

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

REGION IV

Report No. 50-445/78-16; 50-446/78-16

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 & 2

Inspection at: Comanche Peak Steam Electric Station, Glen Rose, Texas

Inspection conducted: October 2-31, 1978

Inspector:

W. G. Taylor

R. G. Taylor, Resident Inspector, Projects Section

11/17/78

Date

Approved:

W. A. Crossman

W. A. Crossman, Chief, Projects Section

11/17/78

Date

Inspection Summary:

Inspection October 2-31, 1978 (Report No. 50-445/78-16; 50-446/78-16)

Areas Inspected: Routine inspection by IE Resident Inspector of safety related construction activities including follow up on licensee actions on previous findings, equipment storage and maintenance, construction fire protection, welding of reactor coolant boundary and safety related piping, storage and protection of the reactor vessel and its internals, and concrete batching and testing activities. The inspection involved one-hundred eight (108) hours of inspection by one NRC inspector.

Results: Of thirteen major activities inspected, one item of noncompliance was identified (deficiency - failure to report a significant construction deficiency in a timely manner - paragraph 4) and one deviation was identified (failure to properly implement Regulatory Guide 1.10 - paragraph 4).

7901040235

DETAILS

1. Persons Contacted

Principal Licensee Employees

- *J. B. George, TUSI, Project General Manager
- *R. G. Tolson, TUGCO, Site QA Supervisor
- *J. V. Hawkins, TUGCO/G&H, Product Assurance Supervisor
- R. V. Fleck, TUGCO/G&H, Civil Inspection Supervisor
- *D. N. Chapman, TUGCO, Quality Assurance Manager

Other Personnel

- *H. O. Kirkland, B&R, Project General Manager
- B. C. Scott, B&R, QA Manager
- J. P. Clarke, B&R, QC Manager
- *U. D. Douglas, B&R, Construction Manager

The IE Resident Inspector also interviewed a number of other site construction craft and quality control employees during the course of the inspection.

*denotes those attending one or more management interviews.

2. Licensee Action on Previous Findings

(Closed) Unresolved Item (50-445/77-13-1): Adequacy of the Fabrication and Inspection of Reactor Coolant System Component Supports. The IE Resident Inspector reviewed a substantial selection of microfilmed documents supplied through Westinghouse by Teledyne-Brown, the supplier of the Reactor Coolant System supports and restraints. The microfilmed documents were compared to the Teledyne-Brown fabrication drawings to determine completeness and adequacy. It was noted that only the full penetration welds in butt joints of the upper steam generator lateral restraints were radiographed. All other joints in other support and restraint devices were subjected to magnetic particle inspection due to joint details as allowed by ASME, Section III, Subsection NF. The IE Resident Inspector had no further questions on this matter.

(Closed) Unresolved Item (50-445/78-12, paragraph 5a): Fabrication of Cable Tray Supports. The Chicago Bridge & Iron inspection procedure for miscellaneous tray hangers has incorporated the requirements of AWS D1.1 in Revision 2. Brown & Root NCR 1105 was revised to specifically identify the fourteen hangers rejected by Brown & Root QC. The hangers were subsequently reworked and accepted. The IE Resident Inspector had no further questions on this matter.

(Closed) Unresolved Item (50-445/78-12, paragraph 6): Inconsistent Material Coating Requirements. The licensee has issued "Design Change Authorization," No. 2514, which adds a note to structural steel specifications SS-16A, SS-16B and SS-17 indicating that site painting (coating) shall be accomplished as described in specifications AS-30 and AS-31. AS-31 has been revised by Design Change Authorization 2932 to allow sandblasted steel surfaces to remain unprimed for up to twenty-four hours as permitted by the "Structural Steel Painting Council," which is consistent with procedures CCP-30 and QI-QP-11.4-3.

