

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION IV

Report No. 50-445/80-08; 50-446/80-08

Docket No. 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, Glen Rose, Texas

Inspection conducted: March 1980

Inspector: *R. G. Taylor*
for R. G. Taylor, Resident Reactor Inspector
Projects Section

4/16/80
Date

Approved: *W. A. Crossman*
W. A. Crossman, Chief, Projects Section

4/16/80
Date

Inspection Summary:

Inspection During March 1980 (Report 50-445/80-08; 50-446/80-08)

Areas Inspected: Routine, announced inspection by the Resident Reactor Inspector (RRI) including follow up to previous inspection findings; general site tours; safety related piping installations; concrete placement activities; electrical installation activities; and protection of major components. The inspection involved ninety-seven inspector-hours by one NRC inspector.

Results: Of the six areas inspected, no items of noncompliance were identified in four areas; two items of noncompliance were identified in two areas (infraction - failure to follow procedures for repair of damaged cable - paragraph 6; deficiency - failure to report a significant construction deficiency - paragraph 5).

DETAILS SECTION

1. Persons Contacted

Principal Licensee Employees

- *J. B. George, TUSI, Project General Manager
- *J. T. Merritt, TUSI, Construction and Engineering Manager
- *D. N. Chapman, TUGCO, Quality Assurance Manager
- *R. G. Tolson, TUGCO, Site Quality Assurance Supervisor
- *J. C. Kuykendall, TUGCO, Plant Superintendent

The RRI also interviewed other licensee and Brown & Root employees during the inspection period including several randomly selected craft and Quality Control personnel that were interviewed in a semi-formal, private atmosphere.

*Denotes those persons with whom the RRI held on-site management meetings during the inspection period.

2. Action on Previous Inspection Findings

(Closed) Unresolved Item (50-445/79-07; 50-446/79-07): ITT-Grinnell Piping Assemblies Containing Bends. The licensee informed the RRI that a complete records search had been accomplished at ITT-Grinnell which identified all pipe spool components that had been hot bent in the fabrication process and had provided the site with documentation to support that each had been solution annealed after the hot bending process. The RRI selected at random a total of eight spools, three installed and five in storage, that by either of the wall thickness or the size had probably been hot bent. The necessary documentation was filed with the spool fabrication records attesting to the items having been solution annealed by various subcontractors to ITT-Grinnell.

The RRI had no further questions on this matter.

(Closed) Unresolved Item (50-445/79-08; 50-446/79-08): Pressurizer Safety Valve Spring Material. The licensee informed the RRI that the Crosby Valve drawing clearly indicated the material composition of the primary valve closure spring and that Westinghouse had approved the drawing and certified it to the owner.

The RRI reviewed drawing DC-C-56964, Revision C and the Westinghouse letter WPT-877 and had no further questions on this matter.

(Closed) Unresolved Item (50-445/79-16; 50-446/79-16): Design of Service Water System Cooling for Diesel Generators. The licensee notified RIV, by a letter dated October 5, 1979, that a potential design problem with valves and controls at the Service Water System and Auxiliary Feedwater System interface had been analyzed and found not to be a problem. The letter further indicated that data to support this contention was on file in the offices of the Architect/Engineer (A&E), Gibbs & Hill, Inc.

The RRI referred the matter to the Vendor Inspection Branch for review during a routine inspection of that A/E. This review was accomplished by VIB personnel who informed the RRI of their concurrence with the A/E's analysis. For further information see Inspection Report 99900524/80-01.

(Closed) Unresolved Item (50-445/80-01; 50-446/80-01): Engineer's Review of Test Reports. The licensee obtained a clarification statement from his A/E relative to the meaning of the stamp appearing on various test report documents indicating "Approved For Arrangement Only." The A/E has stated that the review is for complete compliance to related contract requirements placed on the vendor and that the test report indicates that the equipment satisfied contractual requirements.

The RRI had no further questions on this matter.

