

APPENDIX B

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

NRC Inspection Report: 50-445/86-05

Permit: CPPR-126

Docket: 50-445

Category: A2

Applicant: 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: February 1 through March 31, 1986

Inspectors: *Dennis L. Kelley* 5/2/86  
D. L. Kelley, Senior Resident Reactor  
Inspector (SRRI), Region IV CPSES Group  
(paragraphs 1, 2, 3b, 5, 6, 7) Date

*W. F. Smith* 5/2/86  
W. F. Smith, Resident Reactor Inspector (RRI)  
Region IV CPSES Group  
(paragraphs 1, 2, 3a, 4, 5, 6, 7) Date

Reviewed By: *I. Barnes* 5/5/86  
I. Barnes, Group Leader, Region IV CPSES Group Date

Approved: *T. F. Westerman* 5/6/86  
T. F. Westerman, Chief, Region IV CPSES Group Date

Inspection Summary

Inspection Conducted: February 1 through March 31, 1986 (Report 50-445/86-05)

Areas Inspected: Routine, unannounced inspection of (1) applicant actions on previous inspection findings, (2) miscellaneous independent inspection issues,

(3) preventive maintenance programs, (4) plant tours, and (5) plant status.

Results: Within the five areas inspected, two deviations (failure to complete actions committed in responses to violations, paragraph 2; and failure to implement an adequate preventive maintenance program, paragraph 4) were identified.

DETAILS

1. Persons Contacted

Applicant Personnel

- \*\*\*A. B. Scott, Vice President, Nuclear Operations
- \*\*\*M. R. Blevins, Maintenance Superintendent
- \*\*\*D. E. Deviney, Operations QA Supervisor
- \*\*\*R. A. Jones, Manager, Plant Operations
- \*\*\*D. W. Braswell, Engineering Superintendent
- \*\*\*R. R. Wistrand, Operations Superintendent
- \*\*\*J. C. Smith, Operations Quality Assurance
- \*J. J. Allen, Operations Engineer
- \*\*\*M. J. Riggs, Operations Support Engineer
- \*R. W. Clark, Operations Support
- \*\*\*B. T. Lancaster, Administrative Superintendent
- C. L. Turner, Director, Nuclear Training
- R. Flores, Operations Engineer
- R. W. Haskovec, Licensing
- \*\*C. E. Scott, Startup Manager
- S. N. Franks, Special Project and Technical Support Lead
- D. Walling, Maintenance Engineer
- D. Davis, Maintenance Engineering Supervisor
- \*G. M. McGrath, Special Project and Technical Support Lead
- \*\*T. Jenkins, Operations Support Supervisor
- \*\*T. L. Gosdin, Support Services
- \*\*R. A. Wistrand, Operations Superintendent
- \*\*R. Smith, Operations Support Engineer

\*Denotes applicant representatives present during exit interview of March 6, 1986.

\*\*Denotes applicant representatives present during exit interview of April 3, 1986.

\*\*\*Denotes both exit interviews attended.

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

2. Applicant Actions on Previous Inspection Findings

- a. (Closed) Open Item 445/8431-12: Administrative errors in warehouse receiving inspector qualification records. During a review of inspector qualification records, the NRC inspector noted that five of six inspector qualification records contained errors such as missing certification and practical factor signatures, and other similar administrative errors. During this inspection period, the SRRI

reviewed the five certification files. All signatures were in the proper place, along with the correct supporting documentation. This item is closed.

- b. (Closed) Open Item 445/8436-06: During a review of Emergency Response Guidelines (ERG) procedures, the NRC inspector identified a concern that several of the ERGs had procedure steps requiring the operator to proceed to subsequent steps and then later return to where he left off without the benefit of a reminder or prompt. The applicant committed to consider this concern later when the ERGs were exercised on the control room simulator. The applicant has since conducted exercises on the simulator using the ERGs to diagnose and recover from the following five major malfunctions: steam generator tube rupture, main steam isolation valve failure to shut during a ruptured steam generator, loss of primary coolant accident (LOCA), loss of feedwater induced LOCA, and main steam line rupture. The applicant informed the RRI that no missed steps or confusion resulted from the absence of such prompts in the ERGs and thus did not intend to revise the ERGs to incorporate them. The applicant stated, however, that the issue will be reconsidered if during future simulator exercises, the need for prompts is indicated. This item is closed.
- c. (Closed) Open Item 445/8436-07: During a September 1984 inspection of ERGs, the NRC inspector noted that several of the procedure "Data Packages" were not approved at the time of the review. "Data Packages" are documents which provide a cross reference between data that appears in the ERGs (i.e., pressure and temperature setpoints, or flow values) and the source document; i.e., system diagrams, FSAR, or Technical Specifications. By design, the "Data Package" for each ERG was not to be finalized until the ERG achieved its final form, and that was after the ERG received Station Operations Review Committee (SORC) approval. Revision 4 of Operations Administrative Procedure ODA-204, "Preparation of Emergency Response Guidelines" more clearly defined this approval process in contrast with earlier, less specific revisions reviewed by the original NRC inspector. During the followup inspection, the RRI noted that the "Data Packages" in question had all been approved, but there was a new revision to most of the ERGs which will eventually have a revised and approved "Data Package." This item is closed.
- d. (Open) Open Item 445/8436-08: During an inspection of ERGs, the NRC inspector identified several cases where data was missing and annotated as "later." The applicant indicated that the data was being generated by a computer simulation of the program and would be available in early October 1984. The procedures were reviewed by the RRI in February 1986 as a followup and it was noted that all of the data had since been incorporated by a March 1985 revision, except that Figure 1 of ECA-3.1 still contained a "later" in lieu of the required data. The applicant explained that this particular figure was to be generated by Nuclear Engineering, and not the computer