3. Potential Construction Deficiencies (10 CFR 50.55(e))

During the period covered by this report, the licensee reported three potential construction deficiencies within the context of 10 CFR 50.55(e). The status of each item, as of October 31, 1978, is provided below in addition to references to appropriate documentation:

- a. October 4, 1978: Failed Installed Cadweld Splice in Unit 1 Containment Wall. This item was determined not to be formally reportable by the licensee on the basis of lack of safety significance. See Inspection Report 50-445/78-17, paragraph 4 of this report and the licensee's letter dated October 18, 1978, for further details.
- b. October 6, 1978: Design of Seismic Restraints for Service Water Pumps. The licensee reported that a design problem had been detected in regard to the seismic restraint system for the service water pumps. The licensee has not completed his analysis of the extent of the problem or the possible consequences as of this date.
- c. October 24, 1978: Reactor Coolant Loop Weld Repairs. The licensee reported that unauthorized and undocumented repairs had been made to welds connecting loop piping to system vessels and pumps. The repairs involved through-wall excavation and re-welding without backside shielding gas as required by welding procedures. The licensee has not concluded his investigation of this item nor has he determined its formal reportability. For further details, see paragraph 6 of this report.

4. Unit 1 Containment Wall Cadweld Splicing

The IE Resident Inspector previously examined a randomly selected cross section of Cadweld splices in the Unit 1 containment wall at elevation 955' to approximately 960' where it was expected that

concrete placement would shortly take place.^{1/} As was noted in the referenced inspection report, installation of diagonal and shear bar materials had not been completed at the time of the inspection.

On October 4, 1978, licensee quality assurance representatives notified the IE Resident Inspector that an incident had occurred on October 2 during installation of the diagonal steel at the 955' level that had the potential to be reportable under 10 CFR 50.55(e). Details of the incident are described in reference^{2/}. Subsequent examination of the sequence of events which occurred between October 2, 1978 and October 4, 1978, led the IE Resident Inspector to conclude that the licensee had not, in fact, made their report to the inspector in a timely manner as required by 10 CFR 50.55(e)(2). Based on an interview with a licensee/contractor craft labor superintendent relative to when he became aware of the incident and when the licensee made his notification to the IE Resident Inspector, it appeared that at least forty-one (41) hours elapsed rather than the maximum allowable twenty-four (24) hours between the initial problem identification and the act of notification. This is considered to be in noncompliance with the requirements of 10 CFR 50.55(e).

During the interviews outlined in reference^{2/}, the IE Resident Inspector became aware of an aspect of the licensee/contractor Cadweld splicing program not apparent in his procedures and which fails to fulfill the intent of NRC Regulatory Guide 1.10. The IE inspector developed, from the referenced interviews and by additional interviews with cognizant personnel, that the licensee/contractor has utilized Cadweld splicer helpers to prepare the bars for splicing, assemble the sleeve on the bar and set up the filler metal crucible on the sleeve; in fact, do all the work except pour the premeasured filler metal powder into the crucible and ignite it. The qualified splicer was to supervise and inspect the helper's work and place his identification on the splice. The interviews, however, established that often the splicer could be in another location or even absent from the helper's work area such that supervision would be minimal or non-existent and inspection could be relatively superficial since the splicer would not be able to see the bar ends through the filler metal hole in the sleeve and thus verify the witness marks. Also, he could not observe the packing and bar concentricity with the sleeve since the end cap retainers would be in place.

^{1/} Inspection Report 50-445/78-15; 50-446/78-15, Details, paragraph 4
^{2/} Investigation Report 50-445/78-17; 50-446/78-17, Details

Paragraph C.1 of Regulatory Guide 1.10, which the licensee committed to in section 1A(B) of the FSAR, requires that each member of the splicing crew be qualified prior to splicing. When a crew works as a unit on a splice, the crew as a unit can be qualified. The apparent effect of the licensee/contractor arrangement is to allow a person who has not been qualified to perform all of the important aspects of Cadweld splicing with the qualified splicer taking responsibility for the work. A secondary effect of the arrangement is to reduce the testing frequency requirements of paragraph C.4 of the regulatory guide by some amount ranging up to 50%, depending on how much independent and unverified work was performed by the helper.

