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implications on safety-related systems, programs, or areas. You should also address the collective significance of these deficiencies. Your program plan should also include the proposed TUEC action to assure that such problems will not occur in the future.

This request is submitted to you in keeping with the NRC practice of promptly notifying applicants of outstanding information needs that could potentially affect the safe operation of their plant. Future requests for additional information of this nature will be made, if necessary, as the activities of the TRT progress.

Sincerely,

Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation

Enclosure: As stated
cc w/enclosure:
See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

NOV 29 1984

Docket Nos.: 50-445
and 50-446

Mr. M. D. Spence
President
Texas Utilities Generating Company
400 North Olive Street
Lock Box 81
Dallas, Texas 75201

Dear Mr. Spence:

Subject: Comanche Peak Review

On July 9, 1984, the staff began an intensive onsite effort to complete a portion of the reviews necessary for the staff to reach its decision regarding the licensing of Comanche Peak, 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 you and other Texas Utilities Electric Company representatives to provide you with a number of technical issues in the electrical/instrumentation, civil/structural, and test program areas having potential safety implications. The issues discussed constitute a portion of the technical issues and allegations being evaluated by the Technical Review Team (TRT).

The activities of the TRT have progressed to the point where it is appropriate to provide you with a status of additional items under review and to request additional information. These items, in the coatings, mechanical, and miscellaneous areas, are listed in the enclosure to this letter. Further background information regarding these issues will be published in a Supplement to a Safety Evaluation Report (SSER), which will document the TRT's overall assessment of the significance of the issues examined.

The items in the enclosure to this letter cover only a portion of the TRT's effort. The TRT's ongoing evaluation, QA/QC review and conversations with allegers may reveal additional items in the coatings, mechanical, and miscellaneous areas for which additional requests for information may be appropriate. Also, the TRT evaluation of QA/QC issues, and its consideration of the programmatic implications of these findings, are still in progress. A summary of these issues will be provided to you at a later date.

You are requested to submit additional information to the NRC, in writing, including a program and schedule for completing a detailed and thorough assessment of the issues identified in the enclosure to this letter. This program plan and its implementation will be evaluated by the staff before NRC considers the issuance of an operating license for Comanche Peak, Unit 1. The program plan should address the root cause of each problem identified and its generic

COMANCHE PEAK

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REQUEST FOR ADDITIONAL INFORMATION

IV. Protective Coatings Area

a. Surveillance and Test Program for Coatings

The protective coatings Technical Review Team (TRT) reviewed the backfit program, design basis accident qualifications, traceability, application and repair procedures, training, coating exempt log and dispositioning of non-conformance reports. Concurrently, the staff is evaluating the effects on containment emergency sump performance of paint and insulation debris. The results of the two concurrent reviews will be combined in one supplemental safety evaluation which is scheduled to be issued by January 1985. Actions required for resolution of protective coatings issues will be delineated in the supplement.

V. Mechanical Area

a. Inspection for Certain Types of Skewed Welds in NF Supports

The TRT investigated inspection procedures of Brown & Root (B&R) for welds in pipe supports designed to ASME III Code, Subsection NF. The TRT found that no fillet weld inspection criteria existed for certain types of skewed welds. By definition, skewed welds are those welds joining (1) two non-perpendicular or non-colinear structural members, or (2) two members with curved surfaces or curved cross sections, such as a pipe stanchion (a section of pipe used as a structural member) welded to another pipe stanchion or to a curved pipe pad. Notice that for type (2), the effect of curvature at the weld connection induces skewed considerations, even though the two joining members are physically perpendicular. The B&R weld inspection procedures CP-QAP-12.1 and QI-QAP-11.1-28 for NF supports have addressed type (1) skewed welds; however, the TRT found that QI-QAP-11.1-28 did not include weld inspection criteria for type (2) skewed welds. Although the TRT was told by B&R personnel that procedure QI-QAP-11.1-26 for piping weld inspection was used, since such weld connections were similar in configuration to a pressure boundary stanchion attachment weld, no evidence documenting the use of this inspection procedure was provided to the TRT. According to records reviewed by the TRT, these welds were actually categorized as "all other welds" rather than "skewed welds" on the required QC checklist. Instead of using fillet weld gauges for measuring the size of nonskewed welds, welders were supposed to use a straight edge and a steel scale for measurement of a type (2) skewed weld, as described in QI-QAP-11.1-28. In addition, due to the variable profile along its curved weld connection, the weld size should have been measured at several different locations. The lack of inspection criteria and lack of verification of proper inspection procedures being conducted for type (2) skewed welds are a violation of ASME Code for NF supports committed to by TUEC in FSAR Section 5.2.1 and a violation of Criterion XVII in Appendix B of 10 CFR 50.