simulation, and that the information had not been provided yet. Therefore, this item will remain open until Figure 1 of ECA-3.1 is completed.

- e. (Closed) Open Item 445/8436-09: During a September 1984 inspection of ERGs, the NRC inspector identified seven specific discrepancies which the applicant committed to correct. The RRI conducted a followup inspection of the procedures where the discrepancies had existed and verified that they had all been subsequently revised and the corrections had been made. This item is closed.
- f. (Closed) Open Item 445/8502-04: During the preoperational test program for CPSES Unit 1, the RRI noted a tendency of system test engineers (STEs) to overly utilize minor on-the-spot changes of test procedures such that the complexity of the changes should have required formal revisions to be made. The applicant made several changes to the applicable startup administrative procedures to provide better control of this on Unit 2, and during any subsequent testing on Unit 1. This item is closed.
- g. (Open) Violation 445/8502-05: During an inspection of completed preoperational test data packages, the RRI identified two packages where the STE had failed to follow the administrative requirements for changing test documents. In the response to the Notice of Violation dated October 10, 1985, the applicant stated under "Corrective Steps Taken" that ". . . a Test Deficiency Report (TDR No. 4254) has been written to document this violation and it supplements these two data packages with clarifying information relative to this violation." The committed date of full compliance was October 18, 1985; however, in February 1986 the RRI conducted a followup inspection and found that TDR 4254 was written on October 1, 1986, as stated in the response, but did not find the TDR filed in the records center with either of the test data packages. The applicant's representative explained that the TDR was still pending Joint Test Group review and approval. This is a deviation from the commitment made to the NRC to be in full compliance by October 18, 1985, which includes filing the approved TDR with the test data packages in the records center. During followup inspections made in January 1986, a similar instance surfaced where the applicant committed to accomplish a given task but followup inspection revealed that it had not been done. In this instance, in response to Violation 445/8431-08, the applicant committed to revise Station Administrative Procedure STA-602 by June 1, 1985. The revised procedure was not published until March 5, 1986 (445/8605-D-01).
- h. (Closed) Unresolved Item 445/8502-10: During an NRC inspection of the completed preoperational test data package for ICP-PT-64-10, "Safeguards Relay Actuation Test," the RRI identified a test procedure deviation (TPD) which had 60 line items of change instructions with 61 line items of justifications. It appeared that

instruction number 43 was inadvertently omitted but its applicable justification was not. The unresolved issue was whether or not the omission of the instruction had impacted the test. Upon investigating, the applicant illustrated that the changes justified in item 43 were in fact incorporated by instruction number 50. This was another example of misuse of "short form" TPD changes and permanent corrective actions have been adequately taken in response to Open Item 8502-04 as discussed above. This item is closed.

- i. (Closed) Violation 445/8506-03: Failure to provide adequate procedures. During the corrective action followup inspection of a deficiency report 85-012 involving the replacement of the shaft seal on Reactor Coolant Pump No. 2, the RRI identified four instances of procedural noncompliance or inadequacy. The applicant committed in the written response, TXX-4585, dated October 11, 1985, to revise MDA-201, "Electrical and Mechanical Maintenance Procedures and Instructions," to ensure that all maintenance activities would be accomplished as specified in the approved procedure/instruction. In addition, STA-404, "Control of Deficiencies," was to be revised to improve the reporting of deficiencies and to require more information for better response and corrective action evaluation. The applicant also committed to training of maintenance personnel to the new requirements of MDA-201.

The SRRI reviewed the procedure changes and the training files, and verified that the commitments had been met. This item is closed.

