APPENDIX B

U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-445/84-18 Construction Permit: CPPR-126

Docket: 50-445 Category A2

Licensee: Texas Utilities Electric Company (TUEC)
Skyway Tower
400 North Olive Street
Lock Box 81
Dallas, Texas 75201

Facility Name: Comanche Peak Steam Electric Station (CPSES), Unit 1

Inspection At: Glen Rose, Texas

Inspection Conducted: May 1-31, 1984

Inspectors: for D M Hunnicutt 7/6/84
D. L. Kelley, Senior Resident Reactor Inspector (SRRI) Date
(paragraphs 1, 2, 4, and 6)

for D M Hunnicutt 7/6/84
W. F. Smith, Resident Reactor Inspector (RRI) Date
(paragraphs 1, 2, 3, 5, and 6)

Approved: D M Hunnicutt 7/6/84
D. M. Hunnicutt, Team Leader, Region IV Task Force Date

Inspection Summary

Inspection Conducted: May 1-31, 1984 (Report 50-445/84-18)

Areas Inspected: Routine, announced inspection of (1) preoperational test witnessing, (2) Transamerica Delaval (TDI) diesel generator inspection, (3) plant tours; and (4) plant status. The inspection involved 150 inspector-hours onsite by two NRC inspectors.

Results: Within the four areas inspected, two violations were identified in two areas (failure to follow procedures (three examples in two areas), paragraphs 2 and 3 (8418-01) and failure to provide adequate test prerequisites (one example), paragraph 2 (8418-02)).

DETAILS

1. Persons Contacted

Licensee Personnel

*B. R. Clements, Vice President, Nuclear Operations
*J. C. Kuykendall, Manager, Nuclear Operations
*J. T. Merritt, Assistant Project General Manager
*J. H. Roberts, Construction Startup Turnover Surveillance Supvervisor
*T. P. Miller, Lead Startup Engineer
*H. A. Lancaster, Startup Quality Assurance Specialist
*J. C. Smith, Quality Assurance
*T. L. Gosdin, Support Services Superintendent
*D. E. Deviney, Operations Quality Assurance Supervisor
D. Reimer, Maintenance Engineer
D. A. London, TDI Owners' Group Coordinator CPSES
C. W. Smith, Mechanical Maintenance Supervisor
D. Lystad, Maintenance Supervisor
B. Snellgrove, Quality Control Inspector
R. L. Fortenberry, Shift Supervisor
M. Smith, Shift Supervisor
M. Niemeyer, Training Supervisor
*J. Maxwell, Operations QC Supervisor
*R. A. Jones, Manager, Plant Operations
M. Harris, Systems Test Engineer
K. Becker, Systems Test Engineer
K. Hemmila, Systems Test Engineer
M. Blevins, Maintenance Superintendent
C. Marquis, Maintenance Supvervisor

Others

V. Lyndstrom, TDI Service Representative

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

*Denotes those present during the exit interview.

2. Preoperational Test Witnessing

During this reporting period, the NRC inspectors witnessed the performance of four preoperational tests. The specific test numbers, titles, test objectives, and inspection results are listed below.

Prior to witnessing of each test, the NRC inspectors performed a review of the test procedure. The review was conducted to verify that:

- The procedure provided a clear statement which specified the function it was to perform.

- The acceptance criteria were clearly stated and addressed the appropriate requirements.

- The communications between all persons concerned with the test were addressed.

- The procedure contained appropriate quality control hold points.

- There were provisions for verification of actions performed with appropriate sign offs provided for assurance of procedure step performance.

- The performance of the procedure would, when completed, assure that the acceptance criteria were met.

- The procedure was clearly written, properly reviewed and approved in accordance with the licensee's administrative procedures.

The NRC inspectors found that all the above items were adequately addressed.

The NRC inspectors then observed the licensee's performance of the following tests:

a. 1CP-PT-29-01, RT-1, "Emergency Diesel Generator (EDG) Auxiliary Systems, Retest 1"

This test was to demonstrate the proper operation of the auxiliary systems components that receive safety injection signals, automatic lockout and blockout signals, or operator lockout signals. It also tests the fuel oil transfer pump control circuits. This is the first in a series of retests and preoperational test repeats that are to be accomplished subsequent to the EDG Owners' Group teardown and inspection.