(Closed) Unresolved Item (50-445/80-03; 50-446/80-03): Materials For Service Water Valve Discs. The licensee informed RIV, by letter dated March 25, 1980, that they have reviewed the vendor reported lack of ASME Code required heat treatment of aluminum-bronze discs after welding has been performed and are reasonably sure that no safety problem exists. However, the licensee is returning the valves to the vendor for the Code required treatment prior to fuel loading or at some other time that will not interfere with early phases of pre-operational testing. This is a necessary step to prevent abrogation of the ASME certification for the valves.

The RRI had no further questions on this matter but will follow it as an element of routine inspection.

(Closed) Infraction (50-445/80-03; 50-446/80-03): Failure to Follow Procedures for Cable Pulling. The licensee notified RIV, by letter dated March 5, 1980, that the specific cables in question had been pulled back and visually examined and electrically tested with no damage being evident as a result of the failure to follow proper procedures. The licensee also committed to having foreman level supervision in attendance during all cable pulling activities in the future and to use cable lubrication when prescribed by approved site procedures. The RRI has verified through several inspections that each of the corrective actions has been implemented. The RRI is also satisfied, based upon document reviews and interviews with appropriate personnel, that the cables did not suffer damage.

The RRI had no further questions on this matter.

(Closed) Unresolved Item (50-445/79-23; 50-446/79-22): Component Installation Activities. This unresolved item was written to express a possibility that neither Operational Travelers nor Engineering Instructions would be utilized for the setting and alignment of mechanical equipment and, therefore, that the work might be improperly accomplished and/or not inspected to a proper set of instructions. The RRI has no evidence gained during various inspections over the past twenty months that would indicate that this possibility is also a probability. The evidence, as based on these inspections, is that the

necessary instructions for setting and aligning equipment have been issued, have been followed, and have been verified by the site QA/QC organization.

The RRI has no further questions on this matter.

3. Site Tours

The RRI toured the safety-related plant areas several times weekly during the inspection period to observe the progress of construction and the general practices involved. Three of the tours were conducted during portions of the construction second shift, with a primary emphasis on electrical cable pulling activities.

No items of noncompliance or deviations were identified during the tours.

4. Safety-Related Piping Installations and Welding

The RRI made several observations of the general handling and installation practices of safety-related piping components including spool pieces and valves with a primary concern for those fabricated from stainless steel. These observations included operations being carried on within the plant primary buildings, the pipe fabrication shop and finally, how the finished, uninstalled components are stored. The RRI observed the work of one relatively new welder that had not been previously observed. The welder observed was BFZ accomplishing the post-fitup tack welds on FW-2 of isometric CT-2-RB-005 in line 4-CT-2-097-301R2. The weld rod being used as obtained from the rod flag-tag and the weld filler metal log was from Sandvik heat 463638. The weld procedure being employed was 88021. The RRI subsequently verified that the welder, weld material, weld procedure and the adjacent components being welded all were consistent with the requirements of the ASME Code at that point in time. The RRI also observed the activities of the QA/QC person present and found him diligent and apparently knowledgeable of requirements.

The RRI also observed the activities of a QC person performing a liquid penetrant examination of two socket weld joints of a single spool in the containment spray system being finalized in the fabrication shop. The liquid penetrant examination was being carefully accomplished in a manner consistent with Brown & Root Procedure CP-NDEP-300, ASME Code requirements and good practice.

In addition to the above, the RRI also examined the following weld radiographs which were found to be consistent with the requirements of ASME, Section III as to weld quality and ASME, Section V for radiograph quality:

