U. S. NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION

NRC Inspection Report: 50-445/89-36
50-446/89-36

Permits: CPPR-126
CPPR-127

Dockets: 50-445
50-446

Category: A2

Construction Permit
Expiration Dates:
Unit 1: August 1, 1991
Unit 2: August 1, 1992

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 & 2

Inspection At: Comanche Peak Site, Glen Rose, Texas

Inspection Conducted: May 3 through June 6, 1989

Inspector: R M Latta 6/26/89
R. M. Latta, Resident Inspector (Electrical) Date

Consultant: J. L. Taylor - Parameter

Reviewed by: H H Livermore 6/27/89
H. H. Livermore, Lead Senior Inspector Date

Inspection Summary:

Inspection Conducted: May 3 through June 6, 1989 (Report 50-445/89-36; 50-446/89-36)

Areas Inspected: Unannounced, resident safety inspection of the applicant's actions on previous inspection findings, follow-up on review of 10 CFR Part 50.55(e) deficiencies identified by the applicant, follow-up on NRC Bulletins, electrical equipment, and general plant areas (tours).

Results: Within the areas inspected, no significant strengths or weaknesses were identified, however, one open item was identified regarding the applicant's program to control the use of work in progress and NCR waiver tags (paragraph 3.a.1). During the inspection period, no significant safety matter, violation, or deviation was identifed.

DETAILS

1. Persons Contacted

*M. Axelrad, Newman and Holtzinger
*D. P. Barry, Senior, Manager, Engineering, SWEC
*D. Bize, License Support, TU Electric
*H. D. Bruner, Senior Vice President, TU Electric
*W. J. Cahill, Executive Vice President, Nuclear, TU Electric
*H. M. Carmichael, Senior QA Program Manager, CECO
*J. T. Conly, APE-Licensing, SWEC
*W. G. Counsil, Vice Chairman, Nuclear, TU Electric
*S. Ellis, Performance and Testing, TU Electric
*P. E. Halstead, QC Manager, TU Electric
*C. B. Hogg, Engineering Manager, TU Electric
*R. T. Jenkins, Manager, Mechanical Engineering, TU Electric
*J. J. Kelley, Manager, Plant Operations, TU Electric
*J. J. LaMarca, Electrical Engineering Manager, TU Electric
*O. W. Lowe, Director of Engineering, TU Electric
*S. G. McBee, NRC Interface, TU Electric
*B. Packo, Licensing Engineer, TU Electric
*S. S. Palmer, Project Manager, TU Electric
*P. Raysircar, Deputy Director, Unit 2, CECO
*D. Real, Dallas Morning News
*D. M. Reynerson, Director of Construction, TU Electric
*J. C. Smith, Plant Operations Staff, TU Electric
*R. L. Spence, TU/QA Senior Advisor, TU Electric
*J. F. Streeter, Director, QA, TU Electric
*C. L. Terry, Unit 1 Project Manager, TU Electric

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

*Denotes personnel present at the June 6, 1989, exit meeting.

2. Applicant's Action on Previous Inspection Findings (92701)

(Closed) Open Item (445/8838-O-02): "Cable Grip Installation." This item was opened to track the disposition of design change authorizations (DCAs) initiated to install new cable grips per Field Verification Method (FVM)-089 walkdowns for rooms 69 and 201. The NRC inspector reviewed DCA 61184, Revision 1, for room 69 and DCA 64835, Revision 0, for room 201. DCA 61184 was found acceptable, but the NRC inspector noted that DCA 64835 had been erroneously dispositioned. The error involved the incorrect determination of cable drop length derived from the isometric drawing of the conduit which did not include a horizontal segment of the conduit which was less than 6 feet long, as required by electrical Specification ES-100. Further investigation by the NRC inspector determined that the error had been previously identified by the applicant's program and that a new DCA (54381) had been issued to correct the previous

disposition. The NRC inspector reviewed the applicant's disposition of the new DCA and determined that it was technically acceptable; therefore, this open item is closed.

