APPENDIX

U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

Report: 50-445/82-15
50-446/82-06

Dockets: 50-445; 50-446 Category: A2

Licensee: Texas Utilities Generating Company
2001 Bryan Tower
Dallas, Texas 75201

Facility Name: Comanche Peak, Units 1 and 2

Inspection At: Comanche Peak Steam Electric Station

Inspection Conducted: June 29 through July 9, 1982

Inspectors: D M Hunnicutt 8/17/82
D. M. Hunnicutt, Chief, Engineering Section (Pars. 1, 2, 3, and 7) Date

for D M Hunnicutt 8/17/82
C. E. Johnson, Reactor Inspector, Engineering Section (Pars. 1, 2, 4, and 7) Date

for D M Hunnicutt 8/17/82
R. Mullikin, Reactor Inspector, Engineering Section (Pars. 1, 2, 5, and 7) Date

for D M Hunnicutt 8/17/82
M. J. Roberds, Engineering Technician, Engineering Section (Pars. 1, 2, 4, and 7) Date

for D M Hunnicutt 8/17/82
K. A. Whittlesey, Reactor Inspector, Engineering Section (Pars. 1, 2, 3, 6, and 7) Date

Reviewed: T. F. Westerman, Chief, Reactor Project Section A — Date 8/19/82

Approved: D. M. Hunnicutt, Chief, Engineering Section — Date 8/19/82

Inspection Summaries

Inspection Conducted June 29 through July 9, 1982 (Report 50-445/82-15)

Areas Inspected: Routine, unannounced inspection of construction activities including a site tour; installed reactor vessel internals, including review of applicable procedures, storage inspections, installation techniques, handling and installation, and installed reactor vessel internals protection; safety-related structures (structural steel and supports), including review of applicable procedures, observation of work/work activities, review of records, and personnel and welder qualifications; safety-related electrical cables, including review of NDE records, procedures, nonconformance reports, and inspection and testing; and electrical penetration assembly installation and testing. The inspection involved 138 inspector-hours by five NRC inspectors.

Results: Within the five areas inspected, no violations or deviations were identified.

Inspection Conducted June 29 through July 9, 1982 (Report 50-446/82-06)

Areas Inspected: Routine, unannounced inspection of construction activities relating to installed reactor vessel internals, including review of applicable procedures, storage inspections, installation techniques, handling and installation, and installed reactor vessel internals protection. The inspection involved 15 inspector-hours by two NRC inspectors.

Results: Within the areas inspected, no violations or deviations were identified.

## Details

1. Persons Contacted

Principal Licensee Personnel

W. Mahan, Quality Engineer, Electrical, TUGCO
A. Lancaster, Quality Specialist, TUGCO
*R. G. Tolson, Site QA Supervisor, TUGCO
*B. C. Scott, QA Supervisor, TUGCO

Brown & Root, Inc.

J. P. Clark, Senior Staff Engineer
G. L. Purdy, Site QA Manager
D. Bullard, Rigging Superintendent
J. Crim, Civil Engineer
S. Logan, Ironworker Superintendent

The NRC inspectors also interviewed other licensee and contractor employees during the course of the inspection.

*Denotes those attending the exit interview.

2. Site Tour

The NRC inspectors toured the Unit 1 reactor, auxiliary, and safeguards buildings to observe ongoing construction and housekeeping activities.

No violations or deviations were identified during this portion of the inspection.

3. Reactor Vessel Internals

a. Installed Vessel Internals Protection (Units 1 & 2)

The NRC inspector reviewed the applicable procedures for protection of the installed reactor vessel internals and determined that the procedural requirements were being met. To prevent inadvertent entry of foreign objects and debris into the reactor vessel, the procedures required protective devices to be installed around and over the top of the reactor vessel until the reactor vessel head is installed. The procedures also required all side openings to be blanked off or properly closed. The procedures provided for access control, and access control was being maintained to assure that only authorized personnel, tools, equipment, and other objects or items were permitted into the reactor vessel area. The cleanliness requirements were being met.

