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Draft

SUMMARY REPORT
FOR
REGIONAL EVALUATION
OF
TEXAS UTILITIES ELECTRIC COMPANY
COMANCHE PEAK S.E.S.

DOCKET 50-445

PREPARED BY
U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

April 16, 1985

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A. PROJECT HISTORY

1. Chronological Project Milestones

The application for construction permits for Comanche Peak Steam Electric Station (CPSES), Units 1 and 2 were docketed on July 20, 1973.

Ground breaking occurred on October 8, 1974, and an LWA was granted to the applicant on October 17, 1974. The construction permits (Nos. CFP-126 and CFP-127) were issued on December 19, 1974.

There has been no change in principle contractors. Unit 1 has completed preoperational testing. Precore hot functional testing began on February 20, 1983, and was completed on June 10, 1983. The thermal expansion testing was started in November 1984 and completed during the first week of January 1985. The applicant's present projected fuel load date is the first quarter of 1985.

Texas Utilities Electric Company (TUEC) was granted a license to receive and store fuel (SNM-1912) on April 26, 1983, and began receiving fuel on May 4, 1983. The final fuel shipment was received onsite January 17, 1984.

2. Principle Contractors

Bibbs & Hill, Inc. (B&H) is the architect-engineer, and Brown & Root, Inc. is the constructor. Construction management is being performed by Texas Utilities Services, Inc., a wholly owned subsidiary of the owner, Texas Utilities. The nuclear steam supply system vendor is Westinghouse Electric Corporation.

B. QUALITY ASSURANCE ORGANIZATION STRUCTURE

The applicant's present QA organization is shown in Exhibit 1. The present structure has not appreciably changed from that shown in the FSAR. The applicant has recently completed review of the QA program pursuant to 10 CFR 50.55(c). No changes in the QA program were identified.

C. SALP REVIEW

Four SALP reviews have been conducted to evaluate TUEC's performance. The SALP periods were:

- o August 1, 1979-July 31, 1980 (Report 50-445/80-25 and 50-445/80-26)

- o Jul. 1, 1980-June 30, 1981 (Report 50-445/81-20 and 50-445/81-20)
- o October 1, 1981-September 30, 1982 (Report 50-445/82-24 and 50-445/82-12)
- o October 1, 1982-October 31, 1983 (Report 50-445/83-49 and 50-445/83-23)
- 1. During the period of August 1, 1979, through July 31, 1980, the applicant was evaluated in the following functional areas:

<u>Functional Area</u>	<u>Increase</u>	<u>No Change</u>	<u>Decrease</u>
Quality Assurance,			
Management and Training		X	
Substructure & Foundations			complete
Concrete		X	
Liner (Containment & Others)			complete
Safety-Related Structures		X	
Piping & Hangers (Reactor			
Coolant & Others)		X	
Safety-Related Components			
(Vessel, Internals & HVAC)		X	
Electrical Equipment		X	
Electrical (Tray & Wire)		X	
Instrumentation		X	
Fire Protection		X	
Preservice Inspection		X	
Reporting		X	

The board determined that an increase in inspection activities was not warranted as a result of the assessment.

- 2. During the period of July 1, 1980, through June 30, 1981, the applicant was evaluated in the following functional areas:

<u>Functional Areas</u>	<u>Category</u>
Soils and Foundations	NA
Containment and Other Safety-Related Structures	NA
Piping Systems and Supports	1
Safety-Related Components	1
Support Systems	2
Electrical Power Supply and Distribution	1
Instrumentation and Control Systems	1
Licensing Activities	2

The board concluded that although the overall applicant performance was Category 1, the inspection level of the construction activities should not be changed due to recent programmatic changes which effectively reduce construction inspections.

