

APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-445/89-69
50-446/89-69

Construction Permits: CPPR-126
CPPR-127

Dockets: 50-445
50-446

Licensee: TU Electric
Skyway Tower
400 North Olive, L.B. 81
Dallas, Texas 75201

Facility Name: Comanche Peak Steam Electric Station (CPSES)

Inspection At: CPSES, Glen Rose, Somervell County, Texas

Inspection Conducted: October 2-6, 1989

Inspectors:

Amarjit Singh
A. Singh, Reactor Inspector, Plant Systems
Section, Division of Reactor Safety (Team
Leader)

NOV 1, 1989
Date

J. P. Soudon
for E. Johnson, Reactor Inspector, Plant
Systems Section, Division of Reactor Safety

11/2/89
Date

J. P. Soudon
for M. E. Murphy, Reactor Inspector, Test Programs
Section, Division of Reactor Safety

11/2/89
Date

Accompanying
Personnel:

Thomas A. Storey, Science Applications International
Corporation (SAIC)

Approved:

J. P. Soudon
T. G. Stetka, Chief, Plant Systems Section
Division of Reactor Safety

11/2/89
Date

Inspection Summary

Inspection Conducted October 2-6, 1989 (Report 50-445/89-69)

Areas Inspected: Special, announced inspection of the implementation of the fire protection program and compliance with the commitments to Appendix A of Branch Technical Position (BTP) Auxiliary Power Conversion Systems Branch (APCSB) 9.5-1 as approved through Supplement 21 to the Safety Evaluation Report (SER). In addition, a physical verification of the commitments was performed.

Results: The inspection verified that the licensee has maintained overall an effective fire protection program. Items requiring licensee's action as approved and committed through Supplement 21 to the SER were found to be completed and concerns resolved. The thoroughness and detail of the technical evaluations to support the fire protection program are considered to be a strength. Also, the fire brigade training program was found to be thorough and comprehensive and adds to the strength of the fire protection program.

Inspection Conducted October 2-6, 1989 (Report 50-446/89-69)

Areas Inspected: No inspection of Unit 2 was conducted.

Results: Not applicable.

DETAILS

1. Persons Contacted

TU Electric

- *T. A. Hope, Senior Nuclear Licensing Engineer
- *J. A. Seawright, Corporate Licensing
- *W. F. Grace, Safety Services Manager, Nuclear Operations
- *P. D. Stewart, Operations Fire Protection Supervisor
- *R. D. Walker, Manager, Nuclear Licensing
- *S. Palmer, Stipulation Manager
- *W. G. Guldemond, Manager, Site Licensing
- *W. O. Porter, Operations Support Engineer
- *P. B. Stevens, Manager of Operations Support Engineering
- *M. R. Blevins, Manager of Nuclear Operations
- *B. T. Lancaster, Manager, Plant Support
- *D. E. Deviney, Deputy Director, Quality Assurance
- *O. W. Lowe, Manager
- *D. M. Heintz, Nuclear Training
- *C. B. Hogg, Chief Engineer
- *S. W. Swann, Training Supervisor
- *H. D. Bruner, Senior Vice President
- *W. A. Cahill, Executive Vice President
- *K. L. Anger, Fire Protection Engineer
- *C. E. Beckett, Fire Protection Engineer
- *T. Wright, Senior Engineer
- *R. O. Babb, Fire Protection Engineering Supervisor
- *F. Madden, Manager, Mechanical Engineering
- T. Engel, Engineer
- J. Donohue, Manager, Operations
- P. Goodwin, Senior Engineer, Operations
- D. M. McAfee, Manager, Quality Assurance

IMPELL Corporation

- *G. Grabruck, Quality Assurance
- *H. Beel, Fire Protection Engineer
- *R. L. Dible, Fire Protection Engineer
- H. R. Beck, Fire Protection Engineer
- S. D. Einbinder, Fire Protection Engineer

CASE

- *E. Ottney, Program Manager
- *O. Thero, Consultant

NRC

- *L. J. Callan, Director, Division of Reactor Safety, Region IV
- *T. F. Stetka, Chief, Plant Systems Section
- *J. Wiebe, Senior Project Inspector
- W. D. Johnson, Senior Resident Inspector

*Denotes those attending the exit interview conducted on October 6, 1989.

The inspectors also interviewed other TU Electric personnel during the inspection.