The TRT reviewed weld inspection procedures, weld data cards, and visually inspected several type (2) skewed welds in randomly sampled NF supports where pipe stanchions were used. Although the small sample of welds inspected by the TRT are acceptable, due to deficiencies in inspection records and the apparent lack of inspection criteria, the TRT is not certain whether other type (2) skewed welds were inspected properly. This is a generic issue involving many NF supports in various safety-related systems. The lack of documented inspections and criteria for type (2) skewed welds in NF supports represents a safety concern regarding the possible existence of under-sized welds in supports which are required to resist various design loads.

Accordingly, TUEC shall

(1) Revise B&R weld inspection procedures CP-QAP-21.1 and QI-QAP-11.1-28 to properly address type (2) skewed welds of stanchion to stanchion and stanchion to pipe pad; and,

(2) provide evidence to verify that previous inspections of these types of skewed welds were performed to the appropriate procedures.

b. Improper Shortening of Anchor Bolts in Steam Generator Upper Lateral Supports

The TRT was informed that some anchor bolts in the steam generator upper support beams were shortened during installation to less than the length shown on the design drawing without proper authorization. The TRT was told that the bolt cutting incident occurred either because the hole of the anchor device was filled with debris, or the threaded portion of the bolt had concrete mix stuck to it. There are 18 bolts at each end of each of 4 beams, totalling 144 bolts. There is one beam for each steam generator. The bolt threads into an anchor device embedded in the concrete wall. The acceptable bolt length or the length of bolt available for threading into the anchor device is vital to ensure structural capability of the support beams.

The TRT attempted to review TUEC records for ultrasonic (UT) measurement results and general installation practices. The TRT was told that ultrasonic testing of these types of bolts was not a procedural requirement; however, TUEC was unable to provide any other installation records for TRT review. The TRT concludes that such unauthorized bolt cutting and lack of installation inspection records is a violation of QA procedures and Criterion XVII in Appendix B of 10 CFR 50. Since the support beams are essential to provide lateral restraint for the steam generator during a LOCA or seismic event, adequate anchoring capability of the bolts has safety significance and, as a result, appropriate measures are needed to ensure conformance with General Design Criterion 1 of 10 CFR 50.

Accordingly, TUEC shall provide evidence, such as ultrasonic measurement results, to verify acceptable bolt length. Should unauthorized bolt cutting be verified, TUEC shall:

(1) replace shortened bolts with bolts of proper length, or provide analysis to justify the adequacy of shortened bolts as installed; and,

(2) provide justification or propose measures to ensure that no similar concern exists for bolting.

c. Design Consideration for Piping Systems Between Seismic Category I and Non-Seismic Category I Buildings

In April 1984 the Comanche Peak Special Review Team (SRT), formed and coordinated between NRR, IE and Region II and IV, performed a limited review of Comanche Peak. The TRT, in reviewing the SRT findings in the area of piping design considerations, has discovered that piping systems, such as Main Steam, Auxiliary Steam and Feedwater, are routed from the Electrical Control Building (seismic category I) to the Turbine Building (non-seismic category I) without any isolation. To be acceptable, each seismic category I piping system should be isolated from any non-seismic category I piping system by separation, barrier or constraint.

If isolation is not feasible, then the effect on the seismic category I piping of the failure in the non-seismic category I piping must be considered (CPSES FSAR 3.7B.3-13.1).

For CPSES, FSAR section 3.7B.2.8 establishes that the Turbine Building is a non-seismic category I structure and failure is postulated during the seismic (SSE) event. The effect of Turbine Building failure on any non-isolated piping routed through the Turbine Building from any seismic category I building must be considered.

In addition, for non-seismic category I piping connected to Seismic Category I piping, the dynamic effects of the non-seismic category I piping must be considered in the seismic design of the seismic category I piping and supports, unless TUEC can show that the dynamic effects of the non-seismic category I piping are isolated by anchors or restraints. The anchors or restraints used for isolation purposes must be designed to withstand the combined loading imposed by both the seismic category I and non-seismic category I piping.

Accordingly, TUEC shall provide analysis and documentation that the piping systems routed from seismic category I to non-seismic category I buildings meet the stated FSAR criteria.

d. Plug Welds

The TRT investigated alleged generic problems regarding uncontrolled repairs to holes existing in pipe supports, cable tray supports and base plates in Units 1 and 2. These holes, which had been misdrilled during fabrication, were repaired by plug welds. Since these supports are Seismic

Category I supports and the effects of the welds have not been evaluated, this constitutes a violation of Criteria IX and XVI of Appendix B to 10 CFR 50. Region IV inspections have confirmed the existence of such welds in cable tray supports located in the Unit 2 Cable Spreading Room.

