechanical seal vent and drain piping and add isolation valve on Unit 2 RHR pump seal cooler return line.	No impact. Not simulated.
12	Replace existing gear type turbine generator seal oil pumps with screw type pumps in Unit 2.	No impact. Transparent to students.
13	Rewire SIS/BO trip contacts on 16 motor control center circuits so that it disconnects all non-IE devices.	No impact. Actuation of equipment during an SI or BO condition unaffected.
14	Retain bronze valves in the Unit 2 Circulating Water Priming System.	No impact.
15	Upgrade Unit 2 Loose Parts Monitoring System components from LPMS-I to LPMS-IV.	No impact. Only a "loose part" is simulated, not the LPMS component device.

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UNIT DIFFERENCE SUMMARY
PART A

<u>Item</u>	<u>Difference</u>	<u>Training Assessment</u>
16	Change Unit 2 Circulating Water Pump Lube Water System piping from carbon steel to stainless steel.	No impact.
17	Upgrade Unit 2 Reactor Coolant Pump seal design to a cartridge type seal design.	No impact.
18	Install Remote Terminal Unit (RTU) in Unit 2 to collect and transmit various Turbine Generator information to TUSOC.	No impact. Not simulated.
19	Fisher valve plug replacement with 17-4 PH material.	No impact. Not simulated.
20	Add recirc line for Unit 2 Turbine Plant Cooling Water System.	DM-90-335 has been issued to update Unit 1 design to incorporate these changes. Simulator design will be updated to include those applicable changes.
21	Install bypass relief valve for Reactor Coolant Pump seal return relief valve 2-8121.	No impact.
22	Replace sixteen I-600 mechanical plugs with I-690 mechanical plugs in Unit 2 Steam Generators.	No impact. Not simulated.
23	Cancel and remove Unit 2 ERF computer system. Transfer ERF functions to plant computer.	DM-92-017 will be issued to update Unit 1 design to incorporate these changes. Simulator design will be updated to include those applicable changes.
24	Fit Unit 2 Incore thermocouples with Lemo "B" connectors in lieu of Lemo "A" or Conax detectors.	No impact.
25	Primary plant ESF Filter Unit heater breakers are powered from Unit 1 MCC's.	RDM-659 will be issued to power the heaters from common MCC's. Simulator design will be updated to incorporate the power supply modifications when implemented into plant design.
26	Isolation dampers are deleted from Unit 2 design and are not installed. The same dampers are installed in Unit 1. Human factors concern.	No impact. Instructor may place the dampers in the required position and remove them from service.

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UNIT DIFFERENCE SUMMARY
PART A

<u>Item</u>	<u>Difference</u>	<u>Training Assessment</u>
27	Install new and relocate existing temperature elements upstream of Auxiliary Feedwater to Steam Generator Borg-Warner check valves.	DM-91-036 has been issued to update Unit 1 design to incorporate these changes. The simulator design will be updated to include those applicable changes.
28	Install permanent strain gages on approximately 105 Unit 2 rising stem motor operated valves.	No impact. Not simulated.
29	Smoke detectors in Unit 2 are Electro Signal Labs whereas Unit 1 has Nittan detectors.	No impact. Transparent to students.
30	Undervoltage test switches 2-PB3A and 2-PB3C of both trains are swapped relative to the equivalent Unit 1 circuits.	No impact. Test switches not located on control board.
31	Modify RCP seal leakoff equipment to measure up to 10 gpm versus the current limit of 6 gpm.	DM-91-031 has been issued to update Unit 1 design to incorporate these changes. Simulator design will be updated to include those applicable changes.
32	Install pressure taps in various Unit 2 systems to accommodate DP testing of MOV's for Generic Letter 89-10.	No impact. Not simulated.
33	Update hydrogen gas dryer in Unit 2 to a dual tower model.	No impact. Not simulated.
34	Add chart recorder to the hydrogen flow totalizer for the Unit 2 Main Generator.	DM-91-035 has been issued to update Unit 1 design to incorporate these changes. Simulator design will be updated to include those applicable changes.
35	Add station bar temperature monitoring system in Unit 2 that will input to the plant computer.	No impact. If added to Unit 1 design then simulator design will be updated to include those applicable changes (may be included in DM-92-017).
36	Install temperature monitoring equipment on the Unit 2 Main Turbine.	DM-91-051 has been issued to update Unit 1 design to incorporate these changes. Simulator design will be updated to include those applicable changes.

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UNIT DIFFERENCE SUMMARY
PART A

<u>Item</u>	<u>Difference</u>	<u>Training Assessment</u>
37	Install Bentley-Nevada 3300 series vibration monitoring system on the Unit Turbine generator.	RDM-667 has been issued to update Unit 1 design to incorporate these changes. Simulator design will be updated to include those applicable changes.
38	Install electrically operated hoist over the Unit 2 Diesel Generators to facilitate maintenance activities.	No impact. Not simulated.
39	The associated heater circuits for indicating lights XL-3311A, B, C & D (Main Lube Oil Tank Heaters) on the Unit 2 Main Control Board do not function and are deleted.	Minor Mod-91-186 has been issued to update Unit 1 design to incorporate these changes. Simulator design will be updated to include those applicable changes.
40	The limit switch contact configuration and wiring for valves shown in Table "A" (Unit 1) are different from Unit 2.	No impact. Transparent to students.
41	Unit 1 has Conax strap-on RTD's installed on the RCS. Unit 2 will utilize Hy-Cal strap-on RTD's.	No impact. Not simulated.
42	Unit 2 Feedwater Isolation Valves have on-line calibration capability whereas Unit 1 does not.	No impact. Not simulated.
43	Unit 2 Feedwater Bypass flow is greater than Unit 1 and requires different flow transmitters and Main Control Board meter scales.	Efforts are currently underway to resolve this difference by installing the same meter scales in Unit 1 (DM-90-473). The slightly higher bypass flow in Unit 2 (~30,000 lb/hr) will not detract from student training.
44	Unit 2 lighting transformers are rated at 30 KVA. The comparable Unit 1 lighting transformers are rated at 45 KVA.	No impact. Not simulated.
45	To prevent duplication of numbering, 6 lighting panels in Unit 2 are labeled differently than those in Unit 1.	No impact. Not simulated.
46	Modify Diesel Generator building HVAC to preclude problems experienced during periods of low outdoor temperatures.	No impact.