2. Followup on Previously Identified Item (92701)

(Closed) Open Item (445/8722-001): This item concerned the lack of a seismic analysis for the reactor coolant pump (RCP) oil collection system to meet the requirements of Appendix R to 10 CFR 50 Section III.0. During this inspection, the licensee provided the seismic analysis for review. The analysis was reviewed by the inspectors and demonstrated that the RCP oil collection system is seismically qualified. Therefore, this item is considered to be closed.

3. Fire Protection/Prevention Program

a. Introduction

A site inspection of the Comanche Peak Steam Electric Station (CPSES) for the Unit 1 fire protection program was conducted during October 19-23, 1987. The inspection was documented in NRC Inspection Report (IR) 50-445/87-22. During the 87-22 inspection, the inspectors reviewed the CPSES fire protection program against the criteria of Appendix A to BTP APCS 9.5-1 and Appendix R to 10 CFR 50 and identified a number of open items. An additional site visit was made on May 2-6, 1988, to resolve the outstanding issues. As a result of the evaluations conducted during these inspections, the NRC concluded, in the Supplement 21 to Safety Evaluation Report (SSER 21), that the plant's fire protection program provided a level of protection equivalent to that specified in SSER 21. However, at the time of the previous visits, many of the features identified in the licensee's fire protection program were not yet installed. Specifically, cable wrapping to meet the separation criteria of Section III.G of Appendix R and 8-hour battery powered emergency lights installed in accordance with Section III.J of Appendix R had not been installed. In addition, other features such as fire doors and fire barrier penetration seals were only partially complete.

This inspection was conducted to ensure that those features not yet installed or completed in the previous visits will be completed in accordance with the previously reviewed licensee fire protection program prior to fuel load.

In addition, since the issuance of SSER 21, the licensee has submitted Revisions 2 and 3 to the Fire Protection Report and Amendments 75 and 76 to the Final Safety Analysis Report (FSAR). This inspection also reviewed the changes made to these documents to ensure that they did not adversely affect the level of plant safety or impact previous conclusions made by the NRC.

b. Fire Prevention/Administrative Control Procedures

This area of the inspection covered review of the administrative procedures, Fire Protection Manual Procedures, Fire Pre-Plans, and Training. A list of the procedures reviewed is included in the Attachment. The licensee was found to have adequate procedures, either issued or in draft form, that comprehensively covered all aspects of the fire prevention/protection program.

The licensee's fire protection program for the pre-fuel load period is described in Procedure STA-722, "Interim Fire Protection Program." This procedure covers all aspects of a construction program and provides the requirements to support the special nuclear materials license for new fuel stored in the fuel building. A draft revision to STA-722 has been distributed for review that will implement the post fuel load fire prevention/protection program. The inspectors reviewed a sample of the completed surveillance procedures presently conducted under the interim program. No problems were identified.

Fire brigade training was found to be a strong point with good lesson plans and a comprehensive classroom, practical factors, and offsite fire academy program. The training department is responsible for conducting the classroom training; developing, scheduling and conducting fire drills; and, maintaining the training records. Fire brigade training and drills are on a one year qualification cycle. The shift supervisor is responsible for identifying the fire brigade within a given shift and receives notification of personnel qualification status on a quarterly basis from the training department. Personnel qualification tracking is handled through a computer system. One item of concern was identified by the inspectors during the review of Procedure TR-104, "Fire Protection Training." This procedure was not considered sufficiently explicit in describing what retesting or retraining was required of an individual who failed to obtain the established passing level of the classroom training examinations. The inspectors discussed this issue with licensee representatives, and a revision to the procedure clearly establishing remedial action was issued. Therefore, this concern was resolved.

The licensee has established specific training for individuals who are classified as fire watch personnel. The trained personnel may be assigned as dedicated fire watches on each shift, while assigned as a fire watch, no other duties.

Lesson plans for licensed operator training in the procedure for safe shutdown of the plant when the control room must be abandoned following a fire were reviewed by the inspectors. This was considered a strong point in training because it effectively covered all safe shutdown requirements, made effective use of the simulator, and included plant walkdowns. This training has been completed for all presently licensed operators.

The inspectors reviewed the licensee's fire pre-plan manual. All fire pre-plans have been reviewed and are in place throughout the plant. The pre-plans are presently being reviewed for updating and revising. The licensee plans to modify the format so that each pre-plan will be a single sheet. This enhancement program is planned to be complete by fuel load.

Surveillance testing is contained in the fire protection manual and will not be included in the Technical Specifications. The inspectors reviewed the administrative program and a sampling of individual procedures. Scheduling and tracking will be monitored by computer program. Performance will be handled by various departments with the results reviewed and approved by engineering. The fire protection group will have overall tracking and scheduling responsibility.