Although the effects of unauthorized, undocumented and uninspected plug welds in some locations (e.g., the webs of I-beams or in structural members in compression) will be inconsequential, their effects in critical locations (e.g., flanges of I-beams in flexure or in structural members in tension) in critically loaded supports or base plates could affect their structural integrity and intended function.

Accordingly, TUEC shall perform one of the following:

(1) Modify its proposed plan to Region IV (TXX-4183 and TXX-4259) to include a sampling inspection of all areas of the plant having plug welds, to include cable tray supports, pipe supports and base plates. Propose alternate methods of inspection where the oblique lighting method is not viable (e.g., locations covered by heavy coats of paint). Perform an assessment of the effects on quality due to uncontrolled plug welds found during the proposed inspection, as modified above. Submit a report documenting the results of the inspection and assessment to the NRC for review.

(2) Perform bounding analyses to assess the generic effects of uncontrolled plug welds on the ability of pipe supports, cable tray supports and base plates to serve their intended function. Submit a report documenting the results of the assessment to the NRC for review.

e. Installation of Main Steam Pipes

The TRT investigated an allegation that a Unit 1 main steam line had been installed incorrectly and had been forced into proper alignment after flushing operations by use of the main polar crane and come-alongs. It was also claimed that pipe supports had been modified to maintain the line in its forced position and vibrations following detachment of the flushing line could have damaged the main steam line. Based on its investigation, the TRT determined that the alleged incident pertained to restoration of the Unit 1, loop 1 main steam line to its initial, correct installation position. (The line had shifted during flushing operations due to the weight of the added water and because the temporary supports sagged.) The TRT also determined that the modifications to permanent pipe supports were necessary to provide proper support to the main steam line in its restored position (initial designs for and construction of the supports had been based on the shifted position of the line) and, although the alleged vibrations could not be confirmed, their associated stresses might not have damaged the main steam line. (The highest stresses would have occurred in the weaker, temporary flushing line.) The TRT review of a TUEC analysis, performed 1 year after the incident, concluded that the analysis was incomplete. An evaluation for the full sequence of events leading up to the

incident had not been performed. The TRT review of Gibbs & Hill Specification No. 2323-MS-100 indicated that there were inadequate requirements and construction practices for the support of the main steam line during flushing, and for temporary supports for piping and equipment in general. In particular, evaluations to assure the adequacy of temporary supports during flushing and installation were not required. The deficiencies in the analyses, specifications and construction practice identified above constitute a violation of Criterion V of Appendix B to 10 CFR 50.

Accordingly, TUEC shall:

(1) Modify Gibbs & Hill Specification No. 2323-MS-100, and institute procedures for support of the main steam line during flushing and for temporary supports for piping and equipment in general to assure that the quality of piping and equipment are not affected.

(2) Perform an assessment of stresses in the portions of the Unit 1, loop 1, main steam and feedwater lines that were affected in the sequence of events involved during their initial installation, flushing and final installation. Conditions requiring stress analysis are:

    (a) Flushing condition when the lines were full of water and temporary supports had sagged or settled.

    (b) Disconnecting condition when vibrations of the temporary line could have occurred.

    (c) Lifting condition when forces were applied by the polar crane and come-alongs.

    These assessments shall be based on appropriate piping configurations involved.

(3) Perform a non-destructive examination of locations in the Unit 1, loop 1, main steam and feedwater piping where stresses were exceeded during the conditions of concern in a. through c. above.

(4) Review the existing baseline UT examinations for those portions of the Unit 1, loop 1, main steam and feedwater involved in all the conditions of concern in a. through c., above, for unacceptable indications.

(5) Review records of hydrostatic testing of the main steam and feedwater line to verify the quality of piping involved in the incident.

(6) Provide similar assessments for circumstances involved in a lifting incident identified during the TRT inspection for the Unit 1, loop 4, main steam line.

(7) Provide assessments of effects on quality of safety-related piping and equipment which were involved in similar incidents of sagging, settlements and failures, if any, of temporary supports.

(8) Submit the results of analyses, examinations and reviews in a documented report for NRC review.

