U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF SPECIAL PROJECTS

NRC Inspection Report: 50-445/87-15 Permits: CPPR-126
50-446/87-12 CPPR-127

Dockets: 50-445
50-446

Category: A2

Construction Permit
Expiration Dates:
Unit 1: August 1, 1988
Unit 2: Extension request
submitted

Applicant: TU Electric
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 5 through September 2, 1987

Inspector: H. S. Phillips 9/9/87
H. S. Phillips, Senior Resident Inspector, Construction — Date

Reviewed by: RF Warnick 9/9/87
R. F. Warnick, Assistant Director for Inspection Programs
Comanche Peak Project Division
Office of Special Projects — Date

Inspection Summary

Inspection Conducted: August 5 through September 2, 1987 (Report 50-445/87-15; 50-446/87-12)

Areas Inspected: Routine, unannounced safety inspection including (1) interviews and discussions with managers, supervisors, engineers, and craftsmen; (2) special meetings; (3) follow up on previous inspection findings; (4) follow up on applicant identified construction deficiencies; (5) general plant inspections; (6) civil/structural work activities; (7) electrical work activities; (8) mechanical work activities; and (9) fire prevention/protection.

Results: Within the areas inspected, no violations or deviations were identified. On August 27, 1987, a meeting was held to resolve the issue of overstressing cable while being pulled in or out of cable trays or conduit (paragraph 7). A meeting was also held on August 18 and 19, 1987, to discuss project status (paragraph 2).

DETAILS

1. Persons Contacted

*R. P. Baker, Regulatory Compliance Manager, TU Electric (TUE)
*D. N. Bize, Regulatory Compliance Supervisor, TUE
*M. Blevins, Technical Support Manager, TUE
*R. D. Delano, Licensing Engineer, TUE
*D. E. Deviney, Operations Quality Assurance (QA) Manager, TUE
*P. Halstead, Manager, Quality Control, TUE
*T. L. Heatherly, Regulatory Compliance Engineer, TUE
*C. R. Hooten, Unit Manager, CPE CE, TUE
*J. J. Kelley, Plant Operations Manager, TUE
*L. D. Nace, Vice President, Engineering and Construction, TUE
*D. Noss, QA, TUE
*D. M. Reynerson, Director of Construction, TUE
*A. B. Scott, Vice President, Nuclear Operations, TUE
*C. E. Scott, Startup Manager, TUE
P. B. Stevens, Manager, Electrical Engineering, TUE
*T. G. Tyler, Director, Projects, TUE

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

*Denotes personnel present at the September 2, 1987, exit interview.

2. Special Meetings (51063)

a. On August 27, 1987, R. F. Warnick, H. S. Phillips, and P. C. Wagner of the NRC met with TUE staff members D. M. Reynerson, J. J. LaMarca, P. B. Stevens, and other TUE and Stone and Webster field engineers to discuss the cable pulling methods used on the CPSES project. Specifically, the discussion concerned how TUE assured that cables pulled were not ovestressed. Based on these dicussions it appears that actions have been taken to assure that cable pulls do not overstress cables pulled. See paragraph 7 for details.

b. On August 18 and 19, 1987, H. S. Phillips met with D. M. Reynerson and T. Tyler, TUE managers, to discuss the project status in order to determine the status of work and schedule future NRC inspections. The NRC inspector reviewed the CPSES "Project Status Report" dated August 13, 1987, in conjunction with these dicussions.

3. Follow up On Previous Inspection Findings (92701 and 92702)

(Closed) Violation (445/8608-V-08;446/8606-V-10): Failure to verify implementation of corrective actions. This violation was written due to a QA audit deficiency being closed with no apparent verification that corrective action had taken place. In a meeting on July 29, 1987, TUE personnel went through audit file TCP-51 and explained the documentation to the NRC inspectors. During the discussion, TUE personnel were able to show that documentation does exist and shows that the closeout was accomplished; however, without the verbal explanation, the the documentation would still appear inadequate. Further, TUE has now supplemented the file with memorandum QQM-182 dated June 5, 1987, and it further clarifies the resolution of the audit deficiency. Based on this additional information this matter is resolved.