3. During the period of October 1, 1981, through September 30, 1982, the applicant was evaluated in the following functional areas:

<u>Functional Area</u>	<u>Performance Category 1982</u>
A. Plant Operations - Preoperational Testing	3
B. Construction Activities - Soils and Foundation	Not evaluated
Containment & Other Safety-Related Structures	2
Piping Systems and Supports (includes welding, NDE, and preservice inspection)	2
Safety-Related Components (includes vessel, internals, pumps, etc.)	1
Support Systems (includes HVAC, radwaste, fire protection)	Not evaluated
Electrical Power Supply and Distribution	1
Instrument and Control Systems	1
Vendor Procurement Cycle Controls	3
Licensing Activities	1

The board found that the applicant's management controls were strong and effective with exception of the areas of vendor controls and preoperational testing.

4. During the period October 1, 1982-October 31, 1983, the applicant was evaluated in the following functional areas:

<u>Functional Area</u>	<u>Performance Category</u> <u>10/1/82 to 10/31/83</u>
Preoperational Testing	2
Emergency Preparedness	2
Radiological Controls	
Radiation Protection	2
Contaminatory Measurements	1
Radwaste Systems, Effluent Treatment, Releases, and Monitoring	2
Transportation, Solid Radwaste	1
Environmental Surveillance	1
Security and Safeguards	2
Soils and Foundation	N/E
Containment and Other Safety-related Structures	2
Piping Systems and Supports (includes welding, NDE, and preservice inspection)	2
Safety-related Components (includes vessel, internals, pumps, valves, etc.)	2
Support systems (includes HVAC, radwaste, fire protection, fuel storage, etc.)	3
Electrical Power Supply and Distribution	2
Instrumentation and Controls	1
Training	2
Design and Design Change Controls	2
Quality Assurance - Preoperational	2
Testing Quality Assurance - Construction	2
Vendor Procurement Controls and Involvement Management Controls	2
Involvement	2
Licensing Activities	2

Note: The notation N/E indicates that the functional area was not evaluated.

The total NRC inspection effort during this SALP evaluation period consisted of 78 inspections reported in 46 NRC inspection reports involving a total of 6,498 hours onsite by NRC inspectors and subcontractors.

The board concluded that the level of applicant involvement and degree of control over site activities was acceptable.

9. The current SALP assessment is for the period November 1, 1983, through December 31, 1984.

D. ESCALATED ENFORCEMENT HISTORY

1. Immediate Action Letter

An Immediate Action Letter was issued on September 7, 1979, confirming a licensee decision not to place concrete in the wall to dome transition area of the Unit 2 containment building until such time as a proper engineering evaluation could be made of the omission and subsequent addition in another location of a group of reinforcing steel shear ties.

2. Civil Penalty

A civil penalty (EA-83-64) for \$40,000 was proposed against the applicant for alleged violation of 10 CFR 50, Appendix B, Criterion I. This was based on the Secretary of Labor Final Decision and Order in Atchison vs. Brown & Root, Inc., B2-ER4-9; June 10, 1983.

A civil penalty (EA-83-132) for \$40,000 was proposed against the applicant for alleged violation of 10 CFR 50, Appendix B, Criterion I. This civil penalty proposal was based on an investigation initiated as a result of allegations made to NRC Office of Investigation by paint QC inspectors employed by Texas Utilities Generating Company (TUGCO). The findings of the investigation were discussed with TUGCO management during an Enforcement Conference held in the Region IV office on December 12, 1983.

E. INDEPENDENT DESIGN HISTORY

The applicant has contracted with Cygna Corporation to review the Comanche Peak design. The review is being done in four phases.

Phase I is complete and in review. The review consisted of a design analysis and interface control evaluation of the spent fuel cooling system.

Phase II is also complete and in review. It consisted of a technical review of the residual heat removal system.

Phase III is in progress and is a result of the December 29, 1983, ruling of the AEC. This review consists of a pipe and pipe support review of

the main steam and component cooling water system. It also consists of a review of Quality Assurance and corrective action measures.

Phase IV is underway and completion depends on the ASLB findings of Phase III. It consists of an Independent Design Verification Program (IDVP) regarding the component cooling water system.

