

U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF SPECIAL PROJECTS

NRC Inspection Report: 50-445/88-38
50-446/88-32

Permits: CPPR-126
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 & 2

Inspection At: Comanche Peak Site, Glen Rose, Texas

Inspection Conducted: May 4 through June 7, 1988

Inspector: *P. C. Wagner* 6-8-88
for P. C. Wagner, Reactor Inspector Date

Consultant: J. L. Taylor - Parameter
(paragraph 5 and 6)

Reviewed by: *H. H. Livermore* 6-8-88
H. H. Livermore, Lead Senior Inspector Date

Inspection Summary:

Inspection Conducted: May 4 through June 7, 1988 (Report 50-445/88-38; 50-446/88-32)

Areas Inspected: Unannounced, resident safety inspection of applicant's actions on previous inspection findings, follow-up on previously reported items, assessment of allegations, general plant areas (tours), and Corrective Action Program.

Results: Within the areas inspected, a weakness in the dispositioning of nonconformance reports was noted. The significance of this weakness is an unresolved item pending further NRC inspection. During the inspection, no significant safety matters, violations, or deviations were identified.

DETAILS1. Persons Contacted

- *R. P. Baker, Licensing Compliance Manager, TU Electric
- *M. R. Blevins, Manager, Technical Support, TU Electric
- *J. T. Conly, Lead Licensing Engineer, SWEC
- *W. G. Council, Executive Vice President, TU Electric
- *G. G. Davis, Nuclear Operations Inspection Report Item Coordinator, TU Electric
- *M. D. Gaden, CPRT, IT Corporation
- *W. G. Guildemond, Executive Assitant, TU Electric
- *T. L. Heatherly, Licensing Compliance Engineer, TU Electric
- *J. J. Kelley, Manager, Plant Operations, TU Electric
- *J. E. Krechting, Director of Technical Interface, TU Electric
- *D. M. McAfee, Manager, QA, TU Electric
- *J. W. Muffett, Manager of Civil Engineering, TU Electric
- *L. D. Nace, Vice President, Engineering & Construction, TU Electric
- *D. M. Reynerson, Director of Construction, TU Electric
- *M. J. Riggs, Plant Evaluation Manager, Operations, TU Electric
- *A. B. Scott, Vice President, Nuclear Operations, TU Electric
- *C. E. Scott, Manager, Startup, TU Electric
- *J. C. Smith, Plant Operations Staff, TU Electric
- *S. L. Stamm, Project Engineering Manager, SWEC
- *M. R. Steelman, CPRT, TU Electric
- *P. B. Stevens, Manager, Electrical Engineering, TU Electric
- *C. L. Terry, unit 1 Project Manager, TU Electric
- *T. G. Tyler, Director of Projects, TU Electric

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

*Denotes personnel present at the June 7, 1988, exit meeting.

2. Applicant Action on Previous Inspection Findings (92701)

- a. (Closed) Open Item (445/8603-O-07): Lack of Instrument Tubing Color Coding. During a third-party inspection of instrumentation equipment, which was witnessed by the NRC inspector, the ERC inspector identified certain sections of instrumentation tubing that did not contain longitudinal color coding. The color coding was required for material, size, identification, and traceability. The Comanche Peak Response Team (CPRT) deviation report (DR) was transferred to project nonconformance report (NCR) CI-87-7386X which was dispositioned use-as-is, this is no longer a nonconforming condition. The specification was revised to delete the requirement for continued color coding after installation.

The NRC inspector verified that the correct tubing had been installed by reviewing the Instrument Installation Checklist for the involved instrument (1-PI-4762) which was completed on August 26, 1983. On the basis of the acceptable checklist, the NRC inspector concluded that this item was closed.