VI. Miscellaneous Area

a. Gap Between Reactor Pressure Vessel Reflective Insulation (RPVRI) and the Biological Shield Wall

The TRT investigated an allegation that the Unit 1 reactor pressure vessel outer wall was touching the concrete biological shield wall. A TRT review of existing documentation and discussions with TUEC personnel indicated that this allegation was not factual. However, a significant construction deficiency report, submitted pursuant to 10 CFR Part 50.55(e), on August 25, 1983, documented that unacceptable cooling occurred in the annulus between the RPVRI and the shield wall during hot functional testing, apparently because of the existence of an inadequately sized annulus gap and possibly because the presence of construction debris in the annulus. TUEC corrected the situation by modifications to allow increased air flow for proper heat dissipation and by removal of the construction debris. TUEC representatives indicated that testing to verify the adequacy of the cooling flow will take place when additional hot functional testing is conducted. Information gathered by the TRT during the investigation indicated that a design change in the RPVRI support ring (i.e., locating the ring outside rather than inside the insulation) resulted in a limited clearance between the RPVRI and the shield wall. The TRT review of the 50.55(e) report revealed that TUEC failed to: (1) address the fundamental issue of the design change impact on annulus cooling flow, and (2) determine whether Unit 2 was similarly affected.

Accordingly, TUEC shall:

(1) Review their procedures for approval of design changes to non-nuclear safety-related equipment, such as the RPVRI, and make revisions as necessary to assure that such design changes do not adversely affect safety-related systems.

(2) Review procedures for reporting significant design and construction deficiencies, pursuant to 10 CFR Part 50.55(e), and make changes as necessary to assure that complete evaluations are conducted.

(3) Provide an analysis which verifies that the cooling flow in the annulus between the RPVRI and the shield wall of Unit 2 is adequate for the as-built condition.

(4) Finally, verify during future Unit 1 hot functional testing that completed modifications to the RPVRI support ring now allow adequate cooling air flow.

The TRT noted that control of debris in critical spaces between components and/or structures was identified as an issue, both in the investigation of this allegation and the civil/structural area item II.c (Maintenance of Air Gap Between Concrete Structures), contained in Darrell G. Eisenhut's September 18, 1984, letter to TUEC. Accordingly, TUEC shall also:

(1) Identify areas in the plant having critical spacing between components and/or structures that are necessary for proper functioning of safety-related components, systems or structures in which unwanted debris may collect and be undetected or be difficult to remove;

(2) Prior to fuel load, inspect the areas and spaces identified and remove debris; and,

(3) Subsequent to fuel load, institute a program to minimize the collection of debris in critical spaces and periodically inspect these spaces and remove any debris which may be present.

b. Polar Crane Shimming

The TRT investigated the installation of the polar crane rail support system by visual inspection, review of associated documentation, and discussions with TUEC representatives and their contractors. Region IV Inspection Report 50-445/84-08; 50-446/84-04 and Notice of Violation, dated July 26, 1984, documented that gaps on the Unit 1 polar crane bracket and seismic connections exceeded design requirements. In Texas Utilities Generating Company responses of August 23, 1984, and September 7, 1984, the gaps were attributed to crane and bolting self-adjustment resulting from crane operation. A site design change (DCA-9872, Revision 4, dated August 24, 1984) was issued to document the acceptability of the gaps in excess of 1/16 inch which were identified in the above NRC inspection report.

During further investigation of the allegation that shims for the rail support system of the polar crane had been altered during installation, the TRT observed gaps which may have been excessive between the crane girder and the girder support bracket. Detailed specifications addressing the gap tolerance in the girder seat connections did not exist; however, Gibbs & Hill letter GHF-2207, dated November 28, 1977, stated that the "seated connections will not require shimming since the area in bearing is at least the width of the bottom flange of the crane girder." Contrary to this Gibbs & Hill assumption, the TRT observed nine girders with gaps which

extended under the bottom flange that reduced the bearing surface to less than the 20-inch flange width stated in the letter. The TRT also observed conditions which indicated that the crane rail may still be moving in a circumferential direction, that three rail-to-rail ground wires were broken, that two shims have partially worked out from under the rail, and that two Cadwelds were broken.

Accordingly, TUEC shall:

1. Inspect the polar crane rail girder seat connections for the presence of gaps which reduce the bearing surface to less than the width of the bottom flange and perform an analysis which will determine whether existing gaps are acceptable or require corrective action.

2. Determine if additional rail movement is occurring and, if so, provide an evaluation of safety significance and the need for corrective action.

3. Perform a general inspection of the polar crane rail and rail support system, correct identified deficiencies of safety significance, and provide an assessment of the adequacy of existing maintenance and surveillance programs.