The NRC inspector reviewed the following documentation to assure that appropriate protection for the reactor vessel internals, the reactor vessel, and related areas was being carried out by cognizant personnel:

Traveler ME82-2283-5500, "Install Internals and Head of Cold Hydro"

Traveler ME82-2291-5500, "Install Lower Internals Manway Cover"

Traveler ME82-3360-5500, "Install Full Flow Filters"

Traveler ME82-2290-5500, "Install Irradiation Specimen Access Plugs"

Traveler ME82-2284-5500, "Install Head 'O' Rings"

Traveler ME81-2180-5500, "Install Protective Ring"

Traveler ME81-2175-5500, "Install Lock Head and Vessel Alignment Pin Bolts"

Westinghouse A - Specification 2463 A 68 G01, Rev. 3

Westinghouse Drawings: 1216 E 68 (4 sheets), Rev. 7, "Internals Lift Rig"
1220 E 53, Rev. 2, "Upper Internals"
1221 E 50 (3 sheets), Rev. 6, "Head Lift Rig"
1226 E 73, Rev. 3, "Load Cell"

Traveler ME82-2298-5500, "Installation of Full Flow Filter Delta Pressure Measuring Equipment"

Traveler ME82-2260-5500, "Installation of Filters"

Westinghouse Process Specification 597760, Rev. 5, dated May 10, 1979, "Cleanliness During Warehousing, Installation, Lay-up, and Testing Activities of Nuclear Power Systems"

Procedure STA-607, Rev. 1, dated January 26, 1981, "Housekeeping Control"

Report J-160, "Final Cleaning of Reactor Vessel Lower Internals Including Swipe Tests"

Westinghouse Process Specification 292722, Rev. 9, dated April 27, 1979, "Cleaning and Cleanliness Requirements of Equipment for Use in the Nuclear Steam Supply System and Associated Components"

MRR-1543 (January 9, 1978), including ASME Form N-2 and Drawing 6115 E 39 G02, Sub. 5 for two thermocouple column seal assemblies

b. Storage Inspections (Unit 2)

The NRC inspector reviewed approximately 50 percent of the pertinent records relative to reactor vessel internals storage and determined that:

(1) The stored internals inspections were made at the required frequency by the designated QA group.

(2) Protection requirements for the internals were maintained and monitored to assure continuous protection.

(3) Receipt inspection was made in accordance with requirements. Receipt documentation verified by serial numbers the internals components and that the internals had been received without visible damage.

The NRC inspector reviewed the following documentation to provide the basis for the above:

MRR - CP7895 and RIR-14362 for:

(1) Lower Internals Assembly S/N 45355

(2) Upper Internals Assembly S/N 47968 (w/o guide tubes)

(3) Hold Down Spring S/N 146A01

(4) Lower Tie Plate S/N W405A02

(5) Upper Tie Plate S/N 405A01

Quality Release (QR) QR-P-24081, Rev. 0, dated May 12, 1980, for each of the above items.

Westinghouse Process Specification 292722, Rev. 9, dated April 27, 1979, "Cleaning and Cleanliness Requirements of Equipment for Use in the Nuclear Steam Supply System and Associated Components"

Station Procedure STA 607, Rev. 1, dated January 26, 1981, "Housekeeping Control"

Westinghouse Process Specification 597760, Rev. 5, dated May 10, 1979, "Cleanliness During Warehousing, Installation, Lay-up, and Testing Activities of Nuclear Power Systems"

c. Installation Techniques

The NRC inspector reviewed appropriate documentation for the following:

- Lifting and handling - consistent with established requirements, procedures, precautions, and general industry practices.

- Lifting equipment - the polar crane is as specified and required testing and inspections have been performed.

- Reactor vessel internals installation has been accomplished on previous occasions. The same qualified procedures are scheduled to be followed during the next scheduled installation of the internals.

- Installation of internals has been accomplished in conformance with requirements, including procedures, drawings, and related documentation.