(Closed) Open Item (445/8620-O-02; 446/8617-O-02): N-5 Code review indicated Code class but traveler procedure did not require the entry of class. The inspector followed up on what appeared to be an inconsistency and found no requirement for the entry on travelers to be processed. The entry only occurs during the N-5 documentation review when the traveler is marked to aid in that review.

No violations or deviations were identified.

4. Follow up On Applicant Identified Construction Deficiencies (92700)

The NRC inspector reviewed construction deficiency reports CP-87-55 through CP-87-82 which have been identified as potentially reportable construction deficiencies in accordance with 10 CFR Part 50.55(e). Each report submitted during this inspection period was reviewed to assure that the deficiency was fully identified, described, evaluated, and that the NRC was notified in accordance with TUE Procedure NEO-CS-1, Revision 1. Further NRC review of applicant corrective actions will be accomplished in subsequent inspection reports.

No violations or deviations were identified.

5. General Plant Inspections (50053, 50073, 51053, 51063, 52053)

At various times during the inspection period, the NRC inspector conducted general inspections of the Unit 1 and 2 reactor containment (RCB), safeguards (SGB), auxiliary (AB), electrical control (ECB), and diesel generator (DGB) buildings. Selected rooms in these buildings were inspected to observe current work activities with respect to major safety-related equipment, electrical cable/trays, mechanical components, piping, welding, coatings, and Hilti bolts. The

housekeeping, storage, and handling conditions inside these buildings and various outside storage areas were also inspected.

Work activities that were selected for more detailed inspections are described in paragraphs 6, 7, 8 and 9.

No violations or deviations were identified.

6. Civil/Structural Activities (46053, 48053, 48055, 55050, 50100)

The NRC inspector observed the following Unit 1 work that was in progress: (1) Ebasco walk down of heating, ventilation, and air conditioning (HVAC); (2) modification of Hilti bolt installation per design change authorization (DCA) 31960, Revision 0; (3) polar crane welding of rail clips per Procedures WES 029 and WPS 11032; (4) white residue leaching through the concrete wall coating in the reactor vessel cavity at the 763' elevation (el); (5) cracked concrete ceiling in Electrical Room 83 of SGB 1; and (6) Daniels welding of HVAC Support DH-1-832-VID-1M in RCB 1.

On August 13, 1987, the NRC inspector contacted TUE Engineering Assurance and subsequently met with several engineers in RCB 1 to point out the white residue. The inspector found that NCR PC-87-00002 dated January 6, 1987, had identified a deficiency concerning a conduit that had a white substance (from the wall) on it. An NCR had not been written concerning the deposits coming through the wall. It was also learned that a sample of the residue had been sent to a laboratory for testing. TUE engineering reviewed the NCR and agreed that the NCR should be revised or another NCR should be written to specifically deal with the wall. This item is open pending the review of the disposition of the new NCR (445/8715-O-01).

On August 6, 1987, the NRC inspector found a crack in the concrete ceiling of Room 83 (which is the floor of Room 96 on the 832' el). At the time this condition was found, a craftsman and an engineer were at the location (the crack ran under Hanger CTH-1426). The inspector observed that no NCR tag was applied and asked them what was the problem. The engineer said he would evaluate the crack. In discussing it with the craftsmen, he stated that they thought the crack had been caused by hammering on embeded bolts in Room 96. The inspector observed the crack which was about 2' long X 1/4" or more deep. The crack was more than cosmetic because it was not a tight crack.

On August 20, 1987, the NRC inspector examined the crack again and found that no NCR or other tag was applied to this defect.

TUE Engineering Assurance was notified to explain the situation and they committed to follow-up.

On August 31, 1987, neither an NCR nor a construction deficiency report (CDR) had been issued.

On September 1, 1987, Engineering Assurance stated that the project would not issue an NCR until the hanger was removed and chipping occurred to allow them to determine if the crack exceeded the size allowed in Specification SS-9. This specification appears to allow the disposition of the defect before recording it. The inspector was later informed that the chipping had established that the crack is more extensive than described above and that an NCR would likely be issued.