In SSER 21, the NRC identified a concern relative to the possibility that two adjacent manholes containing redundant shutdown cables could be subjected to a flammable liquids fire since the manholes are in close proximity to the diesel fuel unloading area. During this inspection, the licensee presented procedures which cover the unloading of diesel fuel. The licensee had modified the procedures to ensure that both manhole covers are in place prior to diesel fuel unloading. The procedure was reviewed and found to adequately address the concern raised in SSER 21. This issue is considered resolved.

c. Plant Tour and Inspection of Fire Protection Equipment

(1) Inspection of Manual Fire Fighting Equipment

The inspectors reviewed manual hose station installations and portable extinguishers at various locations throughout the plant. The inspectors also reviewed the equipment located in several hose houses in the yard area. All of the installations and equipment were found to be acceptable and consistent with what was identified in the Fire Protection Report.

(2) Inspection of Installed Fire Protection Features

The inspectors performed an inspection of the penetration seals, emergency lighting, Thermo-lag, radiant energy shields, and fire doors. The inspection was conducted to ensure that these items were in the configurations as identified by the licensee in the

Fire Protection Report and as approved by the NRC through Amendment 21 to the SER. Although the type and method of installation for each of these items were found to be acceptable, none of these items had been completely installed at the time of the inspection. The levels of installation as of October 5, 1989, were as follows:

Thermo-lag	40 percent installed
Radiant Energy Shield	88 percent installed
Fire Doors	85 percent installed
Emergency Lighting	65 percent installed
Penetration Seals	92 percent installed

The inspectors walked down a number of installations associated with each one of these items. The review included physically verifying the operability of fire doors and emergency lights. Sample penetration seals chosen randomly in the field were traced back to the qualifying fire tests. Thermo-lag and radiant energy shield installations were checked for compliance with design criteria and that the proper cables or components were being addressed. Since a significant amount of Thermo-lag still required installation, the inspectors witnessed several ongoing installation activities to verify qualification of the installers and adequacy of the quality assurance procedures. For those installations of each of the separate items identified above, the inspectors concluded that the installed items were in conformance with the approved designs and as called for in the licensee's Fire Protection Report. The inspectors also concluded that appropriate controls and management oversight were in place to ensure the correct and proper installation of those items not yet installed. Schedules for completion of each one of these items prior to fuel load was discussed with licensee management. The licensee committed to complete the installation of these items prior to fuel load.

(3) Other Plant Features

In SSER 21, the NRC had approved an analysis by the licensee which justified partial suppression in a number of plant fire areas. During this inspection, the licensee identified that the analysis was modified for several areas to include the addition of 1-hour fire rated barriers. This analysis was reviewed by the inspectors and was found to be an enhancement of the previously approved analysis and therefore was found acceptable.

An evaluation of control room carpeting had been previously reviewed and accepted by the NRC. During this inspection, the licensee identified that additional carpeting of the same type of fire resistance was being added in areas adjacent to the control room. The inspectors reviewed this modified evaluation and determined that the additional installation of carpeting

would be acceptable based on its low flame spread characteristics.

During the inspection, the licensee identified that a series of fire dampers, which had been located in a fire rated floor/ceiling assembly, were being replaced with a concrete hatch. The licensee presented an analysis which demonstrated that the hatch, when installed, would provide an equivalent fire resistance rating of 3 hours. The analysis was reviewed and found to be acceptable.

In SSER 21, the staff identified a concern about the fire rating of stairwell walls. The concern related to the lack of documentation by the licensee for gypsum wall assemblies which comprised part of the stairwell fire boundaries. In SSER 21, the NRC stated that the licensee would either provide documentation on the adequacy of the walls or correct the deficiency. During this inspection, the licensee stated that they were not able to substantiate the construction of the gypsum walls and that all of the walls in question were removed and replaced with approved and documented gypsum wall construction. The documentation for these walls was reviewed and a field walkdown was conducted. The inspectors concluded that the new walls will provide the fire resistance as documented in the Fire Protection Report and are therefore acceptable.

