

APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report Nos. 50-445/92-02
50-446/92-02

Operating License No. NPF-87

Construction Permit No. CPPR-127

Licensee: TU Electric
Skyway Tower
400 North Olive Street
Dallas, Texas 75201

Facility Name: Comanche Peak Steam Electric Station (CPSES), Units 1 and 2

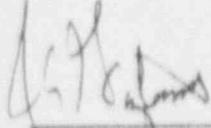
Inspection At: CPSES, Glen Rose, Texas

Inspection Conducted: January 13-17, 1992

Inspectors: H. F. Bundy, Reactor Inspector, Test Programs Section, Division
of Reactor Safety

D. A. Powers, Senior Reactor Inspector, Test Programs Section
Division of Reactor Safety

M. E. Murphy, Reactor Inspector, Test Programs Section, Division
of Reactor Safety

Approved: 

J. E. Gagliardo, Chief, Test Programs Section
Division of Reactor Safety

2/25/92
Date

Inspection Summary

Inspection Conducted January 13-17, 1992 (Report 50-445/92-02)

Areas Inspected: A regional initiative, announced inspection of system entry retest (SERT) in the areas of modifications, temporary modifications, and maintenance activities.

Results: The licensee was found to have a good program for identifying retest requirements and for the planning, developing, and performing of retest procedures. Retest requirements were satisfactorily addressed in the areas of design modifications and temporary modifications. For post-maintenance testing, it appeared that in most instances, appropriate tests were being specified and performed to verify component and system operability. Two

concerns were identified and have been classified as unresolved items. The two concerns are:

- o Test data was not always included in the work packages for post-work reviews. (Unresolved Item 445/9202-01, paragraph 4)
- o Appropriate post-work testing may not have been performed for Corrective Maintenance Work Order C91-312 which involved reversing the direction of a flow orifice in the containment spray system. (Unresolved Item 445/9202-02, paragraph 4)

The licensee had a policy of not requiring leak checks following repair work on components having external leaks which was considered a weakness. An additional weakness in the human factors engineering of the form for engineering technical review of temporary modifications was identified.

Inspection Conducted January 13-17, 1992 (Report 50-446/92-02)

Areas Inspected: No inspection of Unit 2 was conducted.

Results: Not applicable

DETAILS

1. PERSONS CONTACTED

TU Electric

- *R. Baker, Manager, Licensing Compliance
- *L. Bradshaw, Stipulation Assistance
- R. Carver, Assistant Manager, Electrical Maintenance
- *D. Davis, Manager, Plant Analysis
- T. Evans, Supervisor, Plant Engineering Electrical Systems
- B. Fish, Lead Engineer, Construction Operation Support Group
- *J. Gallman, Manager, Trend Analysis
- D. Goodwin, Shift Supervisor, Operations
- *N. Harris, Senior Licensing Specialist, Site Licensing
- *B. Homan, Operations Work Control
- *C. Locke, Senior Engineer, Plant Engineering
- M. Mason, Operations Quality Control
- *J. Meyer, Principal Engineer, Plant Engineering
- *D. Moore, Manager, Work Control Center
- *J. Purdy, Jr., Coordinator, Work Control Center
- M. Quinn, Operations Quality Control
- *M. Reeves, Supervisor, Operations Instrumentation and Control Planning
- *J. Riess, Supervisor, Special Projects
- *G. Ross, Senior Quality Specialist
- S. Sawa, Manager, Special Projects
- A. Scheetz, Lead Production Coordinator, Mechanical Maintenance
- *M. Stakes, Supervisor, Electrical Maintenance Support
- *M. Sunseri, Manager, Performance and Test
- J. Vargas, Test Engineer, Performance and Test
- *B. Wieland, Manager, Maintenance
- *D. Wilken, Manager, COSG
- *J. Williams, Supervisor, Mechanical Maintenance
- *B. Winters, Supervisor, Performance and Test

CASE

- *O. Thero, Consultant

NRC

- *D. Graves, Senior Resident Inspector, Unit 2
- *C. Johnson, Project Engineer, Unit 2
- W. Johnson, Senior Resident Inspector, Unit 1
- J. Gagliardo, Chief, Test Programs Section

The inspectors also interviewed other personnel during the inspection.

*Denotes attendees at the exit meeting held on January 17, 1992.