<u>Weld</u>	<u>Isometric</u>	<u>Line Identification</u>
W-11	BRP-SI-1-RB-27	1.5-SI-1-057-2501R1
W-4	BRP-SI-2-RB-48	1.5-SI-2-028-2501R1
W-6	BRP-SI-2-RB-008	3-SI-2-003-2501R1
W-4	BRP-SI-2-RB-008	3-SI-2-339-2501R1
W-3	BRP-SI-2-RB-008	3-SI-2-339-2501R1
W-5	FRP-RC-2-RB-22	1.5-RC-2-079-2501R1
W-12	BRP-CS-1-RB-029	2-CS-1-112-2501R1
W-7	BRP-RC-1-RB-016	2-RC-1-132-2501R1
W-24	BRP-RC-1-RB-032	1-RC-1-159-2501R1
W-6	BRP-RC-1-RB-016	2-RC-1-132-2501R1
W-24	BRP-RC-1-RB-033	1-RC-1-159-2501R1
W-15	BRP-SI-1-RB-022	1.5-RC-1-079-2501R1
W-8	BRP-SI-2-RB-008	1.5-SI-2-027-2501R1
FW-2	BRP-SI-1-RB-014	2-SI-1-059-2501R1
FW-8	BRP-CS-2-RB-021	2-CS-2-112-2501R1
FW-7	BRP-CS-2-RB-021	2-CS-2-112-2501R1
FW-9	BRP-CS-2-RB-021	2-CS-2-112-2501R1
W-20	BRP-SI-2-RB-060	6-SI-2-092-2501R1
FW-17	BRP-SI-1-RB-038	10-RC-1-092-2501R1
W-10	BRP-RC-1-RB-008	3-RC-1-052-2501R1
W-18	BRP-RC-1-RB-008	3-RC-1-052-2501R1
FW-9	BRP-FW-1-SB-019	18-FW-1-26-2002-2
FW-12	BRP-FW-1-SB-017	18-FW-1-34-2003-2

During an interview with a pipefitter welder, the RRI was informed that sometimes the pipefitter foreman is able to convince the Quality Control personnel to accept an out-of tolerance fitup at a weld joint. The welder indicated that this seemed to occur mainly when the joint was in a pipe size where the inside of the joint could be ground after welding. The RRI obtained enough information from the welder to pinpoint one weld where this had occurred, but by the time the RRI could get to the joint to make an examination, access to the inside of the pipe had become blocked by additional installations. The only recourse under this circumstance was then to rely on examination of the final weld radiographs and an ultrasonic measurement of the pipe wall thickness in the near vicinity of the weld and through the weld. The radiographs indicate a Code acceptable weld which does indicate evidence that some amount of internal grinding was accomplished prior to the radiograph having been taken. The ultrasonic wall thickness measurements show that adequate wall thickness was maintained even though the weld area was ground on both the interior and exterior surfaces. The RRI also interviewed the QC inspector who performed the fitup inspection. The inspector related that the joint in question was marginal in fitup, but that a consumable ring had been used and that the fitup could not be more than a very few thousandths of an inch over specification. The RRI inquired as to what the inspector and the welders considered to be the requirements and was informed that 3/32nds of an inch was the maximum offset allowable. The Code, however, allows as much as 3/16ths inch offset in the wall thickness involved. The Code further allows the fairing (grinding) of the interior of such a joint to provide a smooth transition across the weld. It appears that the tighter tolerance used by Brown & Root primarily comes from the verbage of the "General Piping Procedure" CPM-6.9 and further that the welders much prefer the better fitup since it is easier for them to achieve a satisfactory weld.

The RRI has concluded that the weld joint in question is satisfactory; i.e., it meets all applicable requirements of the ASME Code and that the information received from the welder was largely based on a misunderstanding of the requirements.

No items of noncompliance or deviations were identified.

5. Concrete Placement Activities

The RRI examined the area preparation and the special formwork being installed preparatory to repairing the "honeycomb" condition in the interior walls of the Unit 2 Containment Building as discussed in Inspection Report 50-446/80-01. The work is being accomplished in accordance with a site generated set of detailed instructions while the RRI's basis for inspection is both these instructions and the applicable portions of the U.S. Bureau of Reclamation "Concrete Manual", a recognized authoritative publication on concrete work. The work to date appears to be progressing in accordance with the site instruction and the recommendations of the referenced publication.