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UNIT DIFFERENCE SUMMARY
PART A

<u>Item</u>	<u>Difference</u>	<u>Training Assessment</u>
47	The associated heater circuits for indicating lights ZL-6576, 6577 and 6578 on the Unit 2 Main Control Board have no function and are deleted.	Minor Mod-91-251 has been issued to update Unit 1 design to incorporate these changes. Simulator design will be updated to include those applicable changes.
48	Unit 2 will utilize MI/HG-p Heat Trace cable for high temperature applications versus type TZ used in Unit 1.	No impact. Not simulated.
49	Replace 2CW-0286 and 2CW-0287 with stainless steel valves. Minor Mod-91-273 will eliminate this difference.	No impact.
50	Incorporate an Emergency Response Data System into the design of the new Plant Computer System.	New Plant Computer will be installed in Unit 1 in 1993. Simulator design will be updated to include those applicable changes (DM-92-017).
51	Pressure switch PS 2-2483 and alarm window 2-PA-2483, along with associated wiring and tubing are to be removed.	RDM-787 has been issued to update Unit 1 design to incorporate these changes. Simulator design will be updated to include those applicable changes.
52	Replace 43 existing Magnatrol drain pot level switches installed in high temperature applications.	No impact. Not simulated.
53	Provide an interlock between the Diesel Generator Starting Air Compressors and Aftercooler Fan Motors.	No impact. Transparent to students.
54	Unit 2 will add 3 relief valves to the CVCS Charging Pump Suction lines to preclude a potential overpressure condition.	No impact. Simulator design does not include malfunctions which would cause these relief valves to lift.

ATTACHMENT 9-B
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UNIT DIFFERENCE SUMMARY
PART B

<u>Item</u>	<u>Difference</u>	<u>Training Assessment</u>
1	Unit 1 and 2 have different 6.9KV transformer connections.	Difference not significant to students.
2	Some 480V loads exist only on Unit 1.	No impact. These loads are not simulated.
3	Unit 1 and 2 have different Plant Process Computers.	DM-92-017 will be issued to update Unit 1 design to Unit 2 configuration. Simulator design will be updated to include those applicable changes.
4	Fuel storage and handling system have minor differences.	No impact. Not simulated.
5	Seismic Instrumentation is only located in Unit 1 although alarms appear on both Main Control Boards.	No impact. Transparent to students.
6	Unit 1 and 2 have different Loose Part Monitoring System (LPMS) revisions and power connections.	No impact. Only a "loose" part is simulated, not the LPMS component device.
7	The circulating water to the five non-safety chiller condensers is shared between Unit 1 and 2.	Difference not significant to students (part of common equipment).
8A	Unit 2 uses optimized fuel.	Difference not significant to students.
8B	Unit 1 has D-4 steam generators while Unit 2 has D-5 steam generators.	Difference of minor significance to students.
8C	Unit 1 and 2 use different DNB correlations and design limits.	No impact.
8D	Unit 1 has unused hot leg thermowells while Unit 2 has none installed.	No impact. Transparent to students.
9	Unit 2 personnel air lock is different from Unit 1.	No impact. Not simulated.
10	Dual unit Technical Specifications with some differences between units.	Difference of minor significance to students.
11	Diesel generators have minor differences in component tagging, aftercooler fan interlocks, and vent/drain valves.	No impact. Not simulated.
12	Steam generator blowdown systems have different lower nozzle blowdown rates.	Difference not significant to students.

ATTACHMENT 9-B
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UNIT DIFFERENCE SUMMARY
PART B

<u>Item</u>	<u>Difference</u>	<u>Training Assessment</u>
13	Unit 2 has a recirculation line in the Turbine Plant Cooling Water System.	DM-90-335 has been issued to update Unit 1 design to incorporate these changes. Simulator design will be updated to include those applicable changes.
14A	RCP seal return relief bypass valve will be installed in Unit 2.	No impact.
14B	Three charging pump suction relief valves will be installed in Unit 2.	No impact. Simulator design does not include malfunctions which would cause these relief valves to lift.
14C	RCP seal leak off measurement modifications will be installed in Unit 2 before Unit 1.	DM-91-031 has been issued to update Unit 1 design to incorporate these changes. Simulator design will be updated to include those applicable changes.
15	Some Safeguards Building Vent System isolation dampers are not installed on Unit 2.	No impact. Instructors may place the dampers in the required position and remove them from service.
16	Unit 2 has an additional pressure switch in the Service Water backup to the Auxiliary Feedwater System.	No impact. Will be removed from Unit 2 per DCA-95698.
17	Some common equipment is operated from the Unit 1 Main Control Boards.	Difference of minor significance to students.