7. NRC INDEPENDENT MEASUREMENTS INSPECTION

The NRC performed an independent measurements inspection at the Comanche Peak site April 25-May 6, 1983. The report on the results of the examination are contained in NRC Inspection Report 445/83-15 and 446/83-02. Two violations were identified during this inspection.

8. GENERIC CORRESPONDENCE

TUEC has established procedures providing specific instructions to the nuclear project support group personnel who are responsible for coordination and review of IE Circulars, Bulletins, and generic letters. In each case, a TUEC-appointed coordinator is given responsibility for assigning the cognizant responsible person to review and track all actions and provide documentation. When required, the coordinator shall draft a response to the NRC which will be reviewed by the plant manager - nuclear, licensing engineering supervisor - nuclear, and project support manager - nuclear. The response shall be signed by the vice president - nuclear operations and shall include an affidavit. A permanent record of actions taken is maintained. The applicant's response to NRC has been satisfactory.

9. LICENSEE AND CONTRACTOR INITIATED STOP WORK ACTION

There have been a total of 47 stop work orders issued by the applicant and his contractors since 1975. See Exhibit 2 for a summary of the stop work orders.

10. CONSTRUCTION DEFICIENCY REPORTS (10 CFR 50.55(e))

The applicant has reported 45 significant construction deficiencies. See Exhibit 3 for a summary of these reports.

11. PART 21 NOTIFICATIONS

Of the 17 Part 21 reports received by NRC, 5 resulted from 10 CFR 50.55(e) items and are being tracked by the applicant. They are included in Exhibit 3 of this report. A followup inspection was conducted by the Resident Reactor Inspector to determine the status of the remaining 12 Part 21 reports. All of the reports were closed except for the following:

1. Brown-Boveri Electric, Inc. report of June 16, 1981, regarding overcurrent relay drop-out problems. This item is being tracked on an applicant nonconformance report (NCR).
2. SA- report of July 31, 1981, regarding tornado venting, tracked by several engineering documents.
3. Transamerica DeLaval, Incorporated (TDI) reports of October 28, 1982, September 21, 1983, and March 20, 1984, regarding problems with the emergency diesel generators (EDGs). The generic implications of the TDI problems has resulted in NRC concern regarding the reliability of the EDGs. An owners group detailed a comprehensive teardown and inspection plan. The teardown and inspection of the Unit 1 EDGs has been completed. The results of the evaluation have been completed by the owners group. The final acceptance by the applicant of the testing has not been completed at this time.

K. NRC INSPECTION ACTIVITIES

1. Construction Inspection

The routine MC 2512 inspection program is approximately 97% complete for Unit 1 and Coascon; however, an augmented program has been implemented to correspond to applicant final completion inspection. This augmented program linked to the activities of completion and will be ongoing until final construction and inspection completion.

2. Construction Appraisal Team

- a. The Construction Appraisal Team (CAT) performed an inspection of CPSES on January 24-February 4, 1983. Four enforcement findings were identified regarding procedures for equipment installation, maintenance of items stored outdoors, drawing control, and control of ventilation system fabrication. Details of the inspection are contained in NRC Inspection Report 445/83-18; 446/83-12. The enforcement findings were transmitted to the applicant on May 31, 1983.
- b. On June 27-September 16, 1983, a followup inspection to CAT inspection was performed by the Region IV staff. No new violations or deviations were identified. Details of this inspection are contained in NRC Inspection Report 445/83-28; 446/83-14.

3. Special Inspection

- a. Special inspections to evaluate the applicant's turnover/access control process were conducted in four areas. The areas and results are discussed below.

- 1) The inspection of the fuel building was conducted on May 23 - June 10, 1983. Two violations were identified concerning conduit, cable tray, and pipe supports and piping sway strut jam nuts. The details of the inspection are contained in NRC Inspection Report 445/83-23.
- 2) The inspection of the cable spread room was conducted on March 13 - April 11, 1984. The areas examined included electrical raceway and raceway supports, cable routing, cable terminations, electrical separations, HVAC, and fire protection/detection. No violations were identified. The details of the inspection are contained in NRC Inspection Report 445/84-10.
- 3) The inspection of the containment building was conducted on May 14 - June 20, 1984. Areas examined during the inspection included piping and pipe supports, containment penetrations, HVAC ducts and supports, electrical raceways and supports, safety-related equipment, "as-built" program, QC inspector and welder qualifications, and followup on one unresolved item from the special inspection of the fuel building.