- b. (Closed) Unresolved Item (445/8607-U-16): Adequacy of Butt Splice Inspections. The NRC inspector was concerned that the butt splice inspections performed by the third party and the project adequately addressed the issues raised by the NRC. The NRC headquarters staff reviewed the available information and found that the inspections performed in accordance with the CPRT Action Plan satisfied the staff's concerns regarding the extent of pullout testing to be accomplished and the physical identification of butt splices. Further, the inspections and tests performed by the CPRT provided reasonable assurance that any splices not identified would still perform their safety functions and are, therefore, acceptable. Based on this information, the NRC inspector considers this issue resolved and closed.
- c. (Closed) Open Item (445/8730-O-01, 446/8722-O-01): Use of Taped Electrical Joints. During the review of Revision 3 to the electrical erection specification (ES-100) documented in paragraph 5 of the above inspection report, the NRC inspector questioned the environmental qualification of electrical connections insulated with layers of electrical tape. The NRC inspector reviewed the Environmental Equipment Qualification Summary Package EEQSP-ES-100-03 for the Okonite T-95 and No. 35 splicing tapes and found that it addressed his concerns. In addition, Revision 5 to ES-100, requires specific engineering approval and limits the use of taped joints to low-voltage power cables. The NRC inspector recommended that the applicant consider incorporating the restrictions to the usage of taped joints contained in the EEQSP into ES-100 to ensure these restrictions are not overlooked. Applicant personnel agreed with the NRC inspector's recommendation. The NRC inspector considered this item to be closed.
- d. (Closed) Open Item (445/8730-O-02; 446/8722-O-02): Use of Yellow-77 Electrical Cable Pulling Lubricant on Anaconda Brand Cables. The NRC inspector questioned the acceptability of practices related to cable pulling lubricants in light of the project prohibition on the use of Yellow-77 lubricant for Anaconda cable. The applicant evaluated the use of Yellow-77 in the disposition of DR C87-05328. The evaluation determined that Yellow-77 was not compatible with a semiconducting cross-linked

polyethylene jacket manufactured by Anaconda for medium-voltage power cables. Even though this type of cable was not used at CPSES, a restriction had been placed on the use of Yellow-77 on all Anaconda cables to ensure that no adverse interactions occurred.

The applicant, therefore, concluded that Yellow-77 lubricant could be used with the instrumentation and control cables provided by Anaconda because no incompatibility existed. Since no problems have been identified with the installed cables related to incompatible pulling lubricants, the NRC inspector agrees that this item can be closed.

- e. (Closed) Open Item (445/8730-O-03; 446/8722-O-03):
Removal of Electrical Cable Pulling Aids From Raceways. During the same review of the ES-100 that initiated the questions related to the cable pulling lubricants, the NRC inspector noted instructions related to the abandonment of electrical cable pulling aids in conduits. The NRC inspector was concerned that the revised specification would be misinterpreted to require that pulling ropes be left in conduits rather than making an effort to remove them. The specifications related to pulling aid removal were revised by Design Change Authorization (DCA) 69730, Revision 5 dated April 20, 1988. The revised specification requires all pulling aids be removed; however, if a pulling rope cannot be removed, an engineering evaluation is required and the rope cannot pass through a fire seal. The NRC inspector reviewed these requirements and found this open item to be resolved and closed.

Additional questions related to the abandonment of pulling aids in raceways will be addressed in the assessment of violation 445/8626-V-02.

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

The NRC inspector continued the review of reports submitted by the applicant in accordance with the provisions of 10 CFR Part 50.55(e).

a. Not Reportable Items

The NRC inspector reviewed the following items which had been presented as potentially reportable that were determined to be not reportable following the applicant's further evaluation:

