

APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report Nos. 50-445/92-11, 50-446/92-11

Operating License No. NPF-87

Construction Permit No. CPPR-127

Licensee: TU Electric

Facility Name: Comanche Peak Steam Electric Station, Units 1 and 2

Inspection Conducted: March 23 through April 3, 1992

Inspector: A. Singh, Reactor Inspector, Test Program Section, Division of
Reactor Safety

Approved: *J. E. Gagliardo* 4/23/92
J. E. Gagliardo, Chief, Test Program Section, Division of Reactor Safety Date

Inspection Summary

Inspection Conducted March 23 through April 3, 1992 (Report 50-445/92-11)

Areas Inspected: No inspection of Unit 1 was conducted.

Results: Not applicable.

Inspection Conducted March 23 through April 3, 1992 (Report 50-446/92-11)

Areas Inspected: Routine, announced inspection of the Unit 2 fire protection program for compliance with the commitments to Appendix A of Branch Technical Position (BTP), 9.5-1, and licensee actions with regard to previously identified construction deficiencies.

Results: The inspection verified that the licensee has maintained a satisfactory overall fire protection program. The thoroughness and detail of the technical evaluations to support correction of construction deficiencies were considered to be a strength. No violations or deviations were identified.

DETAILS

1. PERSONS CONTACTED

TU ELECTRIC

- J. Grsere, Licensing Engineer
- *E. Gully, Engineering Manager
- *T. Heatherly, Licensing Engineer
- *T. Hope, Licensing Manager, Unit 2
- E. Magilley, Senior Quality Control (QC) Supervisor
- R. Mandell, Overview Manager
- *G. Merka, Licensing Engineer
- *D. Pendleton, Regulatory Services Manager
- *M. Pitluk, Project Engineering
- *C. Rau, Project Manager, Unit 2
- *R. Walker, Manager, Nuclear Licensing
- *K. Williamson, Project Engineer
- *K. Wren, Construction Quality Assurance

STONE AND WEBSTER ENGINEERING COMPANY

- *R. L. Dible, Mechanical Engineer
- R. Scavotic, Electrical Engineer
- *R. Spence, Unit 2, QC Manager

BECHTEL CORPORATION

- P. Castrichini, Assistant Project Engineer

NRC

- *D. Graves, Senior Resident Inspector
- R. Latta, Resident Inspector

The inspector also interviewed other licensee and contractor personnel during the course of the inspection.

*Denotes those in attendance at exit meeting.

2. LICENSEE ACTION ON 10 CFR PART 50.55(e) DEFICIENCIES (92700)

(Closed) Construction Deficiency Significant Deficiency Analysis Report (SDAR) CP-86-75: "ASCO Solenoid Valves in Piston Air Actuators"

This construction deficiency involved ASCO solenoid valve internals which were exposed to petroleum-based lubricants. As previously documented in NRC Inspection Report 50-445/90-03; 50-446/90-03, this item was reviewed and closed for Unit 1.

During this inspection, the inspector reviewed the licensee's corrective actions to address this construction deficiency for Unit 2. Specifically, the inspector reviewed Stone and Webster Engineering Corporation's letter to TU Electric dated February 17, 1992, which stated that there was reasonable assurance that petroleum-based lubricants had not been used in Unit 2 safety-related air operators equipped with ASCO solenoid valves. Additionally, the licensee has instituted procedures which will assure that petroleum-based lubricants will not be used in these applications for Unit 2.

Based on the above reviews, the inspector concluded that the licensee has implemented appropriate corrective actions to address the identified construction deficiency. Therefore, this item is closed for Unit 2.

(Closed) Construction Deficiency SDAR CP-87-21: "Effect of Thermo-Lag on Derating Factors"

This construction deficiency involved the licensee's evaluations of Thermo-Lag derating factors which determined that the previously assumed value of 10 percent used on internal cable sizing calculations were nonconservative. As documented in NRC Inspection Report 50-445/89-84; 50-446/89-84, this item was reviewed and closed for Unit 1.