Two violations were identified concerning proper inspection of cable tray hangers and design document control. The details of the inspection are contained in NRC Inspection Report 445/84-16.

- 4) The inspection of the safeguards/auxiliary buildings was conducted on July 16-September 7, 1984. The areas examined included piping and pipe supports, HVAC ducts and supports, electrical raceways and supports, installation of prime motors (electric motors and steam turbine) and pumps, and "as built" program. Portions of four safety-related systems were examined during the inspection. These included the Auxiliary Feedwater System, Containment Spray System, Component Cooling Water System, and Chemical and Volume Control System. In addition, electrical separation was examined throughout the buildings.

Two violations were identified concerning QC inspection of electrical separation and proper inspection of cable tray hangers. The details of the inspection are contained in NRC Inspection Report 445/84-26.

3. On July 9, 1984, the NRC Technical Review Team (TRT) began intensive onsite efforts to complete a portion of the reviews necessary for the staff to reach a decision regarding the licensing of CPSES Unit 1. The onsite effort covered a number of areas, including allegations of improper construction practices at the facility. On September 18, 1984, the NRC met with TUEC representatives to present a number of technical issues in the electrical/instrumentation, civil/structural, and test program areas having potential safety implications. On November 29, 1984, the NRC provided a second set of technical issues for TUEC response. On January 8, 1985, the NRC provided a third set of technical issues for TUEC response.

4. Preoperational Testing and Operational Preparedness

MC 2513 is directed toward inspection of activities involved in preoperational testing and operational preparedness. These inspection activities are summarized as follows:

	<u>% Complete</u>
Preoperational Test Procedure Review	100
Preoperational Test Witnessing	100
Preoperational Test Results Evaluation	100
Operation Staffing	90
Quality Assurance	100
Operating Staff Training	100
Technical Specification Review (Final Draft)	100
Operational Procedure Review (including Surveillance Procedures)	100
Radiation Protection	75
Radwaste Environmental Monitoring	75
Emergency Planning	100
Security	75

As of April 10, 1985, only three inspection procedures remain open. They are:

- 7032: Preoperation Test Results Evaluation
Verification (Licensee)
- 7033: Operational Staff Inspection
- 4045: Maintenance Procedures Inspection

5. Startup Testing

Inspection activities established in MC 2514 define the inspection program for the startup testing phase. Since this program generally

starts with fuel loading, the program, except for procedure review, has not begun. The program includes:

- QA/QC Technical Specification Review (complete for Final Draft)
- Startup Procedure Review (required to be started prior to OL)
- Initial Fuel Load (review required to be complete prior to OL)
- Precritical Checks
- Power Ascension Testing
- Initial Criticality/Low Power Testing
- Data Review

6. TMI Open Items

Most of the TMI lessons-learned issues were specifically addressed during the FSAR review and appear in "The Safety Evaluation Report," NUREG-0737 and its supplements. These items are being tracked and verified during preoperational testing inspection activities (MC 2513). The individual items will be inspected and closed out in accordance with the temporary instruction.

7. Allegations

There are a number of allegations made regarding Comanche Peak which are being pursued by the staff. The more significant of these allegations involve issues that arose before the ASLB. These allegations are generally divided into the following areas:

- o Intimidation of QC Construction Inspectors o Practice Involving Drilling through Rebar
- o Falsification of QC Records and Poor QA Practices
- o Worker Firing and Co-Worker Discouragement
- o Improper Documentation
- o Construction Practices with QA/QC Deficiencies
- o Improper Welding of Socket Connections
- o QA/QC Documentation of Penetrations
- o Independence of CYBNA