The RRI did note that a period of nearly three months had passed between the time that the RRI was first notified of the "honeycomb" situation and the initiation of significant repair efforts. Based on the work performed by a consultant to the licensee (see Inspection Report No. 50-446/80-01); the observed trips to the site by representatives of the A/E; and the time span before repairs were started; it appeared that an extensive engineering review had occurred either for the purpose of determining the method of repair or to develop a basis for possibly not needing to make the repair at all for other than cosmetic reasons; i.e., that the structural soundness of the walls was not affected sufficiently to have a safety impact. 10 CFR 50.55(e) in sub-paragraph (1) (iii) indicates that a deficiency is reportable if an extensive engineering evaluation is required to simply determine the safety significance of such a deficiency as appears to be the situation. Since the licensee did not file an interim or final written report to the RIV office within thirty days following immediate notification of the incident to the RRI on December 13, 1979, the licensee was found to be in noncompliance with paragraph (3) of 10 CFR 50.55(e). A formal Notice of Violation was sent to the licensee on April 2, 1980.

During an interview with a craft person, the person related a concern that some of the concrete in the ceiling over a corridor in the facility Common Fuel Building was not what it is supposed to be. He stated that sometime over a year ago, he was drilling holes in the concrete to insert "Hilti" bolts from which he was going to suspend a pipe hanger. He said that the dust which came from the drilling was nearly coal black rather than nearly white which is usually encountered. He had asked his foreman to check with someone on the apparent problem. He was subsequently told to go ahead and drill the holes; that nothing was wrong, but was given no explanation. The RRI determined from the person's description of the location of the incident and by reference to the civil/structural design drawings that the concrete in the particular ceiling was designated to be "heavy weight" concrete to provide added personnel shielding from radiation since the ceiling is also the support floor slab for the refueling canal which connects the spent fuel pools to the containments and the corridor below is a primary passageway. The job specifications require that a magnetite ore be used as both the fine and coarse aggregate in the concrete to achieve the much higher density. With the aid of a licensee employee, the RRI located a block of heavy weight concrete that had been originally cast as a test weight for hoisting equipment and drilled a hole in the block with a standard "Hilti" bolt carbide drill. The resulting drilling dust was nearly coal black just as described by the person. Although it has not yet been done, the RRI intends to locate the person expressing the concern and inform him that his concern is needless while thanking him for relating his concerns to the RRI.

Except as noted above, no items of noncompliance or deviations were identified of a technical safety nature in this area of the inspection.

6. Electrical System Installation Activities

The RRI made an on-going series of observations of the labor and QC activities as they relate to electrical cable installation and termination. The RRI observed a number of various sizes of control and low voltage power cables being installed in both of the primary safety trains. The RRI found that the labor force is carefully handling the cables and is lubricating them thoroughly when pulling through conduits already containing cables. Random checks in the cable tray system indicates that the trays are properly installed and adequately clean and further that there is presently no evidence of intermixing of either of the trains with each other or of either with nonsafety cable. No attempt was made to trace any given cable through its routing system since this is more efficiently and effectively done by other means than visual.

The RRI randomly selected two wire lug crimping tools observed in use and examined them for apparent wear or evidence of careless use. The tools appeared to be in good condition. The tools (CT-1224 and CT-1323) were also used as a vehicle for examining the crimping tool control system. The tools are checked each three months by the site calibration facility using vendor recommended procedures and certified go-no-go gauges in accordance with procedures IEI-98 and IEI-103, respectively. The RRI examined, on a random basis, the actual terminations in various cabinets and observed that the lugs were correctly crimped onto the wires and would not pull loose with application of reasonable force.

The RRI selected a cable type observed being installed as a vehicle for examining the qualification of the cable as required by the commitments contained in the FSAR, Section 8. The cable selected was W-847 from reel W-847-2 and is a 12 conductor unit made up of number 12 AWG individual wires and including their insulation with filler plus a jacket. The cable was supplied by Rockbestos in accordance with Project Specification ES-13B.1. The Project Specification and the referenced FSAR section both require that the cable be qualified in accordance with IEEE-383-74, "IEEE Standard For Type Test of Class IE Electric Cables, Field Splices and Connections for Nuclear Generating Plants." The RRI obtained documentation indicating that Rockbestos had performed the stipulated type and production tests required by the specification with the exception that there was no clear evidence that the three separate type tests of cables, as required by paragraph 2.5.4.3 of IEEE-383, had been accomplished nor was there evidence in the report that individual conductor tests had been performed as required by paragraph 2.5.6. The report did contain an attachment indicating that such tests had been performed and were successful.