The inspectors reviewed the recently completed fire water pump house. The pump house was installed to replace the original pumps which drew water from the impoundment. The impoundment water was found to cause significant pipe corrosion problems and therefore was replaced with a treated water source. The inspectors reviewed the pump house design for code compliance and performed a field walkdown. No discrepancies were identified with the design or installation. However, the licensee's design called for isolation valves and an associated valve lineup which would only allow for the fire pumps to take suction from a single fire water storage tank at a time. While this approach is considered to be a conservative attempt to meet the literal statement in NRC guidelines which says that no single failure in the fire water system should cause loss of system capability, it did appear to present a potential operator problem. The problem relates to the fact that with the valve lineup as identified by the licensee, and also given that the system is newly installed, if a failure were to occur, which necessitated realigning valves to allow for pumps to take suction from the redundant tank, a significant delay might result. The realigning process required four separate valves to be manipulated. This concern was discussed with the plants fire protection and operations personnel. The licensee agreed that increased operator knowledge of the system was necessary for

this configuration vice a system which did not require such potential valve manipulations. A representative from operations presented a procedure which had recently been modified to address the very concern of fire water tank valving. Based on this modification and the obvious awareness by plant personnel of the potential problems this issue is considered resolved.

d. Fire Drill

The inspectors witnessed a fire brigade drill to verify the adequacy of brigade training and equipment. The drill also involved response by the outside fire department. The inspectors acknowledged that the fire brigade was well qualified including fire fighting techniques and communications and coordination with other plant personnel such as those in the radiation protection and operations areas. There was also good coordination between the outside fire department and the fire brigade.

- e. The inspectors reviewed Revisions 2 and 3 to the Fire Protection Report and Amendments 75 and 76 to the FSAR. The majority of changes in both documents were to correct typographical errors or to provide clarification to existing evaluations or descriptions. Recent plant changes such as the new fire water pump house were incorporated. Other plant modifications included the addition of a new start-up transformer and an auxiliary boiler house. The removal of an interconnection between the fire water system and the circulating water system was also identified. The use of limited amounts of non IEEE 383 cable was included. The emergency diesel day tank room suppression systems, which were converted from Open Head Water Spray System to Closed Head Preaction System to address seismic concerns, was also reflected in Amendment 76.

Each one of the modifications was reviewed with the licensee and evaluated to ensure that they did not adversely affect plant safety or modify previous NRC evaluations. The thoroughness and detailed technical evaluations and analysis to support the fire protection program are considered to be a strength. The inspectors concluded that the changes made in Revisions 2 and 3 to the Fire Protection Report and Amendments 75 and 76 to the FSAR were acceptable.

No violations or deviations were identified in the review of the fire protection program.

4. Exit Interview

An exit interview was conducted on October 6, 1989, with those personnel denoted in paragraph 1 of this report. At this interview, the scope of the inspection and findings were summarized. The applicant did not identify as proprietary any of the information provided to, or reviewed by the inspectors.

ATTACHMENT

<u>Procedure No.</u>	<u>Title</u>	<u>Date</u>
STA-727 Revision 0	Fire Brigade	July 12, 1988
STA-728 Revision 0	Storage & Handling of Flammable/ Combustible Materials & Compressed Gases	July 12, 1988
STA-729 Revision 0	Control of Transient Combustibles, Ignition Sources, and Fire Watches	July 12, 1988
FIR-101 Revision 9	Fire Protection Program	October 16, 1987
TRA-104 Revision 7	Fire Protection Training	March 1, 1989
STA-722 Revision 1	Interim Fire Protection Program	October 16, 1987
FIR-108 Revision 0	Fire Protection Organization	December 22, 1988
FIR-201 Revision 6	Preparation, Control, Review, and Use of Fire Preplan Instructions	August 7, 1989
FIR-202 Revision 0	Fire Protection Inspections	December 19, 1988
FIR-301 Revision 1	Portable Fire Extinguisher Inspection, Maintenance, Recharging, and Hydrostatic Testing	March 25, 1987
FIR-302 Revision 1	Fire Door Surveillance	October 13, 1987
FIR-303 Revision 2	Halon Fire Suppression System Inspection	March 15, 1988
FIR-304 Revision 0	Support Buildings Fire Alarm Testing	September 24, 1984

FIR-307	Inspection of Sprinkler Systems	September 25, 1989
STA-722 Revision 2	Fire Protection Program	Draft
STA-723 Revision 0	Fire Protection Systems/Equipment Requirements	Draft
STA-738 Revision 0	Fire Protection Systems/Impairment	Draft
STA-724 Revision 0	Fire Reporting & Response	July 12, 1988
FIR-308 Revision 0	Fire Brigade Equipment	May 9, 1989
FIR-309 Revision 0	Hose Station and Hydrant Hose House Inspection	October 4, 1989