During this same discussion, NRC inspectors stated that dispositioning the defect before documenting it is contrary to NRC requirements. TUE requested a meeting to show that their practice is not a violation. The NRC requested more information to resolve this matter.

This item is unresolved pending further review and the outcome of the dicussions in the requested meeting (445/8715-U-02).

7. Electrical Work Activities (51061, 51063, 51065)

a. Unit 1 Work Observed

The NRC inspector observed the following activities: (1) rework of electrical penetrations on the 860' el near the data cabinet room where rework was in progress, (2) jumper cable EG104628 was reworked per Drawing 2323 E1-0031 (sheet 8); i.e., reterminated to Termination 21, (3) inspection of conduit in DGB 1, and (4) battery rack rework in ECE 1. The inspector also observed frayed electrical wire in a tray to heater on RCB 1 pressurizer.

On August 13, 1987, the NRC inspector observed "A" train Conduit C12 O 04800 that was being reinspected by a Brown & Root (BR) inspector. The craftsman who was with the inspector was making a correction to the color code on the conduit. The NRC inspector asked if an NCR was to be issued and the answer was no because the conduit was being reinspected as a result of NCR E85-1011639S, Revision 1, which had identified the fact that the first inspection had been done by an electrical inspector who was not certified.

This practice (the craftsman making repairs and doing rework without first processing an NCR) was brought to the TUE QA organization's attention to determine why the inspector had not issued an NCR on nonconforming hardware

that was found acceptable during the original inspection but unacceptable during reinspection. The QA response was that they did not have to issue an NCR because the above referenced NCR voided all of the uncertified inspector's inspections and, therefore, no NCR would be issued for any hardware found to be nonconforming as a result of improper inspection. Such deficiencies would be noted on the second inspector's inspection report (IR).

The NRC inspector determined that this practice may be allowed because IRs are trended; however, it was learned that they were not trended before 1985. Therefore, this practice may assure the correction of the inadequate inspection but does not address the original problem caused by the craftsman who did not do the work correctly in the first place. The inspector needs to review selected IRs and further dicuss this matter with the utility in a meeting on NCRs. This item is unresolved (445/8715-U-03).

The NRC inspector requested information on the frayed heater wire to the pressurizer and was informed that this was classified as nonsafety-related in the TUE analysis. The inspector has no further questions.

b. Unit 2 Work Observed

On August 11, 1987, the NRC inspector observed a cable pull from wall sleeve TWS A 018 to electrical cabinet CP2-ECPRCR21 located in the cable spread room. The cable was pulled without any apparent problems.

Subsequently, the inspector found that NCR's had been issued. A review of NCR E85-101983 (cables interlaced, congested and too short to terminate) revealed that the corrective action on this NCR was in response to NRC Violation 446/8604-V-02. The above cable pull was a part of this corrective action.

During cable pulling to correct the deficiencies identified by NCR E85-101983, NCR E86-202008 (August 8, 1986) was written to document the excessive pressure applied to these cables during pull back. NCR E86-202008 lists 5 cables as examples of the cables overstressed and noted that NCR E86-202007 was written to document that 1 cable conductor snapped. The inspector determined that the disposition of NCR E86-202008 was not proper because continuity testing would only show that the conductor was not completely severed. It would not show that the instrumentation and control cable was not stretched or otherwise damaged. TUE agreed that the NCR was

improperly dispositioned. TUE reported that a construction field enineer did the evaluation instead of TUE engineering.

Subsequently, another inspector wrote CDR 87-6959-EC-R because only 5 cables were listed on E86-202008 when 56 other cables were involved. The NRC inspector questioned the disposition of this CDR as it did not address the question of whether the maximum pull of 41 lbs. of force was exceeded and whether the cable insulation and conductor may have been stretched and damaged but not completely broken.