- Six internals components (upper internals, lower internals, holddown nuts, lower internals lock bar, mounting pads, and rod cluster control guide tubes) were selected to determine the following:

    - Installation, handling, and cleaning procedures have been followed.

    - Work procedures have been followed during storage, handling, and installation.

    - QA/QC inspection activities have been performed and completed in accordance with the approved procedures.

Documentation reviewed for the above included:

- Comanche Peak Steam Electric Station (CPSES) Mechanical Maintenance Manual Procedures MEM-902, Rev. 0, dated May 6, 1982, "Upper Internals Removal and Replacement"; MEM-903, Rev. 0, dated May 6, 1982, "Lower Internals Removal and Replacement"; and MEM-901, Rev. 0, (draft), "Reactor Vessel Head Removal and Replacement"

- Procedure STA-607, Rev. 1, dated January 26, 1981, "Housekeeping Control"

- Westinghouse Drawing 1216 E 68, Rev. 7, "Internals Lifting Rig"

- Westinghouse Drawing 1220 E 53, Rev. 2, "Upper Internals"

- Westinghouse Drawing 1220 E 54, Rev. 2, "Lower Internals"

- Westinghouse Drawing 1220 E 55, (3 sheets), "Reactor General Assembly"

- Westinghouse Drawing 6120 E 24, Sheet 3, Rev. 7, "Lower Internals Lock Bar"
- Travelers ME82-2352-5500, ME79-290-5500, and ME81-2135-5500
- Polar Crane - Weekly Lifting Crane Inspection Reports
- Polar Crane - Monthly Lifting Crane Inspection Reports
- Polar Crane - Major Electric Overhead Crane Inspection Reports (Major Liftcrane Inspection - reference ANSI N 45.2.15, Section 6.2.3)
- Polar Crane - Magnaflux Report for QA Department Inspection (AC yoke) NDE Procedure 10.2.2, Rev. 2
- Polar Crane - Main Hoist and Auxiliary Hoist Inspections of Wire Ropes (1¼-inch and ½-inch, respectively)

d. Review of Quality Records (Units 1 and 2)

(1) Handling and Installation

The NRC inspectors reviewed the pertinent quality records covering the quality control and quality assurance activities associated with the reactor vessel internals handling and storage. The estabished scope of QA/QC activities related to handling, installation, and inspections, including QA audits, was documented. The reactor vessel internals have been installed in the reactor vessel to verify that tolerances, locations, orientations, and related activities are as designed and that the procedures are appropriate and complete. The installation, handling, and inspection records verify that the installation of the reactor vessel internals was in accordance with the specifications and procedures. The following travelers were reviewed:

ME81-2135-5500

ME82-2351-5500

ME79-290-5500

(2) Installed Reactor Vessel Internals Protection

The NRC inspector reviewed approximately 50 percent of the quality (QA/QC) related records related to postinstallation of reactor vessel internals protection. These records confirmed that adequate access control was provided to inspect, measure, or verify locations. In addition, the records stated the cleanliness level to be maintained for the reactor vessel internals. The documentation reviewed included the following:

Westinghouse Process Specification 597760, Rev. 5, dated May 10, 1979, "Cleanliness During Warehousing, Installation, Lay-up and Testing Activities of Nuclear Power Systems"

Reactor Vessel Head Removal and Replacement Procedure MEM-901, Rev. 0, (Draft)

Procedure STA-607, Rev. 1, dated January 26, 1981, "Housekeeping Control"

Westinghouse Drawing 1220 E 55, "Reactor General Assembly"

Procedure MEM-903, Rev. 0, dated May 6, 1982, "Lower Internals Removal and Replacement"

Travelers ME79-290-5500, ME81-2135-5500, and ME82-2351-5500

No violations or deviations were identified in this portion of the inspection.

