

U. S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF SPECIAL PROJECTS

NRC Inspection Report: 50-445/88-54  
50-446/88-50

Permits: CPPR-126  
CPPR-127

Dockets: 50-445  
50-446

Category: A2

Construction Permit  
Expiration Date:  
Unit 1: Extension request  
submitted.  
Unit 2: Extension request  
submitted.

Applicant: TU Flectric  
Skyway Tower  
400 North Olive Street  
Lock Box 81  
Dallas, Texas 75201

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

Inspection At: Comanche Peak Site, Glen Rose, Texas

Inspection Conducted: August 3 through September 8, 1988

Inspector: S. D. Bitter 9/26/88  
S. D. Bitter, Resident Inspector,  
Operations Date

Inspector: S. P. Burris 9/26/88  
S. P. Burris, Senior Resident Inspector,  
Operations Date

Reviewed by: S. P. Burris 9/26/88  
for J. S. Wiebe, Lead Project Inspector Date

Inspection Summary

Inspection Conducted: August 3 through September 8, 1988 (Report 50-445/88-54; 50-446/88-50)

Areas Inspected: Unannounced resident safety inspection of applicant's action on previous inspection findings, follow-up on violations and deviations, preoperational retesting program, plant tours, and safety evaluation report follow-up.

Results: During the inspection, one violation was identified in the area of radiological controls (paragraph 5.b). The violation, which includes two instances where an individual did not obtain the appropriate administrative controls prior to entering a radiation control area, indicates a potential weakness in the applicant's program.

DETAILS1. Persons Contacted

- \*R. W. Ackley, Jr., Project Manager, Stone & Webster Engineering Corporation (SWEC)
- \*M. Axelrad, Attorney, Newman and Holtzinger, P. C.
- \*R. P. Baker, Licensing Compliance Manager, TU Electric
- \*J. L. Barker, Manager, Engineering Assurance, TU Electric
- \*H. D. Bruner, Senior Vice President, TU Electric
- \*W. J. Cahill, Consultant, TU Electric
- \*J. T. Conly, APE-Licensing, SWEC
- \*W. G. Council, Executive Vice President, TU Electric
- \*J. C. Crnich, Project General Manager, Ebasco
- \*G. G. Davis, Nuclear Operations Inspection Report Item Coordinator, TU Electric
- \*S. H. Freid, Chief Mechanical/Nuclear Engineer, Bechtel
- \*P. E. Halstead, Manager, Quality Control (QC), TU Electric
- \*T. L. Heatherly, Licensing Compliance Engineer, TU Electric
- \*C. B. Hog, Engineering Manager, Bechtel
- \*R. T. Jenkins, Manager, Mechanical Engineering, TU Electric
- \*J. J. Kelley, Manager, Plant Operations, TU Electric
- \*J. E. Krechting, Director of Technical Interface, TU Electric
- \*O. W. Lowe, Director of Engineering, TU Electric
- \*F. W. Madden, Mechanical Engineering Manager, TU Electric
- \*D. M. McAfee, Manager, QA, TU Electric
- \*J. C. Miller, CPRT, Tenera
- \*J. W. Muffett, Manager of Civil Engineering, TU Electric
- \*L. D. Nace, Vice President, Engineering & Construction, TU Electric
- \*E. Ottney, Representative, CASE
- \*S. S. Palmer, Project Manager, TU Electric
- \*J. D. Redding, Executive Assistant, TU Electric
- \*D. M. Reynerson, Director of Construction, TU Electric
- \*M. J. Riggs, Plant Evaluation Manager, Operations, TU Electric
- \*E. J. Schmidt, Radiation Protection Manager, TU Electric
- \*A. B. Scott, Vice President, Nuclear Operations, TU Electric
- \*C. E. Scott, Manager, Startup, TU Electric
- \*S. L. Stamm, Project Engineering Manager, SWEC
- \*P. B. Stevens, Manager, Electrical Engineering, TU Electric
- \*J. F. Streeter, Director, QA, TU Electric
- \*C. L. Terry, Unit 1 Project Manager, TU Electric
- \*T. G. Tyler, Director of Projects, TU Electric
- \*R. D. Walker, Manager of Nuclear Licensing, TU Electric
- \*K. C. Warapius, Project Director, Impell
- \*J. R. Waters, Licensing Compliance Engineer, TU Electric

The NRC inspector also interviewed other applicant employees during this inspection period.