During this inspection, the inspector reviewed the licensee's corrective actions for this item which were defined in Design Basis Document (DBD) EE-052, which is common for both Units 1 and 2. Based on the inspector's reviews of the supporting data contained in the DBD, it was determined that the licensee currently uses 31 percent derating for single cable trays and 20 percent derating for single conduits which will be enclosed with the Thermo-Lag. These deratings are consistent with Unit 1 and are conservative in nature.

Based on the above reviews, the inspector concluded that the licensee had taken appropriate actions to correct this construction deficiency for Unit 2. Therefore, this item is closed for Unit 2.

(Closed) Construction Deficiency SDAR CP-87-038: "Fire Detection System Printed Circuit (PC) Boards"

This construction deficiency involved potential damage to the annunciator circuitry of the PC boards associated with the fire detection system. This construction deficiency was reviewed and closed as documented in NRC Inspection Report 50-445/89-15; 50-446/89-15.

During this inspection, the inspector evaluated the licensee's corrective actions associated with this issue for Unit 2. Specifically, the inspector reviewed the applicable Nonconformance Report (NCR) 88-14260 and determined that the Unit 2 panels had not been energized; therefore, the PC boards had not been damaged. However, this NCR did specify that the replacement of the associated sockets would prevent potential PC board damage. The inspector also reviewed the associated work packages which indicated that the sockets

had been replaced as required by the NCR. Additionally, the inspector determined that the applicable drawings for Unit 2 had been revised to specify that they used Dialio sockets.

Based on the above reviews, the inspector concluded that the licensee had implemented appropriate corrective action to address the identified deficiencies. Therefore, this construction deficiency is closed for Unit 2.

(Closed) Construction Deficiency SDAR CP-87-44: "Unistrut Tubing Support Bolting"

This construction deficiency involved the use of ASTM A-307, "Bolting in Tubing Supports," which could have resulted in unpredictable clamping force and unknown load limits. As previously documented in NRC Inspection Report 50-445/89-63; 50-446/89-63, this item was reviewed and closed for Unit 1.

During this inspection, the inspector reviewed the licensee's corresponding corrective actions for Unit 2. Based on these reviews, it was determined that the licensee had revised Specification CPSES-I-1018 to prohibit the use of ASTM A-307 bolting and will require the use of SAEAJ-0429 Grade 2 or better bolts. The inspector also reviewed the associated work packages for Unit 2 which indicated that the licensee had installed the unistrut tubing support bolting in accordance with the established procedures.

Based on the above reviews, the inspector concluded that the licensee had taken appropriate corrective action to address this deficiency, therefore, this deficiency is closed for Unit 2.

(Closed) Construction Deficiency SDAR CP-87-051: "480V Containment Electrical Penetration Backup Protection"

This construction deficiency involved the lack of backup protection for the containment electrical penetrations on the alternate bus which was fed through the tie breaker. As previously documented in NRC Inspection Report 50-445/89-04; 50-446/89-04, this item was reviewed and closed for Unit 1.

During this inspection, the inspector reviewed the licensee's corrective actions which addressed this construction deficiency for Unit 2. The inspector reviewed Design Change Authorization (DCA) 93443 and the associated work packages which documented that the licensee had modified and installed the backup time delay over-current auxiliary relays to their respective tie-breaker trip circuits.

Based on the above reviews, the inspector concluded that the licensee had implemented appropriate corrective actions to address the identified construction deficiency. Therefore, this deficiency is closed for Unit 2.

(Closed) Construction Deficiency SDAR CP-87-131: "Steam Generator Cubicle Steel Platform Framing And Pressurizer Support Slab"

This construction deficiency involved a potential nonmechanistic failure which could have resulted in sub-compartment effects which exceed design commitments. Specifically, a pressurizer surge line break had the potential to adversely affect the steam generator cubicle platforms pressurizer support slab. As previously documented in NRC Inspection Report 50-445/90-03; 50-446/90-03, this item was reviewed and closed for Unit 1.