4. Safety-Related Structures (Structural Steel and Supports)

a. Review of Procedures

The NRC inspectors reviewed applicable procedures and instructions to ascertain technical adequacy of activities pertaining to safety-related component supports and structural steel. Procedures reviewed are listed below:

CP-QP-11.16, "Inspection of Seismic Category II Supports and Structural Steel," Rev. 0, October 30, 1981

CP-QP-11.14, "Structural Steel Inspection Activities," Rev. 0, June 11. 1981

CP-QP-2.4, "NDE Personnel Training, Qualification, and Certification"

CP-QP-11.18, "Nondestructive Examination Activities," Rev. 0, July 1, 1982

CP-QAP-2.1, "Personnel Training and Qualification," Rev. 6, May 11, 1982

QI-QAP-2.1-1, "Nondestructive Examination Personnel Certification," Rev. 3, January 20, 1982

CP-QAP-11.1-38, "Fabrication, Installation, Inspection of ASME Moment Restraints Class 1, 2, and 3"

QI-QP-11.14-5, "Inspection of Platforms Installed in Seismic Category I Structures," Rev. 2

G&H Specification 2323-SS-16B, "Structural Steel," Rev. 0, May 29, 1975

G&H Specification 2323-SS-17, "Miscellaneous Steel," Rev. 2, December 12, 1978

b. Review of Records

(1) Steel Structures

The NRC inspectors reviewed quality records of four steel platforms in the safeguards building. The records of the platforms contained the weld data card and inspection checklist for quality control (QC) inspectors to signoff after inspection. Material verification, structural assemblies verification, welding inspection, bolt tightening inspection, and installation verification are all attributes that have to be performed by the QC inspector before completion. Records of inspection activities were not complete because of a backfit program which was established to perform inspection of platforms installed in seismic Category I structures. The size and location of these platforms is such that their structural failure could damage nearby safety-related components.

The NRC inspector also reviewed the design drawings which reference what items were safety-related and what items were not. All items on the drawing were considered safety-related unless otherwise noted by notation "NNS." The notation "NNS" designated Non-Nuclear Safety.

The records reviewed will meet established procedures and will reflect work accomplishments. Records reviewed are listed below.

CP82-110-8903

CP82-112-8903

CP82-108-8903

CP82-106-8903

(2) Steel Supports

The NRC inspector reviewed records of two moment restraints on the main steam line in the safeguards building, Unit 1.

The NRC inspector reviewed material test reports/certification records, vendor manufacturing, and inspection records/certifications.

The NRC inspector also reviewed installation/erection records of both moment restraints. Construction/erection specifications were adhered to. Components were installed and located as required. Records of inspection were complete except for the bolting inspection. Records were legible and readily retrievable.

Travellers reviewed:

CD80-095-3400

CE81-012-3400

(3) Personnel Qualification/Certification

(a) Welder Qualification

In conjunction with a visual inspection and examination of ASME Class II component supports, the NRC inspector conducted a review of records relative to welding procedure specifications (WPS) and welder performance qualification records. The NRC inspector reviewed three welder performance qualification records relative to essential variables, test results, and record of welder's qualifications. Items reviewed were found to be in compliance with Section IX of the ASME Boiler and Pressure Code.

(b) Inspection Personnel Qualifications

The NRC inspector reviewed certification records on three Level II inspectors and two Level III inspectors (mechanical and NDE). All inspectors had current up-to-date certifications and records are being maintained according to applicable code requirements and licensee procedures.

c. Observation of Work/Work Activities

The NRC inspectors observed work and work activities of two steel supports and four steel structures as stated in paragraph 4b(1&2). These steel structures were located in the safeguards building, Unit 1, east of CS line of approximate elevations 880 feet 6 inches. These steel structures were all located in the compartment rooms of the main steam isolation valves. By direct observation and independent evaluation of work performance, work in progress, and completed work, the NRC inspectors determined that activities relative to these safety-related structures and supports are being accomplished in accordance with NRC requirements and SAR commitments.

No violations or deviations were identified in this portion of the inspection.