- j. (Closed) Open Item 445/8506-04: Failure to adequately disseminate lessons learned. During the corrective action followup inspection of deficiency report 85-012 (2.i above), the RRI noted that the applicant had disseminated lessons learned to only the two maintenance mechanics involved with the seal replacement and not to all personnel who could be placed in a similar situation in the future. The applicant subsequently repeated the training for all mechanical maintenance personnel. The SRRI reviewed the documentation and verified that the additional training had been accomplished. This item is closed.
- k. (Closed) Unresolved Item 445/8514-01: During a review of steam generator water chemistry records, the RRI identified a period of over 3 months when the steam generator pH was lower than required by procedure. Although the condition was eventually corrected, the RRI's concern was potential degradation of the wetted surfaces in the steam generators. Westinghouse later published a letter (WPT-8137 dated January 8, 1986) describing the scenario and stating that ". . . it is not believed that the occurrence (low pH for over 3 months while in cold wet layup) would have resulted in excessive corrosion product accumulation in the steam generators within the period of the reported chemistry upset." This item is closed.

### 3. Miscellaneous Independent Inspection Issues

#### a. Review of System Operating Procedure

The RRI conducted a detailed review of System Operating Procedure SOP-607A, Revision 4, "118V AC Distribution System and Inverters." Comparisons were made with the actual hardware in the plant and with the vendor technical manual to verify that the procedure was technically correct. The results of this inspection identified the following examples where the procedure was incorrect:

- (1) Section E.1 (First NOTE) incorrectly specified 465 volts, which reflected what was in the nonplant specific technical manual, but should have been 485 volts for CPSES.
- (2) Section E.1 (Second NOTE) specified 495.5 volts, which appeared incorrect. The applicant's representative could not justify the value and indicated it probably should have been 485 volts.
- (3) Section E.2 switch nomenclature did not match the installed equipment nameplate.
- (4) Section E.3 was missing a clarifying note that should have been transcribed from the vendor technical manual.

The applicant's representative committed to review the entire procedure in detail and correct all such errors, and commented that there is a program under way to "fine tune" all system operating procedures which will correct such problems, if any, in other procedures. Completion of this procedure update shall be an open item (445/8605-0-02).

#### b. Unit 1 Service Water System Deficiency

On January 24, 1986, the applicant verbally notified the NRC of a potentially reportable item under the provisions of 10 CFR 50.55(e). The deficiencies reported were (1) weld failures; and (2) plasite coating failures.

The applicant's investigation to date indicates the following:

##### (1) Weld Failure Evaluation

- (a) Two suspected weld problems in the spool piece downstream of flow control valve 1-SW-023 were determined to be erosion of base metal at the weld due to flow turbulence. In addition, there appeared to be galvanic corrosion in the area near the valve (valve is stainless steel; piping is carbon steel). Due to the flow turbulence the plasite coating was eroded away and then any protective oxide film

that might have formed was continuously washed away. The spool piece is to be replaced with one that will resist this kind of failure.

- (b) Weld failure in the vicinity of instrument isolation valve 1-SW-026 has been evaluated and appears to have been caused by flow induced vibration. The short pipe nipple had insufficient flexibility and thus a stress riser existed at the weld. The nipple was removed and replaced with a longer section of pipe. Reanalysis shows no stress riser at the repaired weld location.
  - (c) A pinhole leak adjacent to field weld 10a on line 2-SW-1-302-150-3 is suspected to have been caused by a welding process problem. A temporary patch has been placed over the hole to stop the leak. Further investigation will be made when the system can be removed from service.
- (2) The plasite coating failures appear to be limited to the areas of flow turbulence. In most of the system pipe runs where turbulence was not present, the coating showed no apparent deterioration after 8 years of service. The internal pipe inspection is nearly complete on Train A. Inspection of Train B (and both trains on Unit 2) will follow.
- (3) In addition to the specific repairs identified above, the applicant is considering the following additional actions:
- (a) Recoat any areas where the plasite coating has eroded with a more turbulence-resistant material.
  - (b) Monitor for wall thinning in selected areas of the system where corrosion or erosion is most likely to occur, using ultrasonic testing methods. Some base line data has already been recorded.

#### 4. Preventive Maintenance (PM) Programs

The RRI has been conducting a comprehensive review of the PM programs at CPSES. Particular attention was focused on what programs have been in place to sustain the level of quality required of safety-related structures, systems and components such that they will perform their intended functions. This is required by American National Standard N18.7-1976, which is an FSAR commitment through Regulatory Guide 1.33. This aspect of preventive maintenance is significant at CPSES, due to the extensive shutdown period currently being experienced. Results of other aspects of the inspection are identified in NRC Inspection Reports 445/85-13, 85-14, and 86-01.