This matter will be considered an unresolved item pending receipt of specific test data to substantiate the vendor statement.

During an interview, the RRI was informed that a safety-related control cable had been damaged while pulling it into the buried conduit system running from the main plant buildings to the Service Water Intake Building. The interviewee related that early in January 1980, a 5 or 7 conductor, orange (Safety Train A) control cable had slipped between a pulley wheel and the pulley frame during an interruption in pull and that when the pull was resumed, the jacket of the cable had been cut open. The pulley had been installed in the first manhole outside of the main buildings to aid the electricians in making the nearly ninety degree direction change through the manhole. The person further related that the electrical crew foreman in charge had instructed his people to tape up the damaged area with standard electrical tape (Scotch 33) and continue the pull which placed the damaged area somewhere in the buried conduit that is nearly five hundred feet long. Neither the foreman or any of his crew had apparently seen fit to report the incident nor was QC apparently aware of it. The RRI discussed the matter with the site electrical engineering personnel who indicated that the standard electrical tape used in the repair was probably not adequate as a jacket repair considering the location and the time that cable would have performed a safety function; i.e., forty years. The engineering personnel determined that only some eight 5 and/or 7 conductor, orange cables were likely to be involved since the balance of the cable in the particular conduit was either much larger or smaller and the person interviewed had been very specific in his relation of the event. The RRI verified that each of the identified cables had been pulled within the time frame of the related event by review of the electrical cable pull cards. The licensee elected to determinate the cables and draw them back to the manhole. The RRI examined the single cable found to have the damage and found that a cut of about one inch long had occurred that penetrated the cable jacket, but also found that no damage had occurred to the individual wire insulation within the cable.

Based on the RRI's knowledge of the characteristics of the wire insulation material, cross-linked polyethylene (XLPE), it is very doubtful that the functionability of the cable would have even been impaired and, therefore, the cut jacket has no direct impact on safety. The implications of the incident do, however, have a potential impact on safety in that it is indicative of a breakdown in the Construction Quality Assurance Program as evidenced by the fact that an electrician foreman took it upon himself to determine the need for the type of repair that was to be made to a damaged cable rather than reporting the matter through proper channels and allowing engineering to make the decision.

The incident is a violation of the intent of Appendix B, 10 CFR 50, Criterion V in that cable was not repaired in accordance with the applicable procedure.

For the record, the RRI would note that at the time of the incident, specific instructions had been issued addressing the area of cable damage or repair after the damage had occurred. The procedure provided for reporting damage to engineering and also provided for the use of a self-vulcanizing rubber tape to make jacket repairs rather than using Scotch 33.

In regard to the aforementioned cable repair procedure (EEI-13), the RRI's review, along with discussions with appropriate Quality Engineering personnel indicate a lack of clarity in its requirements. The procedure currently allows the replacement of wire insulation material in a multiconductor cable with the self-vulcanizing tape. There is currently no evidence available which would show that the tape has the same or better flame retardance characteristics as the factory applied XLPE insulation. The verbage utilized in the procedure also essentially requires discussion with the procedure writers in order to achieve an understanding of what was intended by the writers.

This matter will be considered to be unresolved pending clarification.

7. Protection of Major Safety-Related Components

The RRI verified that the reactor vessels in both units are adequately protected to prevent likely damage and/or contamination. The Unit 1 reactor vessel head is well covered and protected in its lay-down area. The Unit 1 reactor vessel core-support components (internals) remain in their enclosed lay-down areas within the refueling pool area.

No items of noncompliance or deviations were identified.

8. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance or deviations. Two such items are discussed in paragraph 6 and will be referenced in the future as:

- a. Clarification of Rockbestos Electrical Cable Qualification
- b. Clarification of Electrical Cable Repair Procedures

9. Management Interviews

The RRI met with one or more of the persons identified in paragraph 1 on March 3, 4, 18, 19 and 29, 1980, to discuss various inspection findings and to discuss licensee actions and positions.