5. Safety-Related Cables

a. Review of NDE Records

The NRC inspector reviewed the Gibbs & Hill, Inc., "Cable Megger and Continuity Card" and "Termination Card" relative to 12 power and 9 control Unit 1 installed electrical Class IE cables. The records were reviewed in order to ascertain whether megger and continuity tests were performed and met the requirements of established procedures.

The NDE records were examined for the following cables:

Power

| | |
|---|---|
| EG100042B | E0100230 |
| E0100006 | E0100161A |
| E0102752 | E0100161B |
| EG102912 | EG100485 |
| EG100198A | EG100705 |
| EG100198B | EG100032 |

Control

| | |
|---|---|
| E0121828 | A0106980 |
| EG113625 | E0123670 |
| E0125661 | E0122911 |
| E0112286 | EG109771 |
| E0123476 | |

Procedures Examined

QI-QP-11.3-27, "Class IE Power Cable Meggering"

QI-QP-11.3-28.3, "Verify Cable Continuity Check Performed"

b. Cables, Terminations, and Related Equipment - Review of Nonconformance Reports

The NRC inspector reviewed 27 nonconformance reports (NCR) relative to Unit 1 to ascertain whether:

(1) Records are current, legible, complete, reviewed, and readily retrievable.

(2) Nonconformances are adequately described in these records and include the status of corrective actions or resolution.

(3) Records reflect that appropriate corrective action was taken.

The following nonconformance reports were examined:

| | | | |
|---|---|---|---|
| E-82-00522 | E-82-00521 | E-82-00518 | E-82-00472 |
| E-82-00406 | E-82-00349 | E-82-00337S | E-82-00316 |
| E-82-00315 | E-82-00305 | E-82-00297 | E-82-00265S |
| E-82-00220 | E-82-00213S R.1 | E-82-00211 | E-82-00208 |
| E-82-00205 | E-82-00198 | E-82-00197 | E-82-00196 |
| E-82-00177 | E-82-00154S | E-82-00145 | E-82-00142S R.1 |
| E-82-00103 | E-82-00097 | E-82-00087 | |

The NRC inspector found that each NCR was very precise and easily understandable as to the problem encountered and corrective action taken.

c. Inspection and Testing - Review of Quality Procedures

The NRC inspector reviewed the quality-related procedures to determine if procedures are established for the inspection and testing (where specified) of associated materials, components and special tools, such as cable insulation, compartment boundary seals, and fire retardant coatings.

Procedures Examined

QI-QP-11.3-28.6, "Verify Proper Tools"

QI-QP-11.3-26.3, "Verify Cable Acceptability"

QI-QP-11.3-37, "Pre-Placement Inspection for Penetration Seals"

QI-QP-11.4, "Inspection of Protective Coatings"

No violations or deviations were identified in this portion of the inspection.

6. Containment Electrical Penetration Inspection and Testing (Unit 1)

A review of the completed operation travelers for electrical penetration assemblies 1E9 and 1E6 indicated that QC inspections were performed as required during installation. The NRC inspector reviewed qualification records of three QC inspectors to determine that these personnel were qualified to perform the inspections indicated on the operations traveler. Records included documentation of formal training, on-the-job training, prior experience, results of written and oral examinations, and visual acuity tests.

The NRC inspector also reviewed documentation associated with the periodic inspection of installed electrical penetrations. Leak testing of the assemblies is being performed in accordance with Construction Procedure 35-1195-EEI 9, Rev. 1, "Leak Rate Test." Unsatisfactory performance is documented in nonconformance reports. Testing is performed at the intervals specified in Quality Instructions QI-QP-11.3-39, Rev. 0, and QI-QP-11.3-31.

No violations or deviations were identified in this portion of the inspection.

7. Exit Interview

The NRC inspectors met with licensee representatives (denoted in paragraph 1) and Mr. R. G. Taylor, NRC Resident Reactor Inspector, at the conclusion of the inspection on July 9, 1982. The NRC inspectors summarized the purpose, scope, and findings of the inspection.