2. SERT INSPECTION OBJECTIVES AND METHOD

The overall objective of this inspection was to determine the licensee's performance in the area of system entry retest identification, documentation, and performance.

To accomplish this objective, the inspection was conducted to determine if retest requirements were evaluated during design change and maintenance planning and that the retest procedures met regulatory requirements, licensee commitments, and industry guides and standards. It was also to determine if retest requirements were considered for all system boundary violations. The inspection was also conducted to verify that the retests proved operability and assured that the design basis was satisfied for structures, systems, and components that were modified or subjected to maintenance.

The inspectors reviewed the licensee's administrative procedures for modifications and maintenance. The following procedures were found to define the retest program, establish responsibilities, and provide procedure development:

- o STA-606, "Work Requests and Work Orders," Revision 17, PCN-2,
- o STA-702, "Surveillance Program," Revision 9, PCN-2,
- o STA-623, "Post Work Test Program," Revision 6, PCN-2,
- o "Post Work Test Guide," Revision 0, Change 12,
- o STA-716, "Design Modification Process," Revision 6,
- o STA-683, "Review, Approval, Revision of and Changes to Test Procedures and Results," Revision 2, and
- o STA-602, "Temporary Modifications," Revision 9.

Modifications and maintenance work items scheduled during the last refueling outage were assessed, and the inspectors selected 3 modifications and 28 maintenance work orders for detailed review. Five temporary modifications were selected for detailed review from the lists of open and closed items. The selected items are listed in the Attachment.

3. INSPECTION FINDINGS SUMMARY

The licensee was found to have a good program for identifying retest requirements and for the planning, developing, and performance of retest procedures. Retest requirements were satisfactorily addressed in the areas of design modifications and temporary modifications. For post-maintenance testing, it appeared that in most instances appropriate tests were being

specified and performed to verify component and system operability. However, two concerns were identified:

- o It was not clear that test data was always included in the work packages for post-work reviews. (Unresolved Item 445/9202-01, paragraph 4)
- o It appeared that appropriate post-work testing may not have been performed for Corrective Maintenance Work Order C91-312, which involved reversing the flow direction of Orifice CPI-OTORBO-01. (Unresolved Item 445/9202-02, paragraph 4)

The licensee had a policy of not requiring leak checks following repair work on components having external leaks which was considered a weakness. An additional weakness in the human factors engineering of the form for engineering technical review of temporary modifications was identified. It was found that the wording of Questions 2, 9, 10, and 11 of the form resulted in a negative question requiring a positive answer if there were no concerns. One example was found where all four questions had been answered "No." A review by the licensee determined that the questions should have been answered "Yes."

No violations or deviations were identified during the inspection.

4. POST-MAINTENANCE TESTING (PMT) (62700, 62702)

The inspectors examined the licensee's maintenance program to identify and evaluate the methods in place to control post-maintenance testing. This examination consisted of reviewing the administrative procedures and selected maintenance work orders as well as interviews with maintenance personnel.

The licensee's maintenance program and associated post-maintenance testing requirements were described in the documents identified in paragraph 2 above. These documents described a comprehensive program to ensure appropriate post-maintenance testing was being specified and performed to verify component and system operability.

To determine the effectiveness of post-maintenance test implementation, the inspectors reviewed 28 completed work packages (listed in the Attachment) performed during the last refueling outage. Supporting corrective maintenance and surveillance work packages were also reviewed. Work planning and test personnel were interviewed as necessary to clarify test requirements and results obtained. The review consisted of verifying that post-maintenance testing was considered during the planning stage, that post-maintenance tests were identified in the work package, and test procedures were identified or included as appropriate. The review further verified that the testing specified was appropriate to the work performed.

With the possible exceptions discussed below, the inspectors found that appropriate tests were being specified and performed to verify component and

system operability. The licensee's program allowed the required testing to either be integrated into the work instructions or to be referenced as an independent test requirement. The program required independent tests to be listed on a post-work test report (PTR) which was included in the work package.

For Work Order C91-312, which involved reversing the direction of Orifice CP1-CTORBO-01 in the containment spray system, no testing was specified in the work instructions, and no PTR was included in the work package. It appeared that flow testing would have been appropriate following this work. The licensee initiated ONE Form FX-9291 to address the testing issue. This issue will be tracked as Unresolved Item # 9202-02 pending NRC review of the completed ONE form and the determination of the safety significance of the failure to perform flow testing. The licensee indicated that this orifice was apparently incorrectly installed during construction.