During this inspection, the inspector reviewed the licensee's corresponding corrective actions for Unit 2. Specifically, these corrective actions included the incorporation of design criteria for the consideration of loadings resulting from high-energy line breaks into DBDs CS-073, -074, -081, -083, -084 and -085.

Based on these reviews, the inspector concluded that the licensee had taken appropriate corrective actions to address the potential impact of this construction deficiency. Therefore, this item is closed for Unit 2.

(Closed) Construction Deficiency SDAR CP-88-009: "Electrical Penetration Overload Protection"

This construction deficiency involved potential overloading and lack of backup protection devices for electrical penetrations. Specifically, this deficiency involved three concerns: (1) backup protection incomplete or nonexistent, (2) protection devices uncoordinated with penetration conductor ratings, and (3) momentary short-circuit currents of module conductors exceeding the penetration ratings. As previously documented in NRC Inspection Report 50-445/89-71; 50-446/89-71, this item was reviewed and closed for Unit 1.

During this inspection, the inspector reviewed the licensee's corresponding corrective actions for Unit 2. In particular, the inspector determined that the licensee had incorporated the applicable penetration protection design criteria in DBD EE-062, Revision 5. The inspector also reviewed a sample of DCA packages including DCAs -93443, -96907, -95996, and -96797, which connected spare contacts from the backup over-current auxiliary time delay relays to the tie-breakers trip circuit.

Based on the above reviews, the inspector concluded that the licensee had implemented appropriate corrective actions to address the identified deficiency. Therefore, this construction deficiency is closed for Unit 2.

(Closed) Construction Deficiency SDAR CP-88-015: "Containment Maximum Flood Levels"

This construction deficiency involved a potentially nonconservative assumption which was used in a calculation which resulted in raising the containment maximum flood level by 10 inches. The licensee's review also indicated that

some safety-related equipment could be affected. As previously documented in NRC Inspection Report 50-445/89-47; 50-446/89-47, this item was reviewed and closed for Unit 1.

During this inspection, the inspector reviewed the DBD ME-076 and Calculation No. 2-MU-0026, which provided the basis for the maximum flood level inside containment. This review indicated that the assumed flood level was higher than the calculated flood level. The inspector also reviewed the DCA and the associated work packages which documented that the required wire mesh doors had been installed on specified compartments in the lower level of the containment building.

Based on the above reviews and field verification walkthrough, the inspector concluded that the licensee had implemented appropriate corrective actions to address the identified deficiency. Therefore, this construction deficiency is closed for Unit 2.

(Closed) Construction Deficiency SDAR CP-89-011: "Pipe Support Installations"

This construction deficiency identified a broken cotter pin on a Unit 1 large bore pipe support. As previously documented in NRC Inspection Report 50-445/89-75; 50-446/89-75, this item was reviewed and closed for Unit 1.

During this inspection, the inspector reviewed the corresponding Unit 2 corrective actions for this construction deficiency, which were contained in TU Electric's Letter TXX-91403, dated December 5, 1991. These corrective actions included the review of the appropriate specifications and construction/inspection procedures to ensure that the safety-related supports in Unit 2 are inspected. The inspector also determined that additional walkdowns will be performed prior to the turnover of systems to startup and subsequent to operations.

In order to confirm the adequacy of these corrective actions, the inspector performed a walkdown of approximately 80 safety-related pipe supports. Based on these walkdowns, it was determined that all observed supports were properly configured and that fastener locking devices were correctly installed.

Based on these reviews, it was determined that the licensee has implemented adequate corrective actions to address the identified deficiency. Therefore, this construction deficiency is closed for Unit 2.