3. Action on 10 CFR Part 50.55(e) Deficiencies Identified by the Applicant (92700)

a. Reportable Issues

(1) (Closed - Unit 1 only) Construction Deficiency (SDAR CP-87-40): "Electrical Isolation between Class 1E and non-Class 1E Equipment." This deficiency involved the possibility of Class 1E radiation monitors being affected by faults induced in non-Class 1E radiation monitors by non-Class 1E 120 volt AC control circuits. An additional deficiency involving separation between the non-Class 1E fire detection system and associated Class 1E Atmospheric Cleanup Units fire protection circuits was also covered by this SDAR. As stated in the applicant's closeout documentation, the fire detection system aspect of this SDAR was determined to be nonreportable. This position was supported by letter CECO-0173 dated February 20, 1989, and by Design Change Authorization (DCA) 58844, Revision 1, which deleted the isolation requirements. The NRC inspector determined that the analysis for the fire protection deficiency appeared adequate and that the applicant's determination of nonreportability was acceptable.

The NRC inspector reviewed DCA 63001, Revision 6, as well as the associated quality control inspection reports, and physically inspected the installation of the isolation device for Radiation Monitor 1-RE-6290A and 2-RE-6290. The NRC inspector determined the work required had been completed in 1-RE-6290A, but that it was incomplete for Unit 2. During this process, the NRC inspector noted a waiver tag for Nonconformance Report (NCR) E86-103497X and work in progress tags for work orders C85-0318 (September 3, 1985) and C86-2063 (August 11, 1986) on the Unit 1 monitor. Investigation by the NRC inspector determined that the NCR was for a separation violation and the waiver tag was hung to allow continuation of testing. The NCR was transferred to NCR CE-87-4264X (March 3, 1987) which was closed by implementation of DCA 63001, correcting the isolation discrepancy. The NRC inspector requested information from the applicant regarding programmatic requirements for removal of tags after work completion, in that the monitor work was apparently

completed and the monitor had been calibrated for some time and was ready for turnover to operations. On May 15, 1989, the applicant notified the NRC inspector that the work in progress tags had been left in place in violation of established procedure and that corrective action was being taken. This corrective action included initiation of a deviation report (DR), program review, and possible retraining to preclude reoccurrence of the discrepancy. The NRC inspector was also advised that the removal of superfluous tags may also be addressed under the room turnover program.

Based on the applicant's completion of work as stated above, this construction deficiency is closed for Unit 1; however, pending the resolution of the deficiency regarding the applicant's work in progress and NCR waiver tags, this item will be tracked as open item (445/8936-O-01).

(2) (Closed - Unit 1 only) Construction Deficiency (SDAR CP-87-54): "Class 1E MOV Motor Starters." This deficiency involved the use of thermal overloads and fused disconnects in motor operated valve (MOV) starter circuits. Specifically, the FSAR commitments were that thermal overloads would only be used in alarm circuits and thermal magnetic breakers would be used for locked rotor tripping, not fused disconnects. The applicant reviewed the fused disconnect portion of the deficiency and concluded that it was nonreportable. Additionally the applicant submitted FSAR Amendment 75 which added use of fused disconnects. The NRC inspector reviewed the analysis supporting the conclusion of nonreportability and determined that it was acceptable based on redundant train equipment and the single failure criteria.

Further analysis by the applicant determined that the thermal overloads in the control circuits for four valves (2 in each unit) were reportable. Subsequently, DCAs 67861 and 67025 were initiated to correct the Unit 1 deficiency. The NRC inspector reviewed the subject DCAs along with the associated work package, and inspected several of the affected cubicles in Motor Control Center 1EB3-2 to verify that Unit 1 work had been completed. Unit 2 work is to be covered by DCA 80853 (when issued). Based on the above documentation reviews and inspections, this construction deficiency is closed for Unit 1.

(3) (Closed - Unit 1 only) Construction Deficiency (SDAR CP-87-108): "Auxiliary Feedwater (AFW) Pumps Low Suction Pressure Spurious Trips." By letter TXX-6886, the applicant reported a deficiency involving the AFW pumps' low pressure trip function which may have rendered the AFW system inoperable. The NRC inspector reviewed various records which documented the removal of the suction pressure trips from the AFW pump circuits. The NRC inspector also verified the implementation of this modification by inspecting the turbine driven AFW pump suction line, a motor driven AFW pump supply breaker, and the associated instrumentation and control cabinets. Additionally, the NRC inspector examined the suction pressure switches for the Unit 2 turbine driven AFW pump trip and determined that they have not yet been removed; therefore, this construction deficiency is closed for Unit 1 only.