\*Denotes personnel present at the September 8, 1988, exit interview.

2. Follow-up Previous Inspection Findings (92701)

- a. (Closed) Open Item (445/8722-O-09): Completion of analysis of circuits related to safe shutdown. The NRC inspector that opened this item reviewed the associated circuit analysis and the CPSES calculation (No. 152, Revision 4) that resulted in the need for modifications. The inspector has determined that the applicant has issued the design change authorizations (DCAs) necessary to implement the modifications.

Revision 4 of calculation No. 152 appears to have adequately addressed this open item. On the basis of the NRC review and the modifications initiated by the applicant, Item 445/8722-O-09 is closed.

- b. (Closed) Open Item (445/8822-O-01): Nonconforming lock washer. This item originated during observation of electrical maintenance activities on the Unit 1, Train B residual heat removal (RHR) pump motor. The pump motor lower bearing had just been modified and while attempting to install a nut and locking tab washer on the rotor of the motor, electrical maintenance discovered that the lock washer provided would not fit without being machined. Because no documentation concerning the machining had been provided to electrical maintenance, the reinstallation of the RHR pump motor was deferred until the applicant could determine the circumstances surrounding this nonconformance.

Subsequently, the applicant determined that the locking tab washer was procured properly using the correct stock number; furthermore, the correct part was received and issued. Apparently, the vendor failed to provide sufficient documentation to indicate that the washer needed to be modified slightly to fit the rotor shaft.

In order to document this nonconformance, the applicant initiated nonconformance report (NCR) 88-05961. The disposition of this NCR was to machine the washer (per the instructions of Westinghouse Field Deficiency Report TBXM-10339) and to incorporate the machining instructions in Maintenance Procedure MSE-C1-4312, "RHR Pump Motor Rework."

NRC inspectors have verified the completion of these actions; the pump motor has been reinstalled satisfactorily. Overall review of this item resulted in no discrepancies; therefore, this item is closed.

- c. (Closed) Open Item (445/8852-O-03): Applicant's actions concerning postulated oil spill as described in NUREG-0797, "Safety Evaluation Report (SER) for CPSES Unit 1 and Unit 2." This item was open pending receipt of additional information from the applicant. In the SER, Section 2.2.2, the staff states that the applicant has indicated that station personnel will patrol the area west of the safe-shutdown impoundment once a day to check for oil pipeline breaks. The inspectors reviewed Security Post Order for Post 213 dated February 29, 1988. The order requires, in part, a random mobile patrol of the oil seepage ponds to check for oil spills or seeps. The times of these patrols are designated by the security shift sergeant at least once a shift. The inspectors, therefore, determined that there is reasonable assurance that patrols will be conducted at least once per day as specified by the SER.

The SER also states that the applicant has analyzed several pipeline breaks and will install three retaining ponds between the pipeline and safe shutdown impoundment. The inspector reviewed the applicant's analyses of pipeline breaks, reviewed the design drawings of the three retaining ponds, and inspected the retaining ponds. The inspectors have determined that there is reasonable assurance that the retaining ponds will prevent an oil line break from spilling oil into the safe shutdown impoundment (SSI). The inspectors had no further questions in this area. This item is considered closed.