During this inspection period, the RRI reviewed the applicant's submittal of PM data in response to a request for documented evidence on (1) what PM

items were required since four safety-related components sampled by the RRI were released from construction to the startup testing organization, (2) when they were done, and by what procedure, and (3) if not done, what the justification was. The request was documented in NRC Inspection Report 445/86-01 as Unresolved Item 445/8601-U-10. Based on a review of the documentation provided by the applicant, the RRI identified the following discrepancies, which were discussed in various meetings with Maintenance Department representatives and at the exit interview of April 3, 1986.

a. Component Cooling Water Pump No. 2 (CP1-CCAPCC-02):

Monthly motor rotation was not done from the component turnover date of April 30, 1981, until January 26, 1984. Quarterly pump rotation (which normally would have been done concurrent with motor rotation) was also not done from turnover date of May 13, 1981, until January 26, 1984. Monthly heater checks were not done from September 10, 1982, until January 14, 1985.

b. Station Battery (CP1-EPBTED-01):

There was no documented evidence of weekly battery inspections from the time the battery was released on October 29, 1979, through May 21, 1982. According to the information furnished, this period was interrupted by turnovers back to construction for modifications, thus the entire period may not apply to the Operations Maintenance Department for responsibility.

c. Motor Driven Auxiliary Feed Pump No. 2 (CP1-AFAPMD-02):

The quarterly rotation was not done from September 27, 1982, until August 18, 1984.

d. Centrifugal Charging Pump No. 1 (TBX-CSAPCH-01):

Pump/motor rotation was not done between March 25, 1983, and February 25, 1984, and between February 25, 1984, and April 3, 1985.

The potential for quality degradation may be mitigated by the fact that at times during the above periods when the PMs were reportedly not done (or at least not documented), the equipment was in operation or under test. The concern is that failure to produce documentation indicating continuity in basic PM activity (such as periodic inspections, equipment rotation and heater checks) in four out of four selected components is indicative of program weaknesses. Of particular concern are those systems which are not routinely operated during cold shutdown conditions. Failure to implement an adequate PM program is a deviation from the FSAR commitment to comply with ANS N18.7-1976 (445/8605-D-03). This deviation supersedes and therefore closes Unresolved Item 445/8601-U-10.

5. Plant Tours

During this reporting period, the SRRRI and RRI conducted inspection tours of Unit 1. In addition to the general housekeeping activities and general cleanliness of the facility, specific attention was given to areas where safety-related equipment was installed and where activities were in progress involving safety-related equipment. These areas were inspected to ensure that:

- o Work in progress was being accomplished using approved procedures;
- o Special precautions for protection of equipment were implemented, and additional cleanliness requirements were being adhered to for maintenance and welding activities; and
- o Installed safety-related equipment and components were being protected and maintained to prevent damage and deterioration.

Also during these tours, the SRRRI and RRI reviewed the control room and shift supervisor's log books. Key items in the log review were:

- o Plant status,
- o Changes in plant status,
- o Tests in progress, and
- o Documentation of problems which arise during operating shifts.

During the control room inspection tour conducted on March 25, 1986, the SRRRI identified a degradation of cleanliness of the bench-top surfaces of the main control panels and in particular the Unit 2 nuclear instrument panels. The nuclear instrument panels were open, but the instrument drawers had not yet been installed, thus there was no apparent equipment damage. The presence of dust and grit was caused by the extensive grinding activity above the control panels on control room ceiling structure which was under modification. There appeared to be enough protection in place, but this was not adequately supplemented by increased cleaning activity in the control room. The RRI followed up on March 26, 1986, by inspecting the internals of the main control panels and noted a heavy layer of dust, but the presence of grinding grit was not evident. Control room cleanliness was discussed with the Operations Superintendent at the time of the inspection and again with attendees at the April 3, 1986, exit interview. Actions to correct the condition were promptly implemented. The resident inspectors will continue to monitor this area on future tours.

6. Plant Status as of March 31, 1986

- a. Unit No. 1 remains at 99% complete. Excavation and turbine building wall removal in preparation for replacement of condenser tubing has

been completed. A significant amount of pipe support rework is in progress and/or in the planning stage.

- b. Unit No. 2 is now 80% complete. Preoperational testing of safety-related systems has not commenced; however, test procedures are being generated.

7. Exit Interview

Exit interviews were conducted March 6, 1986, and April 3, 1986, with the applicant representatives identified in paragraph 1 of this appendix. During these interviews, the operations resident inspectors summarized the scope and findings of the inspection. The applicant acknowledged the findings.