- (1) SDAR CP-84-30, Instrumentation Piping: By letter dated October 12, 1984, the applicant informed the NRC of a potentially reportable problem related to a change in instrumentation piping code classifications. The proposed changes were evaluated under TUGCO Design Deficiency Report (TDDR) No. ME-84-007 which was approved on February 4, 1985. By memorandum No. TSG-7139, amended, dated November 13, 1984, TUGCO committed to restore the initial design. Therefore, the proposed change, which was reported, was not implemented except for drawing revisions. In addition, the acceptability of instrumentation piping was verified as part of the ISAP VII.c implementation. Therefore, the NRC inspector agreed that this SDAR was closed.
- (2) SDAR CP-87-39, Optional Isolation Chips: The vendor (Westinghouse) identified a high failure rate for optical isolation chips utilized in control cabinets. Since the applicant did not know the effect of such failures on the operability and reliability of the equipment, the NRC was informed that the issue was potentially reportable. Subsequently, the vendor informed TU Electric (Westinghouse Letter WPT-9438 dated December 1, 1987) that the optical isolator chips installed in Unit 1 should not experience high-failure rates and that failure would not result in an unsafe condition. Therefore, the applicant determined that this issue was not reportable. The NRC inspector agreed with the determination. This SDAR is considered to be closed.
- (3) SDAR CP-87-41, Differential Pressure Transmitters: The applicant informed the NRC that some differential pressure transmitters had been installed as Group B transmitters without proper qualification for the class of service. As a result of the Equipment Qualification Program, the applicant determined that the transmitters were qualified for their installation. Therefore, the applicant determined this issue to be not reportable. On the basis of this review, the NRC inspector considers this SDAR to be closed; NRC inspection of the EQ Program will be handled as a separate issue.
- (4) SDAR CP-87-43, Solenoid Valve Insulation: Applicant personnel observed cracked insulation coatings on solenoid valve coils for the feedwater isolation valves and informed the NRC of this potentially

reportable condition by Letter TXX-6647 dated August 13, 1987. Further applicant evaluation for the resolution of DR C88-00100, which was initiated for the solenoid coil insulation problem, disclosed that the observed condition would not affect the coil operability. However, the manufacturer recommendations include the replacement of solenoid valve assemblies every five years or 4500 cycles. The NRC inspector verified that the Environmental Qualification Summary and that the Activity Tag List both contained the five-year replacement requirement. This SDAR is closed.

- (5) SDAR CP-87-81, Terminal Block Connections: During the CPRT inspections, four instances of loose connections to Weidmuller terminal blocks (TBs) were identified and the NRC was informed that this condition was potentially reportable. Further, applicant evaluation of the four connections in question determined each of them to be not reportable because of the lack of effect on the safe shutdown of the facility. Moreover, the CPRT recommendation that all Weidmuller TBs be inspected is being implemented by the Post Construction Hardware Validation Program (PCHVP) Procedure CPE-SWEC-FVM-EE-90 and any other instances of loose connections will also be evaluated for reportability. The NRC inspector, therefore, agreed that this SDAR could be closed.

4. Allegation Follow-up (99014)

(Closed) Allegation (OSP-88-A-0020): Unauthorized Use of Adhesive Markers in Electrical Equipment.

Concern Details

The allegor was concerned that, despite not being authorized by the electrical erection specification (ES-100) or QC inspection requirements, adhesive markers had been installed in electrical equipment at CPSES. The allegor was concerned that these markers could become loose and damage or interfere with the operation of electrical components. The NRC inspector started the evaluation of this allegation near the end of the previous report period (in April 1988) but had not received sufficient information to determine the acceptability of the applicant's actions; he, therefore, deferred documentation of the earlier activities to this report.

Assessment

In order to evaluate the existence of unauthorized adhesive markers, the NRC inspector reviewed related NCRs. The NRC inspector determined that NCR 88-02292 had been originated on February 2, 1988, for the existence of adhesive markers in four motor operated valves' actuators. The NCR was dispositioned on February 17, 1988, as follows:

- . "Use-as-is: This is no longer a nonconforming condition.
 - Valve 1-8000A has been reworked with RayChem Tubular Wire Markers in accordance with ES-100; Ref. Work Order C87-0000699.
 - Valve 1-8000B has field installed wire markers (RayChem Tubular Type) in accordance with ES-100."
- . On a Design Change NCR Continuation Sheet:
 - "Details of Change: "Use-as-is" Valves 1-HV-2482 and 1-HV-2485. The adhesive markers are acceptable as installed.
 - Engineering Basis:
 - "1. The wire markers do not perform a safety related function.
 2. Wire markers are not a part of the Limitorque Equipment Qualifications.
 3. Similar wire markers were used by the vendor."

While this process was procedurally allowable, the NRC inspector did not find the engineering basis for the continued existence of the markers in the latter two valves to be technically reasonable. The NRC inspector questioned whether the markers could, if they become loose or by any other means, interfere with the proper operation of the valves' actuators.