- d. (Closed) Open Item (445/8852-O-04): Higher than design ground water level. This item was open pending receipt of additional information concerning the ground water field monitoring program. The inspectors reviewed Specification CPES-S-1035, Revision 1, "Boreholes and Installation of Piezometers," dated January 13, 1988; "Groundwater Monitoring Piezometer Installation Report (Final)," dated May 9, 1988; and "Groundwater Monitoring Six Month Evaluation Report" (January-June 1988). The inspectors determined that there is reasonable assurance that the Groundwater Monitoring Program will fulfill the commitment made in the Safety Evaluation Report (SER). The preliminary revision of the Groundwater Monitoring Six Month Evaluation Report (January-June 1988) indicates that there is no evidence of a continuous static groundwater table or piezometric surface within the Glen Rose formation to the depth investigated. However, the report also indicates that groundwater occurs in isolated zones (perched water) at various levels from elevation 734 up to the rock surface. As a result, the original design water level (elevation 775) is no longer justifiable.

The inspectors reviewed design basis document (DBD-CS-091), Revision 1, "Foundation Material Properties," dated December 31, 1987, and determined that although the original design basis water level was at elevation 775, the plant design was checked for an assumed groundwater level at elevation 810 (plant grade). At the service water structure, groundwater was assumed at elevation 780, 5 feet above the normal safe shutdown impoundment water level. All seismic Category I structures were found to be stable. The inspector determined that there is reasonable assurance that the assumed groundwater level at grade (elevation 810) will not be exceeded. However, it is not clear to the inspectors that the assumed groundwater level (elevation 780) for the service water intake structure is adequate. The preliminary version of the Ground Water Monitoring Six Month Evaluation Report (January - June 1988) indicates that the groundwater level near the service water intake structure is relatively constant at elevation 783. In addition, the SER states that during a probable maximum flood (PMF), the maximum stillwater level reached in the safe shutdown impoundment is at elevation 790.5.

Significant Deficiency Analysis Report (SDAR) CP-88-23 dated February 4, 1988, was issued concerning the same subject matter. Open Item 445/8852-O-04 is closed and the concern over the design basis groundwater level at the service water intake structure will be followed by SDAR-CP-88-23.

- e. (Open) Open Item (445/8852-O-05): Program for monitoring sediment buildup in the SSI. This item was open pending receipt of information relating to the applicant's commitment to a program for monitoring sediment buildup in the SSI. The inspectors reviewed Procedure EGT-758, Revision 1, "Safe Shutdown Impoundment Dam Inspection," dated January 22, 1988, and the draft Revision 2 to this procedure. The procedure requires annual testing for sediment buildup in the intake channel and if the sediment depth exceeds 1.5 feet, the procedure refers to Technical Specification 4.7.5 which requires the sediment to be removed within 30 days. The inspector determined that there is reasonable assurance that excess sediment will be detected. The procedure states that when sediment removal is necessary, procedures will be developed and approved to remove sediment from the intake channel.

The inspectors are concerned that if excess sediment is identified while the plant is in operation and must be removed within 30 days, adequate forethought and

preparation may not be utilized to develop the procedure. Disturbing sediment and debris in the intake channel has the potential for clogging pump suction or discharge filters thereby causing a common mode failure of all service water trains for the two units. The failure of the service water system would not only cause a plant transient, but would cause a failure of the safety systems required to mitigate the transient. An activity with this potential should be carefully analyzed and reviewed without a 30-day time limit.

The applicant is considering a procedure change to identify the approach of the silt level to the 1.5-foot limit. This would allow the applicant time to determine the optimum time to conduct the silt removal activities, time to develop procedures, and time to let a contract to conduct the silt removal operation prior to reaching the 1.5-foot limit. This item remains open pending the applicant's action to change the procedure and NRC's review of the procedure.