On May 19, 1984, the RRI arrived at the test site (in the "A" Train diesel generator room) while the test was in progress. At the time, Section 7.19, "EDG Fuel Oil Transfer Pumps 01A and 01B Control Circuit Verification Test," was being delayed until additional communications equipment was obtained. Upon reviewing the official working copy of the procedure, the NRC inspector noted that the prerequisite electrical lineup sheet was not completed. Breakers 1EB3-4, 1G, and 2G, which supply power to EDG Starting Air Compressors 01 and 02, were not

signed off as being in the closed position. This is a requirement under prerequisite 6.1.7 in support of test paragraphs 7.1 and 7.2, which were signed off by the system test engineer (STE) as satisfactorily completed.

The RRI brought this to the attention of the STE. He acknowledged the error, secured the test, and proceeded to initiate a test deficiency report. The STE demonstrated to the NRC inspector how the breakers were initially closed as indicated by the lights on the control panel and the position indicator for the breakers on the distribution panel. If the supply breakers were not closed as required by prerequisite 6.1.7, the test results could be misleading, i.e., it would appear that the lockout signal functioned properly, because the air compressors would not start. The STE convinced the RRI that if the breakers had been out of position during the test, it would have been obvious by the indicating lights on the control panel. The test was resumed after the deficiency report was dispositioned by licensee management. This is in violation of Section 4.9.11 of CP-SAP-21, Revision 2, "Conduct of Testing," which requires the STE to ensure that the applicable prerequisites specified by the test procedure have been verified to be complete. Sign off of the electrical lineup sheet documents this verification.

b. 1CP-PT-57-01, RT-1, "Safety Injection Pump Performance, Retest 1"

The objective of this test was to verify operation of control and interlock circuits for various components in the safety injection system. The retest was required as a result of electrical rework for train separation criteria and walkdown deficiencies. The test was started on May 16, 1984. The NRC inspector noted that there were some editorial errors in the original revision of the test procedure. Upon questioning the STE, it was noted that he had conducted a pre-test briefing of personnel and reviewed the test procedure to the extent that the errors were found and properly corrected in accordance with administrative requirements. Since this was done prior to the start of the test, the test proceeded without procedure delays. The test was performed in an efficient, professional manner. Communications between the STE and other participants supporting the test were clear and concise.

The test steps were not conducted in the order in which they were written, but, rather were conducted in an order which facilitated more efficient use of time and manpower resources. The RRI noted that in Section 7.0 of the procedure there was a note stating, "Steps of this procedure may be performed in any order." The "steps" of the procedure were not defined, and, therefore, if the step-by-step sequence of testing each component were to be conducted out of the order written, the test would be invalid. The RRI discussed this with licensee management, pointing out the fact that

the STE ultimately decides which steps can be done in any order and which cannot. To date, there have been no known instances where steps were erroneously conducted out of sequence. The licensee contended that STEs are adequately trained to make proper choices without impacting the intent of the test. In fact, approximately 50% of the STEs are the authors of the tests they are performing, and, thus, have a complete understanding of the intent. However, the licensee acknowledged the RRI's concern and is considering the application of more concise statements in procedures with regard to sequence.

During the valve interlock and control circuit test of valve 1-8807A (safety injection suction header cross-connect), the valve did not change position when the control panel switch was operated. This was caused by a section of tubular scaffolding leaning against the valve handwheel clutch, which in turn disengaged the remote operator. Upon removal of the scaffold, the valve was cycled. No apparent damage was done. There was an operator at the valve. However, he did not realize the scaffold would cause a problem. The STE and licensee management were cautioned by the NRC resident inspectors that this kind of operating interference can be common while construction is going on, and as such the operators must be alert for it. The licensee agreed and indicated that the STEs are well aware of these conditions. As such, they are normally sensitive to potential construction interferences with operating components and take appropriate actions to clear them. The licensee committed to reiterate the need for caution in this area to STEs and operating personnel.

c. 1CP-PT-37-02, "Condensate Storage and Transfer System"

The objective of this test was to verify operability of the automatic condensate storage tank level control system and that it responds correctly to "A" and "B" Train safety injection signals.

On May 1, 1984, the NRC inspector observed the STE experiencing some difficulty getting started because prerequisites could not be satisfied; i.e., instrument air system was not in service. Since it was not needed to support some of the circuit test, the STE processed a change to delete the requirement until needed. This turned out to be academic, as the service air system soon became available.

During testing of the condensate transfer pump low suction pressure trip test, the STE encountered difficulty in trapping pressure in the pressure switch by isolating the switch in accordance with Section 7.1.9 of the procedure because the test gage connections leaked and did not seal by tightening. The leak rate was slow

enough, however, such that by expediting performance of the procedure steps, there was sufficient pressure trapped long enough to accomplish the test. This reflects poor performance on the part of test equipment installing personnel and good thinking on the part of the STE in dealing with a test obstacle that could have caused unnecessary disruption of the test.