On August 14, 1986, the NRC inspector asked TUE Engineering the following questions: (1) how does TUE assure that cables pulled in or out are not overstressed as Procedure QI-QP-11.3-26, Revision 32, does not require the use of tension measuring devices; (2) how does TUE assure that hand pulls are not accomplished by several workers which may cause overstressing; and (3) how many NCRs have identified broken conductors. In response TUE requested a meeting (see paragraph 2) and stated that tension measuring devices are not used because they have only allowed the cable to be hand pulled, the length of each pull is limited, engineering calculates the force necessary for the pulls, and in addition, inspectors witness all Class 1E pulls. It was also stated that the cable pull procedure was to be revised to allow the use of dynamometers and clarify the procedure regarding pulling cable back. TUE management stated that the construction field engineer should not have dispositioned the NCR because engineering is responsible for this process.

TUE took steps to correct the improperly dispositioned NCRs by issuing Deficiency Report (DR) C-87-3455. In addition training was provided to field construction engineers regarding the disposition of CDRs and NCRs as evidenced by the NRC review of training records.

During this same meeting an engineer stated that TUE had found that a cable pulling chart was deficient and this was reported to the NRC in Construction Deficiency Report CP-86-71 and Corrective Action Report (CAR) 93 was written to correct this condition. Subsequent to the meeting the inspector reviewed this file. The interim report (TXX-6065) stated no damage has been identified concerning cable pulling tension. This appears to conflict with the two NCRs (E86 202007 and E86 202008) which stated that a cable snapped when it was pulled back out of the wall sleeve and cable tray. Interim report (TXX-6288) references Special Technical Issue Report

STIR-NRC-002 - Cable Tension Report. This report was not immediately available at the end of the inspection period.

The NRC inspector confirmed that the cable break was isolated by reveiwing NCRs for 1985, 1986 and 1987 by subject matter and selecting likely cases in Units 1 and 2 where cable may have been broken. No other cases were found and this correlates with data presented at the meeting, that is, only 3-4 cables had been broken during cable pulling. Another specific question was raised as to whether cables which broke in process were customarily recorded on NCRs or some other document and were such documents trended for adverse trends.

This inspection will be continued next month. Pending the inspector's review of the disposition of NCRs, SDAR CP-86-71 inconsistency, STIR, and damaged cable trends, this item is unresolved (446/8712-U-04).

8. Mechanical Work Activities (50073, 50090, 55050, 55053)

The NRC inspector observed the following work: (1) chiller system welding per Drawing ECE CH-X-AB-023A, Welds 21 and 17, modifications per DCA 59371; (2) RCB 1 penetrations MI-11, 12, MII-9, MIV-7, 9, 10, MV-3, 6, 10, and 16; (3) reactor coolant drain tank (RCDT) heat exchanger (Hx); (4) RCB 1 equipment hatch lifting device and NCR PM-87-00037; (5) DGB 1 torque bolts per work order C870005602 on CP-MECCJW-01; (6) weld preparation on support SI-031-027-Y22R; and (7) supports in RCB 1 at the bottom of the pressurizer.

The NRC inspector pointed out rusted nuts and bolts on the RCDT Hx to TUE engineering where these bolts joined a stainless steel flange. This was questioned relative to material compatibility. The bolt/nuts were not stainless but were a high alloy steel called out by the drawing. This component was also found to be nonsafety-related.

No violations or deviations were identified.

9. Fire Prevention/Protection (42051)

The NRC inspector observed that fire watches were posted throughout all buildings where welding was in progress and that fire retardant material was placed over cable trays and other equipment to protect it. Fire extinguishers were in all areas and near painting operations. Fire hoses were available throughout the plant. The areas in all buildings were clean

and free from debris and trash. Containers were marked for proper disposal of materials.

No violations or deviations were identified.

10. Open Items

Open items are matters about which further review and evaluation is required to document, track, and ensure adequate follow-up on matters of concern. An open item is identified in paragraph 6 of this report.

11. Unresolved Items

Unresolved items are matters about which more information is required in order to determine whether they are acceptable items, violations, or deviations. Unresolved items are identified in this report in paragraphs 6 and 7.

12. Exit Interview (30703)

An exit interview was conducted on September 2, 1987, with the applicant's representatives identified in paragraph 1 of this report. During this exit interview, the scope and findings of the inspection were summarized.