The IE inspector verified, during the interviews, that the licensee had conducted training classes for the helpers equivalent of that given the splicers except for actually qualifying them and giving them unique identifiers. The IE inspector further verified, during the interviews, that the licensee has no records providing information as to specific splicer/helper combinations; i.e., crew composition on a given day or on what splices a helper worked. This situation is considered to be a deviation from FSAR commitments, specifically from Regulatory Guide 1.10.

5. Containment Structural Concrete

The IE Resident Inspector observed concrete placement identified as 101-5805-027 on October 16, 1978. The IE Resident Inspector observed that the formwork was clean, tight and secure with adequate clearance to the reinforcing steel. The reinforcing steel was clean as was the concrete of the preceding placement. Two placement crews were placing and consolidating the concrete consistent with recommendations of the American Concrete Institute.

The IE Resident Inspector observed operations of the concrete batch plant during the course of the above placement. Design mix 133 was specified for the placement and the various ingredients were batched and mixed in the proper proportions as evidenced by the plant scales which had been calibrated August 30, 1978. The plant automatic control system and data print-out correlated with the scales within 1% during several observations.

The IE Resident Inspector interviewed the Brown & Root quality control technician assigned to the plant and reviewed a B^oR daily surveillance checklist used to verify plant condition. The IE Resident Inspector and the B&R technician then toured the plant revalidating the technician's findings. The IE Resident Inspector examined the batch plant aggregate stockpiles and found both the sand and #67 gravel were properly stockpiled and showed no evidence of segregation.

The IE Resident Inspector also observed site concrete laboratory technicians at the two placement pumping stations taking samples for slump, air content and temperature of the concrete as discharged from the mixer trucks. The tests were conducted consistent with project requirements and the applicable ASTM specifications.

The IE Resident Inspector visited the laboratory on October 17 and verified that cylinders for strength tests had been properly made, were properly identified and were stored in accordance with ASTM C-511-75. The calibration status of the cylinder testing machine identified as MTE 3031 was verified as current and traceable to the National Bureau of Standards.

The IE Resident Inspector revisited the concrete placement on October 17 to examine concrete curing. The IE Resident Inspector found that a portion of the formwork had been elevated to the next lift level and that the exposed wall had been coated with curing compound. The horizontal surface had been "green cut" preparatory for the next placement and was uniformly wetted. Ambient air and concrete temperatures were found to be about 70°F.

No items of noncompliance or deviations were identified in this area.

6. Reactor Coolant System Installation and Welding Activities

The licensee made limited progress in regard to welding of the reactor coolant pipe to the reactor vessel, steam generators and pumps during the reporting period. The IE Resident Inspector observed manual GTAW welding on the joint connecting the pipe to Loop 2 pump and had no questions. As noted^{3/}, an IE inspector observed welding by semi-automatic GTAW equipment and determined that the qualified welding procedure was not being followed in regard to travel speed.

On October 24, 1978, the licensee reported a potential significant construction deficiency in accordance with 10 CFR 50.55(e) in regard to reactor coolant welding operations. The licensee reported that he had received allegations that through-wall weld metal repairs had been made without proper authorizations, documentation and without backside shielding gas as required by the welding procedures. The licensee reported that it was alleged that the repair work was performed at the direction of a craft labor general foreman who was subsequently discharged. The fact that such repairs had been made was confirmed by evidence of "sugaring" on four of the eleven joints partially welded out at the time.

^{3/}Inspection Report 50-445/78-19; 50-446/78-19

Coincident with the licensee's investigation of the above allegation, liquid penetrant inspection performed as part of the normal quality control program revealed numerous linear indications in the root area of each of the eleven welds made to date. The IE Resident Inspector examined several of the joints and had no question of the unacceptability of the welds under the ASME B&PV Code.

The licensee's quality assurance organization has documented the problem of the unauthorized repairs and the nonacceptability of the welds due to linear indications on five separate Nonconformance Reports; i.e., NCRs M-1229, M-1210, M-1223, M-1227 and M-1197. The licensee stopped all reactor coolant system welding activity on October 24, 1978. Pending disposition of the NCRs, this matter will be considered an unresolved item to be followed closely by the IE Resident Inspector.