(Closed) Construction Deficiency SDAR CP-91-003: "Corroded Hilti Bolts"

The licensee notified the NRC on June 11, 1991, of a deficiency involving the corrosion of installed Hilti-Kwik bolts (HKBs). Specifically, as delineated in TU Electric's Letter TXX-91246, dated July 10, 1991, this condition was identified when an HKB on a floor-mounted pipe support broke during retorquing. The examination of the broken bolt revealed a significant reduction in cross-sectional area which was a result of corrosion. This

deficiency initially was documented in the NRC Inspection Report 50-445/91-55; 50-446/91-55. By Letter TXX-92059, dated January 31, 1992, the licensee stated that the deficiency involved the potential for galvanic corrosion in HKBs that were utilized to anchor component support base plates in areas that may subject the base plates to water submersion. Pipe and equipment support base plate assemblies utilize several different metal components in various configurations. When these assemblies are submerged in water, conditions favorable for galvanic corrosion could be established. In the January 31, 1992, letter, the licensee committed that all the identified corroded HKBs will be replaced prior to Unit 2 fuel load. In addition, the licensee has procedures in place which will control the submergence of support base plates by water prior to grouting and sump pumps are generally provided to maintain areas dry.

On the basis of this review, the inspector concluded that the licensee had developed appropriate corrective actions to address the identified deficiency. Therefore, this construction deficiency is closed for Unit 2.

3. FIRE PROTECTION/PREVENTION PROGRAM (64704)

This inspection was conducted to verify the adequacy of the Unit 2 fire protection program against the NRC guidelines and requirements as specified in Appendix A to Branch Technical Position (BTP) 3.5-1 and Appendix R to 10 CFR 50. A special team inspection was conducted for Unit 1 during the period October 2-6, 1989 (IR 50-445/89-69). All items identified during that inspection have been resolved. Since both Units 1 and 2 are essentially identical, the safety evaluation report (SER) and its supplements were written for both units. The fire protection program for Unit 1 was found to be acceptable in the SER and its supplement. Therefore, this inspection for Unit 2 was intended to ensure that Unit 2 was equivalent to Unit 1 or, if found different, to review differences for acceptability. The licensee had submitted amendments through 84 to the Final Safety Analysis Report (FSAR). The inspector reviewed the changes made by those documents to ensure that they did not adversely affect the level of plant safety or impact previous conclusions made by the NRC in the SER.

The licensee's fire protection program for the pre-fuel loading period is described in Procedure STA-722, "Fire Protection Program," Revision 3, dated January 14, 1991. This procedure covered all aspects of a construction program and provided the requirements to support the special nuclear materials license for new fuel stored in the fuel building. The inspector reviewed a sample of the completed surveillance procedures presently conducted under this program. No problems were identified.

The inspector reviewed the administrative procedure, fire protection manual, fire preplans, and training. The licensee stated that these procedures will be implemented prior to fuel loading for Unit 2. Additionally, the licensee has established specific training for individuals who are classified as fire watch personnel. The dedicated fire watch personnel will have no other duties.

The inspector reviewed manual hose station installation and portable extinguishers at various locations throughout the plant. The installed equipment was found to be acceptable and consistent with what was identified in the fire protection report.

The inspector also performed an inspection of the penetration seals, emergency lighting, fire detection systems, suppression systems, and fire doors. The inspection was conducted to ensure that these items were in the configurations identified by the licensee in the fire protection report. Although the type and method of installation for each of these items was found to be acceptable, none of these items had been completely installed at the time of inspection. The levels of installation as of March 27, 1992, were as follows:

- Penetration Seals - 45 percent installed
- Fire Detection Systems - 50 percent installed
- Fire Suppression Systems - 95 percent installed
- Emergency Lighting - 15 percent installed
- Fire Doors - 60 percent installed
- Fire Extinguishers - 20 percent installed

The inspector walked down a number of installations associated with each one of these items. The review included physically verifying the operability of fire doors. Sample penetration seals chosen randomly in the field were traced back to the qualifying fire tests. For those installations of each of the separate items identified above, the inspector concluded that the installed items were in conformance with the approved designs. The inspector also concluded that appropriate controls and management oversight were in place to ensure the correct and proper installation of those items not yet installed. The licensee plans to complete the installation of these items prior to fuel loading.

4. EXIT MEETING

The inspection scope and findings were summarized in the exit meeting which was conducted on April 2, 1992, with those personnel denoted in paragraph 1 of this report. The licensee did not identify as proprietary any of the information provided to, or reviewed by, the inspector during this inspection.