The inspectors observed that post-maintenance testing was normally not specified in corrective maintenance work orders involving the repair of external fluid leaks, unless the leak checks were required by the applicable code. This policy was documented in Memorandum CPSES-9025736 dated November 9, 1990. The assumption was that the operators would perform leak checks in accordance with an internal instruction when returning the equipment to service, and initiate work requests as appropriate to correct leaking problems. The inspectors observed that leaks could be overlooked when extensive work was completed on complex equipment such as emergency diesel generators. Licensee representatives agreed to review this practice. The inspectors identified the following corrective maintenance work orders for which leak checks would have been appropriate: C91-8112, "Replaced Root Valve CPX-VAACUP-02"; C89-6368, "Rework Valve 1CH-0448 to Prevent Seat Leakage"; and C91-10205, "Rework Leaks in Starting Air System for EDG-CP1-MEDGEE-01."

The inspectors found that test data was not included in the completed work packages for the following corrective maintenance work orders:

- o C90-6709, "Rework Pump TBX-CSAPCH-01 to Correct Excessive Shaft Seal Leak,"
- o C90-7456, "Replace Inboard and Outboard Bearings in Pump CP1-AFAPMD-02," and
- o C91-985, "Rework Valve 1-PCV-0455A for Seat Leak."

A PTR listing test procedure numbers was included in each package. However, given only the procedure number, the file clerks could not retrieve the associated completed test procedure. Eventually, the work control center was able to provide corresponding surveillance work order numbers, and with this information the file clerks were able to retrieve the associated completed test procedures. A management representative stated that actions would be

taken to enhance referencing test documentation in corrective maintenance work orders.

Paragraph 6.2.4 of Procedure STA-623, Revision 6, stated, in part, "The test data sheets shall be included in the work package." It was further stated in paragraph 6.2.6, "Once testing has been accomplished and data sheets attached, the responsible test organization will review and forward the work package to the work control center for post-work/post-test review." Because the test data sheets were not found in completed work packages, the inspectors attempted unsuccessfully to determine when they were being separated. A licensee representative stated that it is their policy to separate the test documents from the work packages prior to filing. However, the test documents should be presented with the associated work packages for the post-work reviews. A shift supervisor stated that he sometimes had to locate the test documents prior to accepting equipment associated with a work order for operation. A licensee representative stated at the exit meeting that possibly Procedure STA-623 was being violated with regard to including the test data in the work package. He went on to state that a ONE form would be initiated to resolve this issue. This issue will be tracked as Unresolved Item 445/9202-01 pending review of the licensee's completed ONE form and determination of the licensee's conformance to the requirements of Procedure STA-623.

5. DESIGN MODIFICATIONS (72701)

The purpose of this area of the inspection was to determine the process by which a permanent modification to structures, systems, or components was developed, reviewed, installed, and tested. Of specific interest was that post-modification testing ensured that structures, systems, or components had been satisfactorily determined to be operable and that design bases had been met.

Procedure STA-716 provided the guidance for the plant design modification process. The procedure specified the requirements for initiating, approving, implementing, testing, accepting, and documenting modifications of CPSES structures, systems and components. The procedure required that any licensee or contractor employee may request a design modification (DM). After the requesting employee's management had concurred on the requested DM, it received a technical review and was then assigned to a DM coordinator. Subsequent reviews were required by many organizations including the Plant Modification Review Group, Performance and Test, the Station Operations Review Committee (SORC), the Design Modification Review Group, and the responsible work groups. Planning and Scheduling prepared the implementation schedule, and a work request and work order were generated. Finally, the post-implementation test results were required to be reviewed by the Test Review Group (TRG).

Procedure STA-683 provided the requirements for the review, revision, and approval of test procedures. The procedure specified that the Performance and Test group shall review DM test acceptance criteria and designate the testing methodology to be used. The procedure required that engineering tests were to

be approved by the Performance and Test manager and that those engineering tests created specifically for use as DM acceptance tests shall be submitted to the TRG for review and approval. Following the completion of the testing, the TRG, and other organizations, were required to review and approve the test results. The procedure stated in paragraph 6.6 that within 60 days from the time that the testing activity was completed the documentation shall be processed through any required post-test reviews. The inspector questioned the licensee to consider whether post-test reviews should be required to be completed in a shorter timeframe. The licensee's representative indicated that they would consider reducing the allowable review time. During the inspection, the inspector asked several licensee personnel if they were aware of any instance where a post-test review had reversed the previous responsible work group and shift supervisor determinations of the operability of a system or component. There were no such instances that could be identified.