- f. (Closed) Open Item (445/8852-O-06): Annual riprap inspection of the SSI. The inspectors reviewed applicant Procedure EGT-758, "Safe Shutdown Impoundment Dam Inspection," Revision 1, dated January 22, 1988, and draft Revision 2 to this procedure and determined that the procedure requires the dam slopes to be visually inspected to ensure there are no erosion-formed gullies or wave-formed notches or benches that reduce the embankment cross section or expose less wave-resistant materials. The inspectors found the procedure to be adequate and this item is considered closed.
  - e. (Closed) Open Item (445/8852-O-07): Annual inspection of SSI dam in accordance with Regulatory Guide 1.127, Revision 1. The inspectors reviewed applicant's Procedure EGT-758, "Safe Shutdown Impoundment Dam Inspection," Revision 1 dated January 22, 1988, and draft Revision 2 to this procedure and determined that annual measurements of piezometric levels and annual surveys of the surface alignment monument locators are required. In addition, the inspectors reviewed several of the annual dam safety inspection reports and determined that they have the applicable information required by Regulatory Guide 1.127, Revision 1. This item is considered closed.
3. Follow-up on Violations/Deviations (92702)
- a. (Closed) Deviation (445/8716-D-01): Retest requirements for previously accepted systems. This deviation dealt with the applicant's Operations Administration Procedure STA-623, "Post Work Testing," Revision 1 dated June 26,

1987, not containing administrative controls to ensure adequate retesting of systems or design features which have been maintained or modified following preoperational testing. Since the completion of the original preoperational testing program, there has been an extended amount of time has elapsed and the applicant has committed to several measures to ensure that systems are adequately tested and maintained in an acceptable condition. First, the applicant is currently implementing the Unit 1 preoperational retest program which will retest Regulatory Guide 1.68 requirements unless acceptable justification is provided on an individual test basis. Secondly, Procedure STA-623, "Post Work Testing," has been revised to include administrative controls which:

- . Outlines in more detail the types of post-work tests to be conducted; i.e., equipment test, surveillance test, design modification acceptance test, preoperational test, acceptance test, and system test.
- . Identifies specific organizational responsibilities; i.e., responsible work organization, responsible test organization, post-work test report review, system test matrix review, etc.
- . Identifies amount of detail for specific job responsibilities; such as, start up manager, I&C manager, etc.
- . Adds a post-work test list which is used as a cross reference between required surveillance procedures, technical specification requirement, and the specific component tag number.

In addition to the above change, the applicant reviewed and revised the following procedures to include clarification of the impact of Regulatory Guide 1.68 (Revision 2, August 1978) for testing prior to the issuance of an operating license.

- . STA-623, "Post Work Testing," Section 6.4.1.3 was revised to provide for a sign-off block verifying review for post-test review.
- . STA-606, Revision 8, "Work Requests and Work Orders," Section 6.8.1 was changed to provide Startup review of work orders for impact on preoperational test program. Section 2.0 ensures that testing performed by Startup or components/systems in the custody of operations



shall be performed in accordance with an authorized work order.

- . STA-808A, Revision 1, "Unit 1 Prestart Test Program," Section 2.0, states that the program is applicable to all Unit 1 and common systems required for safe power operation of Unit 1. Figure 7.2, Unit 1 Prestart Test Program Flow Chart, references Regulatory Guide 1.68.
- . STA-809A, Revision 0, "Development of System Test Matrices," Section "5.3 assigns responsibility for implementing the Unit 1 Prestart Test Program to the Unit 1 test manager.

Based on these changes to the Operation/Preoperation Test Program, the inspectors consider this item closed.

4. Preoperational Retest Program Activities (70301, 70302)

NRC staff obtained and reviewed the most recent information regarding Unit 1 Preoperational Retest Program. This review included discussions with preoperational supervision and personnel, procedure status review, projected schedule (overall and individual test performance) and status of preoperational test procedure review and acceptance. The applicant's published preoperational test procedure list shows that there are 146 total procedures for Unit 1 review, with 106 procedures issued for comment. Of these 106 procedures, 7 have been approved for use. The inspectors have requested copies of the approved procedures for review during a future inspection period.

There were no violations or deviations identified in the areas inspected.

5. Plant Tours (71302)

The NRC inspectors conducted plant tours during this inspection period. These tours provided coverage during normal, off-normal, and backshift working hours. During the tours, inspection activities included reviewing work documentation, witnessing ongoing work activities, observing and interviewing shift operations personnel, reviewing the status of control room construction work, reviewing the status of system and component completion, observing the status of Units 1 and 2 equipment lay up, observing housekeeping activities, and inspecting for general safety compliance.