7. Safety Related Piping Systems Installation and Welding

During extensive plant tours conducted by the IE Resident Inspector on both work shifts, it was observed that both carbon and stainless steel piping system components were generally handled and protected in accordance with project specifications, procedures and good construction practices. Random interviews with craft labor personnel indicated a substantial awareness of requirements, particularly in regard to handling and protection of stainless steel components although a very limited awareness as to why the requirements are necessary.

The IE Resident Inspector observed a number of welds being made in both carbon and stainless steel piping systems. Two welds were selected for indepth review for conformance to project requirements.

Weld FW-3 is identified on isometric drawing AF-1-YD-03 and is part of line 10-AF-1-02-152-3 as shown on FSAR figure 10.4-11. The weld was being made in accordance with Procedure 11010, Revision 1 by welder "AML." The IE Resident Inspector reviewed the Procedure Qualification Record and the welder qualification records and found them consistent with the requirements of ASME Section IX. The weld rod being used was 7018, heat 411W1381 in lot 24606 which was certified by Teledyne MCKay as meeting the requirements of ASME SFA 5.1. The IE Resident Inspector also reviewed the ITT Grinnel quality assurance data packages for the two pipe spools being joined, AF-1-YD-03-2 and AF-1-YD-03-3, and found that the materials involved appeared to comply with the requirements for SA-234, type WPB as specified.

The other weld examined, FW-3, is identified on isometric CT-1-SB-11-3 in line 16-CT-1-002-151-R2. This line is in the Containment Spray system as shown on FSAR figure 6.2.2-1. The weld was being made by welder "AJE" in accordance with Procedure 88023. Both the welder and weld procedure were found to be properly qualified.

Records pertaining to the weld filler metal and for adjacent materials including valve CT-148 were found to be consistent with ASME Code requirements.

In addition to the above observations, the IE Resident Inspector randomly selected two field welds where nondestructive examination by radiography is an ASME Code requirement. They were welds FW-7 of isometric CS-1-SB in line 3-CS-1-202-151R2 and FW-2 of CT-1-SB-11-3 in line 16-CT-1-002-151-R2. Radiographic films were examined both for the quality of the welds and quality of the radiographs from a technique standpoint and found to be consistent with Code requirements.

No items of noncompliance or deviations were identified.

8. Storage and Maintenance of Components

The IE Resident Inspector examined the storage condition of the reactor internal core support structures and found it unchanged from the previous inspection of this activity^{4/}.

The IE Resident Inspector examined the installed reactor vessel in Unit 1 and found it to be essentially in the condition described in the previous inspection^{4/}.

During plant tours, the IE Resident Inspector observed the protection of various partially installed plant components including the Auxiliary Feedwater pumps, Safety Injection pumps, Component Cooling Water pumps, and motor driven valves. All electric motors observed had space heaters connected and energized. All components except installed line valves were covered by fire retardant coverings and supported by fire retardant wood framework.

No items of noncompliance or deviations were identified.

^{4/} Inspection Report 50-445/78-13; 50-446/78-13

9. Construction Phase Fire Protection

Although not committed to compliance with any guidelines for fire protection of installed or partially installed plant equipment and structures, the licensee and his contractors have informally implemented an inspection program primarily involving strategically located fire extinguishers. During general plant tours, the IE Resident Inspector verified that properly filled hand fire extinguishers were located in the areas where welding or cutting by flame was in progress and established by random interviews that working personnel or their foremen were cognizant of fire extinguisher location.

The IE Resident Inspector had no further concern in this area.

10. 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. An unresolved item disclosed during this inspection period is discussed in paragraph 6 and will hereafter be referred to as "Reactor Coolant System Weld Quality."

11. Management Interviews

The IE Resident Inspector met with licensee and contractor management frequently throughout the inspection period due to the number of potentially significant construction deficiencies discussed in this report. Other management interviews were held on October 13, 1978, in conjunction with IE inspection 50-445/78-18; 50-446/78-18 and on October 30, 1978, at the conclusion of the inspection period to discuss the Resident Inspector's findings.