(4) (Closed - Unit 1 only) Construction Deficiency (SDAR CP-87-114): "Flexible Metal Tubing Misalignment." The applicant notified the NRC on October 21, 1987, of a deficiency in that anti-torque marks on flexible metal tubing were observed to be misaligned prior to installation. The applicant's corrective/preventative actions included: revision of instrumentation installation Specification I-1018, revision of pertinent design drawings, reexamination of installations by QC and PCHVP, and the training of personnel to the new specification criteria. As previously documented in NRC Inspection Reports 50-445/89-07; 50-446/89-07 and 50-445/89-28; 50-446/89-28 the NRC inspector had reviewed the corrective actions associated with PCHVP Field Verification Method FVM-069. This review process included the verification of the adequacy of flexible metal tubing installation, training, and the implementation of Specification I-1018. Based on the acceptability of the inspection activities in the referenced reports, this construction deficiency is closed for Unit 1.

(5) (Closed - Unit 1 only) Construction Deficiency (SDAR CP-88-05): "Auxiliary Feedwater (AFW) Instrumentation Electrical Separation." This deficiency resulted from lack of isolation between the nonsafety-related AFW pump turbine speed indicators and their Class 1E 120 volt AC power source. The NRC inspector reviewed DCA 62875 which installed qualified fuses between the indicators and the Class 1E power source, and the work packages which installed the fuses. Additionally, the NRC

inspector physically inspected the fuse installation at Control Panel CP1-ECPRCB-09. No fuses were present in Unit 2 panel CP2-ECPRCB-09. The NRC inspector determined that there were no apparent discrepancies in the installation or documentation processes and that the corrective actions were adequate; therefore, this construction deficiency is closed for Unit 1.

b. Nonreportable Issues

(1) (Closed) Construction Deficiency (SDAR CP-86-42): "I&C Cabinet Power Supplies." This deficiency involving the coordination of 118 volt QC supply breakers to I&C cabinet DC power supplies as postulated, would have allowed the loss of both DC power supplies in a panel through a fault in one of the power supplies. The NRC inspector reviewed the applicant's analysis for nonreportability and determined that the analysis was acceptable based on the redundacy of I&C panel trains. The NRC inspector also inspected the 118 volt AC distribution panels and confirmed that the Unit 1 BOP 7300 I&C cabinets supply breakers had been increased to 35 amp size as indicated in the SDAR documentation package provided by the applicant. The equivalent or mirror-image breakers in Unit 2 were also determined to be 35 amp; however, they were unlabeled and could not be positively identified as supplying the same Unit 2 cabinets. In order to confirm the adequacy of the Unit 2 breakers, the NRC inspector reviewed the applicable electrical one-line drawing E2-018 and determined that these breakers were in the correct location within the distribution panels. Based on the above documentation reviews and inspections, this construction deficiency is closed.

(2) (Closed) Construction Deficiency (SDAR CP-87-09): "Terminal Studs in PK-2 Test Blocks." The applicant informed the NRC of a potentially reportable deficiency regarding stress corrosion failure of terminal studs in PK-2 test blocks of the General Electric (GE) supplied 6.9kv switchgear on May 7, 1987. The applicant had been notified by GE by letter on June 30, 1986, regarding the discrepancy, initiated NCR IPE-87-001 (for Unit 1 switchgear) on December 18, 1986, and transmitted the GE letter from operations to the site coordinator on April 1, 1987, for reportability evaluation. The applicant accepted the GE recommendation to replace the studs and work was completed on both Unit 1 switchgear and one of the two Unit 2 switchgear affected. The NRC inspector reviewed the documentation supporting the

stud replacement and found no apparent discrepancies. A startup work authorization (SWA) 45416 to complete work on the last Unit 2 switchgear is on file and on hold pending resumption of Unit 2 work. The NRC inspector considered the justification for nonreportability somewhat weak in that TXX-6619 states, in part, "Test blocks were located on test circuit for the 6.9kv switchgear and not on operating circuit. Failure . . . would not cause equipment or system failure." The test blocks are in fact directly in the operating circuits. Removal of the test blocks allows insertion of test equipment into the operating circuits without opening current loops or tripping undervoltage channels. However, a single failure of a test block may not result in equipment tripping in that some trips require simultaneous fault signals from more than one channel. Therefore, the determination of nonreportability is acceptable and the construction deficiency is closed.