To support these activities, NRC inspectors attended plan-of-the-day meetings, discussed plant status with operations personnel, reviewed plant lay up logs, and

performed a walkdown inspection of all major Unit 1 systems in lay up.

- a. During the course of the tours and inspections, the NRC inspectors noted the following:
- (1) The Unit 1 lay up status walkdown covered the main turbine generator, the diesel generator, the primary and secondary systems, and electrical penetrations. During the walkdown, the on-shift auxiliary operators accompanied the inspector; the operators demonstrated to the inspector's satisfaction that they were knowledgeable as to valve and component locations, methods of verifying valve positions, and methods of verifying lay up status. No discrepancies were noted in this inspection of lay up status.
  - (2) Housekeeping measures appear to be adequately implemented.
  - (3) Observations of the component cooling water system flush procedure and discussions with control room personnel indicated that they are cognizant of the flush lineup and status of the component cooling water system.
- b. The radiation protection manager informed the resident inspectors of two separate instances where radiological barrier violations had occurred on two separate occasions, August 14 and 15, 1988. The incidents resulted when a contract employee, working in the fuel building, twice crossed a barrier into a radiation controlled area (RCA) in order to gain access to the fuel building bridge crane lower platform.

In the second instance, as the employee crossed onto the crane's lower platform (thus crossing the boundary of the radiation controlled area), a radiation protection technician stopped him and informed him that he had crossed a radiation controlled area boundary without proper authorization in the form of a radiation work permit (RWP). The employee explained that he had crossed the barrier in a similar fashion on the previous day. Furthermore, he explained that he believed that he had received permission from the responsible engineering and security departments prior to crossing the boundary to reach the crane's lower platform. He based this belief on a discussion he had with the fuel building coordinator. In this discussion, the fuel building coordinator told the employee that he could enter green badge security areas (areas above the 860 foot level in

the fuel building). Because the fuel building coordinator thought that the employee did not want access to the crane's lower platform, the fuel building coordinator did not perceive that the employee was actually asking for permission to enter a radiation controlled area.

The preliminary cause of this violation appears to be that neither the contract employee nor the security personnel recognized that the crane's lower platform was in a radiation controlled area. Contributing causes appear to be that security personnel were under the impression that blue badge security areas (areas where nuclear fuel is being stored or handled) were equivalent to radiation controlled areas, that the barrier signs posted did not include instructions to notify radiation protection prior to entry, and that the work package did not identify any of the contract employee's work as being in an radiation controlled area and therefore, the work permit did not call for radiation protection participation.

The radiation protection department responded to these incidents by issuing radiological incident/problem report (88-0002) and a deficiency report (DR) P88-04086 documenting the occurrences. Corrective actions include improving the postings and barricades on the 860 foot level, changing the security post order to include a radiation protection escort for all blue badge area entries, instructing the security personnel that blue and green badges are for security purposes only, and that personnel should contact radiation protection prior to entry into radiation controlled areas.

The above constitutes a violation of the applicant's special nuclear material license, and is identified as a violation (445/8854-V-01): Unauthorized Entry into Radiological Controlled Area.

6. Safety Evaluation Report (SER) Review and Follow-up (92719)

Comanche Peak SER (NUREG 0797) includes various commitments and requirements that the applicant must meet prior to the NRC's decision on issuance of an operating license. The following items were reviewed by the inspector.

Section 9.3.2. The applicant committed to install provisions to sample containment sump water. The inspector has ascertained that the applicant has the capability to sample the containment recirculation sumps via the Train A residual heat removal pump. The sampling procedure is covered in

Chemistry Procedure CHM-512A, "Operation of the Reactor Coolant Post Accident Sampling System."

7. Exit Meeting (30703)

An exit meeting was conducted on September 8, 1988, with the applicant's representatives identified in paragraph 1 of this report. No written material was provided to the applicant by the inspectors during this reporting period. The applicant did not identify as proprietary any of the materials provided to or reviewed by the inspectors during this inspection. During this meeting, the NRC inspectors summarized the scope and findings of the inspection.

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