8. NRR Confirmatory Items (To be verified by Region IV)

<u>SER Section</u>	<u>Description of Item</u>
5.3.1.2/5.3.1.3	Fracture-toughness 5.3.2/5.3.3 properties of Unit 2 Reactor vessel materials (SSER #1 5.3.1.2, 5.3.1.3, 5.3.2, and 5.3.3) (Discussed in SSER #6)

- 9.1.4 Handling of heavy
 loads in conformance
 with the guidelines of
 NUREG-0612
 (SSER) §1 9.1.4)
 (Complete except for
 "Control of heavy
 loads - Phase II)
- II.E.4.2 Containment isolation
 dependability
- 3.9.2 Periodic leak testing
 of pressure
 isolation valves
- 9.1 Documentation of
 applicant's
 commitments on fire
 protection

9. Outstanding items including enforcement and unresolved items will be provided in a subsequent report.

L. CONSTRUCTION STATUS

Most active systems are sufficiently complete to conduct preoperational tests. Pipe support design and installation remain as major pacing effort at this time. Also, there is a considerable effort in the area of attaining separation in the electrical area.

There is a considerable effort directed to engineering design review of site changes. In conjunction with this effort, site QA is verifying that the changes have been inspected and that proper documentation is available.

M. PREOPERATIONAL TEST RESULTS

The applicant's startup group has determined that the plant will be ready for fuel load when the following systems have been prerequisite/preoperational tested. Not all systems are required to be preoperational tested per NRC Regulatory Guide 1.58, Revision 2. The percent complete refers to the conduct and results approval only.

<u>System</u>	<u>Description</u>	<u>Preoperational % Complete</u>
01	125 V DC Class IE Power Systems	100
02	6.9 KV/480v Class IE AC Distribution Systems	100
03	Startup Power Systems	100
04	Service Water System	100
06	Fire Protection/Detection Systems	100
07	Control Room - HVAC System	100
08	Battery Rooms - HVAC System	100
11	Component Cooling Water System	100
12	Communication System	100
22	Sampling System	100
24	Primary Plant Ventilation System	100
29	Diesel Generator and Auxiliaries System	100
31	Safety Chill Water System	100
32	Auxiliary Building - HVAC	100
34	Main Steam System	100
36	Safeguards Building - HVAC System	100
37	Auxiliary Feedwater System	100
39	Diesel Generator - HVAC System	100
40	Fuel Handling and Vessel Servicing Systems	100
41	Liquid Waste Processing System	100
42	Fuel Building - HVAC System	100
44	Steam Generator Blowdown System	100
45	Containment Ventilation System	100
46	Containment Hydrogen Purge System	100
47	Fuel Pool Cooling and Cleanup System	100
48	Containment Spray System	100
49	Chemical and Volume Control System	100
55	Reactor Coolant System	100
56	Boron Recycle System	100

57	Safety Injection System	90
58	Residual Heat Removal System	100
60	Solid Waste Processing System	100
61	Gaseous Waste Processing System	100
64	Reactor Protection System	90
65	Containment Atmosphere Monitoring System	100
66	Nuclear Instrumentation System	100
67	Hydrogen Recombiner System	100
68	Rod Control System	100
70	Radiation Monitoring System	100
73	Protection and Surveillance Package (N-16)	100
74	Movable Incore and Flux Mapping System	100
75	Structural Integrity and Leak Rate Testing	100
78	ERF Computer (SPDS) System	100
80	Seismic Monitoring System	100
81	Cranes and Hoists	100
82	Meteorological Monitoring System	100
91	Loose Parts Monitoring System	100

The testing phase of the preoperational testing program is complete. See paragraph K.4 for the remaining open 2513 modules.

The preoperational test program is approximately 95% complete (factoring in retesting).

V. CONCLUSION

Prediction of the fuel load date by Region IV, based solely on physical work and testing to be done and the past progress rate would not yield a realistic date because other activities such as the ASLB, TRT, and corrective actions are more controlling. When schedules for these activities are available, readiness for fuel load can be predicted.