(3) (Closed) Construction Deficiency (SDAR CP-87-35): "Raychem Motor Connection Kits." This deficiency involved Raychem motor connection kits which were provided to the applicant with shims which were outside the use range of the breakout components in the kits. The applicant determined that the affected kits, where installed on Class 1E terminations, were in non-LOCA or non-HELB areas. In those areas, only the electrical insulating properties of the shim was required. Additionally, Raychem testing indicated that the deficient shim application did not affect the insulating property of the kit installation. Based on the above, the NRC inspector concurred with the applicant's determination of nonreportability. Additionally, the NRC inspector reviewed several DCAs, NCRs, and QC inspection reports and determined that the affected splices had either been reworked or that there were outstanding NCRs which would control the implementation of rework activities; therefore, this construction deficiency is closed.

4. Follow-up on NRC Bulletins (92703)

(Closed - Unit 1 only) NRC Bulletin 88-01: "Defects in Westinghouse Circuit Breakers." This bulletin provided information on Westinghouse series DC circuit breakers which failed to operate as required and specified the inspection of pole shaft welds and breaker closing mechanism alignment. The applicant met the requirements of the bulletin by replacing the pole shafts in all Unit 1 Class 1E breakers affected and checking alignment during replacement. Required pole shaft

weld inspections were performed during receipt inspection of the replacement pole shafts from Westinghouse. The NRC inspector reviewed work orders C88-5579 and C88-6166 and determined that the supporting documentation concerning pole shaft replacement appeared adequate. The NRC inspector also determined that the removed pole shafts have been repaired and were identified for use in non-Class 1E breakers. The applicant committed to complete bulletin actions for Unit 2 prior to Unit 2 fuel load as documented on NCR 87-04766 and SWAs 43904 and 45416. Based on the above, this bulletin is considered closed for Unit 1.

5. Electrical Equipment (51053)

The NRC inspector reviewed DCA 82617 and applicable SWAs 67928 and 67137. The DCA reduced the load on Class 1E DC inverters 1ED1 and 1ED2 by transferring some DC distribution loads to inverters 1ED3 and 1ED4. The change was required due to derating of the battery chargers. Review of the SWAs and associated travellers documenting work completion revealed no apparent discrepancies. Post work circuit testing per test Procedure EE-20 is pending.

6. Plant Tours (42051c, 51053)

The NRC inspector conducted routine plant tours during this inspection period which included evaluation of work in progress as well as completed work to determine if activities involving safety-related electrical systems and components including electrical cable were being controlled and accomplished in accordance with regulatory requirements, industry standards, and applicant procedures. In particular, the NRC inspector reviewed NCR 89-01108, which had been dispositioned to reinstall cable EG100391A due to minimum bend radius violation at tray T12GSBG53. The cable had previously been observed to have a severe twist at that point, with possible wire strand separation. Physical inspection of the area verified that the cable had apparently been satisfactorily replaced.

The NRC inspector was also present in the cable spreading room when a fire alarm actuated at panel CPX-EIPRLV-29. An operator responded in a timely manner, checked the affected area to verify that the alarm was spurious, and reset the alarm.

The NRC inspector observed cable protection preparation prior to work at cable tray T13GCCM-10. Cables appeared adequately supported and protected from weld splatter by fire blankets.

The NRC inspector observed a pull rope in C12G72463, T12GABP85 through 27. The applicant was requested on May 5, 1989, to provide work document numbers for any work in progress. On May 10, 1989, the applicant indicated only DCA 77139, "maintain

spacing" work was pending (which did not seem to apply). On May 11, 1989, the NRC inspector noted the pull rope was missing and again requested cable pulling documentation. The applicant provided a copy of DCA 079974 (on May 12, 1989) which added cable AG000592 through the above raceways. The traveler implementing the DCA was also provided, but several discrepancies were noted in the dates that steps were signed off. The NRC inspector requested a presentation to explain the discrepancies. The applicant provided additional QC inspection reports and cable pull cards in a presentation on May 22, 1989, which satisfied the NRC inspector's concerns regarding the apparent date discrepancies.

7. Open Items

Open items are matters which have been discussed with the applicant, which will be reviewed further by the inspector, and which involve some action on the part of the NRC or applicant or both. Open items disclosed during the inspection are discussed in paragraph 3.a.1.

8. Exit Meeting (30703)

An exit meeting was conducted June 6, 1989, 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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