The inspector reviewed a status sheet on 28 DMs implemented (i.e., received shift supervisor signature), but not closed. The oldest outstanding DM, which was implemented May 5, 1991, was not closed because the DM was considered deficient and a ONE Form was active on the DM. Another outstanding DM, which was implemented on June 26, 1991, had not been closed because the post-implementation testing revealed that the system performance could be improved with further design evolution, and a revision to the DM was under consideration. The inspector selected three safety-related DMs and the corresponding six implementing work orders for review (listed in the Attachment). The inspector determined that, where appropriate, 10 CFR Part 50.59 safety evaluations and operations impact assessments were attached to the packages. The packages contained detailed analyses and had the necessary approvals specified by procedure.

The inspector and a test engineer walked down a design modification (DM 90-036) affecting four trains of the auxiliary feedwater system. The modification involved the relocation of two resistance temperature detectors and the addition of two resistance temperature detectors. The design modification was performed to provide better indication of back-leakage through downstream check valves. The design modification appeared to have been implemented appropriately in accordance with the specified design drawings. The inspector noted that component identification tags were properly attached. The test engineer described the functional testing that he and another person had performed following the design modification implementation. The test engineer, who had previous experience as a startup engineer, appeared knowledgeable of the licensee's testing program, and post-modification testing was appropriate.

6. TEMPORARY MODIFICATIONS (72701)

The inspectors reviewed the licensee's temporary modification program which was described in and administratively controlled by Procedure STA-602, "Temporary Modifications."

As in design modifications, temporary modifications (TMs) may be initiated by anyone. Temporary modifications (TMs) undergo a programmatic as well as a license compliance review to determine if other evaluations were necessary. The TS and the associated final safety analysis report chapters were also reviewed to determine the impact the TMs may have and what restrictions may apply. In addition, a 10 CFR Part 50.59 review was performed when it was determined that one was required. Post-installation and post-restoration testing was evaluated and imposed as applicable.

The inspectors reviewed an "Open Temp Mods" report dated January 8, 1992. It listed 37 TMs as open, none were over 2-years old. The licensee also provided a report entitled "Temp Mods Originated During RF1." The report reflected a number of closed TMs. Five TMs were selected from these reports for review. The TM packages were found to be complete and met the requirements set forth in Procedure STA-602. The inspectors verified that each package had been reviewed as evidenced by the appropriate signatures.

The TMs were reviewed for adequacy, and for those tests that had already been performed, it was found that the results met the acceptance criteria set forth in the test procedures.

During the review of Temporary Modification 89-1-347, it was noted that the engineering technical review form had four questions (2, 9, 10, and 11) with wording that resulted in a negative question requiring a positive answer if no further action was required. In TM 89-1-347, these questions had been answered "No," which would have required extensive additional effort and may have even required cancellation of the TM. This response was not recognized and the TM was handled normally. A licensee representative acknowledged the apparent error and, after further engineering review, it was determined that the questions should have been responded to with a "yes," and there was no technical problem with the normal processing of the TM. The licensee stated that the human factors engineering aspect of this problem will be reviewed and appropriate changes considered to the wording of the questions in the form.

7. EXIT MEETING

The inspection scope and findings were summarized in an exit meeting on January 17, 1992, with the personnel identified in paragraph 1 of the report. The licensee did not identify as proprietary any of the materials provided to, or reviewed by, the inspectors during this inspection.

Following the onsite exit meeting, a licensee representative was contacted by telephone on February 11, 1992, and advised that the issue concerning the apparent lack of inclusion of test data in the work packages would be considered an unresolved item pending review of the results of the licensee's review.