There were no other problems or concerns associated with this test.

d. ICP-PT-57-01, RT-2, "Safety Injection Pump Performance, Retest 2"

The objective of the test was to balance the four cold leg injection flow paths and the two hot leg injection paths.

Difficulty was encountered in completing the prerequisite section of the test. Several test procedure deviations (TPD) had to be written in order to complete the prerequisites. One of the difficulties encountered was an attempt to use an approved operating procedure, SOP-201A, "Safety Injection System," to line up the safety injection system for the test. Since SOP-201A is a procedure for normal operations, it would not support the performance of the test. This resulted in having to write a TPD for a lineup that would support the test. This is an example of failure to provide adequate prerequisites to support the test.

Another difficulty was the apparent lack of communication between the startup group and operations group. In addition to the communication and coordination difficulty, the flow transmitters malfunctioned and had to be replaced. Properly calibrated transmitters were obtained and installed; however, this resulted in numerous delays in the start of the test. Once these problems were corrected and the test had begun, the test steps were performed smoothly and without incident.

After verifying that the correct revision of the specific preoperational test was in use, the NRC inspectors verified, during the test performance, that:

There were sufficient personnel to perform the test.

The test steps were performed in the proper sequence to yield valid results.

Unforeseen equipment and procedure problems were reviewed and documented.

Test personnel observed procedural hold points.

The NRC inspectors observed testing activities both on and off normal working hours and during the weekends.

No other violations or deviations were identified.

3. Monitoring of TDI EDG Inspection

During this reporting period, the RRI monitored the disassembly, inspection, and records generation on EDG Serial 76001, which is Unit 1, Train "A" EDG and on Serial 76002, which is Unit 1, Train "B" EDG. This work is part of the recertification program of TDI diesels at CPSES and several other nuclear power plants. An overall report on the inspection of the Train "A" EDG from start to finish has been published on June 6, 1984, as NRC Special Inspection Report 50-445/84-17. Train "B" EDG work is being accomplished over a much shorter time span and the NRC site inspection activities related to the recertification of the Train "B" EDG will be reported on NRC Special Inspection Report 50-445/84-20 to be published after the work is completed.

The RRI observed work in progress; checked for procedure compliance; and verified material segregation and control, cleanliness control, and documentation of findings. Personnel were interviewed as work progressed to ascertain that they were properly trained, briefed, and in possession of the required procedures and work authorizing documents.

Unit 1 Train "A" EDG

At the beginning of this reporting period, cylinder heads were being installed and most of the inspections had been completed and documented on Train "A" EDG.

The RRI witnessed installation of the cylinder heads and noted that good work practices were being utilized in the handling and maintenance of cleanliness. A quality control inspector was present to perform detailed inspections of all mating surfaces to assure the absence of nicks, burrs, and foreign material.

On May 16, 1984, just prior to final closure of the crankcase, the RRI inspected the internals and found no problems. The crankcase had been thoroughly cleaned and inspected prior to this point.

Installation of cylinder head sub-covers and valve covers was observed by the RRI. Although there were no problems with the physical work process, one on-the-spot change to the procedure was entered but not initialed by the person required to do so before proceeding. The licensee is utilizing maintenance mechanical instructions which have been previously written for work on the EDGs. During the initial use of these instructions, necessary on-the-spot changes had been properly executed in most cases. This observation of a failure to initial a change appeared to be an

isolated instance, but the RRI brought it to the attention of the quality control and maintenance supervisors, whereupon the condition was corrected. On May 8, 1984, the quality control supervisor issued a memo which was used to brief personnel on the importance of keeping procedures in order and changes properly signed. The importance of good housekeeping practices was reiterated. There were no further problems in this area.