In order to evaluate the possibility of a problem, the NRC inspector requested that the actuators be opened so that an inspection of the internal components layout could be conducted. The valves' actuators were physically inspected on April 26, 1988, and the following was observed:

- . Actuator 1-HV-2482 for the Turbine Driven Auxiliary Feedwater Pump (TDAFWP), Station Service Water Suction Valve: This actuator,

supplied by Limitorque, was powered from the Train A, Class 1E bus (Orange) and was located in Room 71 of the Unit 1 Safeguards building (TDAFWP Room). The NRC inspector noted the existence of two short jumper wires without obvious identification markings and three bent terminal lugs. These conditions, however, appeared to be allowable by project requirements because the jumper wires appeared to be the same as longer jumper wires with identification markings in color, size and material, and the terminal lugs did not appear to exceed the one time allowable 90° bend at the barrel. The NRC inspector also noted the existence of numerous adhesive markers. The markers, in addition to being wrapped around numerous (approximately 15) jumper wires for their identification, were also placed on the termination points on the limit switches and an open and a close marker were attached to the limit switch housing to identify the cams. The limit switch termination point markers were small (approximately 3/8" x 3/8") while the wire markers appeared to be the standard (approximately 1/4" x 1") strips which were wrapped around the wires to produce a 1/4" wide identification sleeve.

The NRC inspector observed that this actuator was mounted in the "normal" orientation, in that its connection cover was mounted horizontally, normal to the vertical valve. In this configuration, the limit switch cams are horizontal and the likelihood of a loose marker interfering with the switch contacts or the limit switch or torque switch mechanisms was considered, by the NRC inspector, to be low.

Actuator 1-HV-2485 for the Condensate Storage Tank Discharge Valve: This Limitorque actuator was observed to contain similar findings as the above actuator in relation to the jumper wires, terminal lugs, and adhesive markers. However, the NRC inspector considered the likelihood of a problem to be much higher for this actuator than the other because it was mounted vertically above the valve. In the "vertical" configuration, the limit switch cams are vertical and the operating mechanisms for the the limit switches and torque switch are below the wiring termination points. Therefore, if a wire or termination point marker were to come

loose, it could fall down either onto switch contacts or into the operating mechanisms.

If the above conditions were to occur, the proper operation of a valve could be jeopardized. (e.g., a fouled limit switch contact could prevent an automatic valve operation or a fouled torque switch could prevent the valve actuator from properly positioning the valve upon receipt of an actuation signal.)

In order to determine the validity of his concerns and to evaluate the breadth of the existence of the adhesive markers, the NRC inspector discussed the possibility of the above conditions with applicant personnel.

In response to the NRC inspector's questions, applicant personnel in a meeting held on May 2, 1988, stated that the NCR had been revised and would be redispositioned. The redispositioning was awaiting the receipt of additional information from the actuator manufacturer, Limitorque.

The subject of the adequacy of the NCR dispositioning is an unresolved item pending NRC evaluation of the programmatic study (CAR 88-01) which had previously been initiated by the applicant and the specific information on why the "use-as-is" disposition of this NCR was acceptable (445/8838-U-01).

Conclusion

Based on the NRC determination that the NCR documenting the existence of adhesive wire markers had been inadequately dispositioned, the NRC inspector found the allegation to have been substantiated. The NRC will continue to evaluate the applicant's corrective actions in response to CAR 88-01 as part of our inspection of the NCR process and will determine the disposition of the above unresolved item at the conclusion of that evaluation.

5. Corrective Action Plan (CAP)

The NRC inspector is evaluating the implementation of the PCHVP through procedure and documentation reviews and by physical inspections of hardware. During this inspection period, the NRC inspector continues to evaluate activities associated with PCHVP Procedure CPE-SWEC-FVM-EE-088. Additionally, a review of PCHVP Procedure CPE-SWEC-FVM-EE/ME/IC/CS-089, Revision 3 dated March 4, 1988, "PCHVP Engineering Walkdowns" and its associated implementation documentation was performed. These activities are detailed below.

a. Electrical Components (51051 and 51053)

The NRC inspector walked down the following FVM-089 packages which involved the inspection of Cable Grips: 89-E4-66, 89-E4-67, 89-E4-69, and 89-E4-201.