ATTACHMENT

Computer Tracking Spreadsheet, "First Refueling Design Modifications,"
January 17, 1992

Computer Tracking Spreadsheet, "DM'S IMPLEMENTED - NOT CLOSED," January 16,
1992

Design Modification 89-159, Revision 0 (345 kV offsite power system
modification)

Design Modification 91-036, Revision 1 (auxiliary feedwater check valve
temperature monitoring modifications)

Design Modification 91-079, Revision 0 (remove feedwater pump suction
strainers from instrument tap upstream to instrument tap downstream and
replace with pipe)

Work Order C91005215, Revision 0 (modify Cabinets 1CF10, 1TC39, 1CR13, 1CR14,
and 1CR40)

Work Order C910007411, Revision 0 (modify feedwater suction strainers)

Work Order C010003149, Revision 0 (modify feedwater temperature monitor)

Work Order C010005161, Revision 0 (modify feedwater temperature monitor)

Work Order C010004516, Revision 0 (modify feedwater temperature monitor)

ONE Form FX 91-1617, December 2, 1991

TM 89-1-347, Jumper LS on 1-HV-5557

TM 90-1-100, Thermal Expansion Test RTDs and Position Transducers to be
Converted to Temp. Mod. from Test Mod.

TM 91-1-61, Run Hoses for Steam Generator Sludge Lancing and Cables for EDDY
Current Testing Through the ILRT Containment Penetration

TM 91-1-90, Lift Thermocouple Leads for Channel 5 Train A.

TM 91-1-46, Use Bland Flange to Modify Valve CPI-VADPGC-06 to Demonstrate a
Leakage That is Within Acceptance Criteria

CMWO C91-8112, "Replace Root Valve CPX-VAACUP-02"

CMWO C91-11090, "Adjust Stroke Tie for Valve 1-PCV-0456"

CMWO C91-10679, "Retorque Primary Sample Line Support"

CMWO C90-7840, "Install Lugs on Leads to Gate Drive"

CMWO C90-4675, "Replace Cells for 125V Station Battery CPI-EPBTND-05"

- CMWO C91-1372, "Replace Detectors on Fire Control Panel CP1-EIPLV-33A"
- CMWO C91-5083, "Replace Upper Bearing for RHR Pump Motor TBX-RHAPRH-01M"
- CMWO C91-9205, "Rework Auxiliary Filter Hoist CPX-MEMHWR-04A"
- CMWO C91-9316, "Install Cover, Lug Wire on Containment Polar Crane
CP1-MESCCP-01"
- CMWO C91-8864, "Remove/Reinstall Vibration Monitor for Pump TBX-RCPCPC-02"
- CMWO C91-9342, "Rework Withdrawal Tube on 125V Safeguard Battery
CP1-EPBTED-01"
- CMWO C91-9417, "Replace Check Valves on Centrifugal Water Chiller
CP1-CHCICE-05"
- CMWO C91-11655, "Adjust/rework Limit Switch 1-FV4773-2-L01"
- CMWO C91-11445, "Troubleshoot Air-Operated Valve 1-HV-4168-AO to Determine Why
There is Not Power Indication"
- CMWO C90-7324, "Rework Flex Conduit on RDT 1-TE-0466"
- CMWO C91-11216, "Determine Cause of Control Room A/C Unit CPX-VAACCR-02 Trip"
- CMWO C91-11321, "Correct Fitting Air Leak on Valve 1-HV-2452-1-PR3"
- CMWO C89-6368, "Rework Valve 1CH-0448 to Prevent Seat Leakage"
- CMWO C90-6709, "Rework Pump TBX-CSAPCH-01 to Correct Excessive Shaft Seal
Leak"
- CMWO C90-6843, "Rework Valve 1CT-0181 to Correct Seat Leakage"
- CMWOC90-7456, "Replace Inboard and Outboard Bearings in Pump CP1-AFAPMD-02"
- ~~CMWO~~ C91-11074, "Perform Alignment and Rework Oil Leak at Outboard Bearing
~~CP1~~ g for Pump TBX-CSAPCH-01"
- ~~CMWO~~ C91-985, "Rework Valve 1-PCV-0455A for Set Leak"
- CMWO C91-9312, "Replace Hydraulic Hose and Add Fluid to Door Hydraulic
Cylinder CP1-MEMEPA-01"
- CMWO C91-312, "Reverse Direction of Orifice CP1-CTORBO-01"
- CMWO C91-13095, "Rework Leaks in Starting Air System for EDG CP1-MEDGEE-01"
- CMWO C91-13099, "Replace PIE splices to Radiation Monitor 1-RE-5502"

CMWO C91-6040, "Stop Leaks and Add Refrigerant to Chiller CPX-VAACUP-02"