The RRI conducted detailed reviews on 14 inspection plan (I.P.) documentation packages. There was an excellent representation of what was inspected and to which acceptance criteria. Many photographs were used. In general, the "paper trail" was satisfactory with a few exceptions as noted below. The following I.P.s were reviewed by the RRI:

I.P.	Subject
I.P.-15	Turbocharger Butterfly Valve Assembly
I.P.-19	Turbocharger Bracket Bolting
I.P.-20	Rocker Arm and Push Rod Assembly
I.P.-21	Cylinder Block
I.P.-24	Cylinder Liners
I.P.-25	Starting Air Distributor
I.P.-27	Pistons and Piston Pin Assembly
I.P.-28	Governor Linkage
I.P.-29	Control Panel Cleanliness
I.P.-31	Exhaust Manifold Bolting and Gaskets
I.P.-32	Cylinder Block Line and Manifold Nuts
I.P.-33	Turbocharger
I.P.-34	Crankcase Assembly
I.P.-36	Base and Bearing Caps

Of the 14 I.P. packages sampled, it was noted by the RRI that 8 had nonconformance reports (NCRs) that were not closed. At this point in time, the engine was being prepared for starting and break-in of the new piston rings. The RRI expressed concern to the licensee's quality assurance supervisor that running the equipment with unresolved deficiencies would violate procedures and is not in the best interest of quality. The response was that all NCRs written against the engine would be cleared or conditionally released before the engine is operated. "Conditional release" means in broad terms that an engineering evaluation has been conducted and quality of the equipment will not be compromised if the equipment is operated. This concept is frequently needed in order to conduct in-process equipment checkouts prior to final restoration to service.

After the engine had been run, the RRI noted that some of the NCRs were still open and not conditionally released. For example: NCR 84-0097 rejected all of the pistons pins for wear, and the I.P.-27 package had

no documentation showing this to be an acceptable, "use as-is" condition. Upon questioning the licensee's quality control supervisor, it was revealed that the "hold tags" that would have prevented premature engine operation were removed from the engine control panel without proper authority. However, there was other documentation showing that the engine could be safely operated "as-is." This is a violation of the STA-405, Revision 5, which is the administrative procedure controlling NCRs. The quality control supervisor immediately placed the equipment back in a "hold" status so that this could be properly resolved. A deviation report was initiated by the licensee to document the procedure violation. There were four other NCRs with the same problem.

The package for I.P.-33 (Turbocharger) had notations stating that dimensions specified could not be taken because, "the needed measuring equipment was not available." The QC inspector put "N/A" for the attribute on the inspection report and the Level III inspector approved the inspection report for closure. This is in violation of Section 4.4 of QPM-004, "Inspection Report." The inspection report and the I.P. had not been revised to delete the requirement to take measurements. The licensee issued a deviation report to document and provide for corrective action.

The above problems are examples of failure to follow procedure as described in the Notice of Violation attached to this inspection report.

The RRI noted a few instances where the quality control inspector indicated "satisfactory" on inspection reports when unsatisfactory or indeterminate conditions existed. On the surface, this appeared to be a problem; however, the QC inspector was "inspecting and reporting" rather than inspecting for acceptance or rejection against given acceptance criteria. As such the QC inspector indicated that he had satisfactorily conducted the inspection specified on the inspection report. Because of the investigative nature of the TDI Owners' Group inspections, there were many cases where acceptance criteria were yet to be determined; thus, many of the inspection tasks were to simply report what is seen. QPM-004, "Inspection Report," which is the procedure that implements the use of inspection reports, states that acceptance criteria shall be included in the instructions to the inspector that are entered on the inspection report form. It does not adequately provide for "inspect and report" situations. The licensee is considering a change to QPM-004 to accommodate such situations in the future.

In the I.P.-32 package, the RRI noted that the I.P. was revised over the signature of the previous revision, lending confusion to what acceptance criteria was used in evaluating defects on cylinder block nuts. The inspection report was closed out with a satisfactory reinspection, yet the related nondestructive examination report still showed the rejection. No NCR was written to provide the necessary followup. The "paper trail" in

this I.P. package was inadequate. The QC supervisor indicated that he would make the proper corrections or additions because the required data was available and that quality of the hardware had not been compromised. This problem is (open) Unresolved Item 50-445/8418-03.

4. Plant Status

The following is a status of TUEC (TUGCO) manning levels for operations and plant testing activities as of May 31, 1984:

a. Operations Manning Status

Authorized personnel level (including maintenance, operations, administration, quality assurance, and engineering) - 541

Number presently onboard - 482

b. Plant Testing Status

The present status of the NRC preoperational testing phase inspection program is approximately 40 percent complete.

The licensee preoperational testing program is as follows:

Test Completion Status

Preoperational Tests - 97

Acceptance Tests - 44

No violations or deviations were identified.

5. 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 such item, disclosed during the inspection, is discussed in paragraph 3 above.

6. Exit Interview

An exit interview was conducted June 1, 1984, with licensee representatives (identified in paragraph 1). During this interview, the SRRI and RRI reviewed the scope and discussed the inspection findings.