The cable grip packages were performed under Revision 1 of FVM-089 and had not been backfit to the current revision of the procedure; however, the changes to the engineering checklist attachment appeared to be primarily administrative. DCAs 61184 (Package 89-E4-69) and 64835 (Package 89-E4-201) were initiated to install cable support grips. This is an open item pending follow-up of DCA status/implementation (445/8838-O-02).

The NRC inspector accompanied a Stone & Webster Engineering Corporation (SWEC) engineer on a FVM-89 York Panel walkdown (Package 89-E4-CP1-ECPRCR-16) and observed the following: (1) available documentation was adequate for the task; (2) casual discussions of the engineer's background and experience indicated he was well qualified for the task; and (3) the engineer performed the field verification method (FVM) inspection requirements thoroughly and with attention to detail.

Two completed York panel packages (89-E7-CP1-ECPRCR-03 and 18) were physically walked down by the NRC inspector and found to be accurate. NCR 88-07-11 of Package 89-E7-CP1-ECPRCR-18 was followed up and the disposition found to be adequate. The NRC inspector discussed the general content of the completed packages with the SWEC supervisor and suggested that additional documentation in the package would provide for more thorough follow-up of activities. However, the SWEC supervisor indicated that the packages would be even further reduced, with only the basic engineer checklist being finally transmitted to TU Electric. The NRC inspector had observed a lack of any out-of-scope observations on checklists for such items as minor damage to terminal block covers. In addition, when the NRC inspector followed up on DCA 57976, Revision 1, which had not been implemented at the time of walkdown, he determined that the DCA was in the ECPRCR-03 package at the Paper Flow Group-Electrical, awaiting transfer to construction engineering for implementation. The NRC inspector also noted that the engineering checklists for FVM-89 have no provision for documenting specifically what DCAs, etc. were reviewed as part of a package walkdown.

The NRC inspector will continue to evaluate the adequacy of the packages as part of the PCHVP inspections.

No violation or deviations were identified.

b. Electrical Separation (51061 and 51463)

The NRC inspector noted that a recent revision to PCHVP Procedure FVM-88 (Revision 3) had been issued which no longer required review of open electrical separation deficiency reports; these may, however, be included for reference. Also, the FVM scope definition was revised to indicate that the nuclear instrumentation system separation attribute was being checked by conduit instead of by room or area.

The NRC inspector also reviewed Walkdown Packages 88-E1-135-CP1-ECPRCB-02 and 11 (multi-train equipment internal separation). During a walkdown of the packages, the inspector observed that one Servicair barrier in each panel was not listed on its packages' list of barriers per guideline No. 8, attachment F of Revision 3 of the FVM (EG139380 to MS-4753 in CB-02 and Gaitronics box to floor opening in CB-11). While the inspector did not consider these omissions to be significant, he informed SWEC personnel that their lists were not complete. On being informed of these shortcomings, SWEC initiated recheck proceedings but the cabinet/cables were unavailable to SWEC for confirmation of the NRC inspector's findings at the close of this report period. The NRC inspector will continue to follow these issues as part of the PCHVP inspections.

NRC review of Package 88-EX-165 revealed several items which had been resolved as evidenced by old IRs and/or ESDRs, but a NRC walkdown of the noted items showed that the conditions continued to exist. This indicated to the inspector that the conditions had either not been properly corrected or that subsequent inspection/rework activities had resulted in a return to the original condition. The observed conditions were, however, in conformance with present project requirements.

No violations or deviations were identified.

6. Plant Tour (51053 and 51063)

At various times during this report period, the NRC inspectors conducted inspections of the Unit 1 reactor, safeguards emergency diesel generator, auxiliary, and electrical/control buildings. These inspections were conducted to observe work in progress, equipment protection and storage, and general housekeeping activities. No significant observations were made during this report period and no violations or deviations were identified.

7. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations, or deviations. One unresolved item disclosed during the inspection is discussed in paragraph 4.

8. Open Items

Open items are matters which have been discussed with the applicant, which will be reviewed further by the NRC inspector, and which involve some action on the part of the NRC or applicant or both. One open item disclosed during the inspection is discussed in paragraph 5.

9. Exit Meeting (30703)

An exit meeting was conducted June 7, 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.