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

DOCKET FILE

SEP 18 1984

Dockets: 50-445
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Texas Utilities Electric Company
Attn: M. D. Spence, President, TUGCO
Skyway Tower
400 North Olive Street
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Dallas, Texas 75201

Dear Mr. Spence:

SUBJECT: COMANCHE PEAK REVIEW

On July 9, 1984, the staff began an intensive onsite effort designed 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.

The NRC assembled a Technical Review Team (TRT) responsible for evaluating most of the technical issues at Comanche Peak, including allegations. The TRT has recently identified a number of items that have potential safety implications for which we require additional information. These items 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 overall TRT's assessment of the significance of the issues examined.

The items in the enclosure to this letter, which are in the general areas of electrical/instrumentation, civil/structural and test programs, cover only a portion of the TRT's effort. The TRT evaluation of items in the areas of mechanical, QA/QC, and coatings, and its consideration of the programmatic implications of these findings, are still is 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. 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 implications on safety-related systems, programs, or areas. The collective significance of these deficiencies should also be addressed. Your program plan should also include the proposed TUGCO action to assure that such problems will be precluded from occurring in the future.

SEP 18 1984



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

Sincerely,

Original signed by
Darrell G. Eisenhut

Darrell G. Eisenhut, Director
Division of Licensing, NRR

Enclosure:
As stated

cc w/enclosure
See next page

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COMANCHE PEAK

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ENCLOSURE 1

REQUEST FOR ADDITIONAL INFORMATION

I. Electrical/Instrumentation Area

a. Electrical Cable Terminations

The Technical Review Team (TRT) inspected random samples of safety-related terminations, butt splices inside panels, and vendor-installed terminal lugs in General Electric (GE) motor control centers, and reviewed documentation relative to the installations.

1. The TRT found a lack of awareness on the part of quality control (QC) electrical inspectors to document in the inspection reports when the installation of the "nuclear heat-shrinkable cable insulation sleeves" was required to be witnessed.

Accordingly, TUEC shall clarify procedural requirements and provide additional inspector training with respect to the areas in which nuclear heat-shrinkable sleeves are required on splices and assure that such sleeves are installed where required.

2. The TRT found inspection reports that did not indicate that the required witnessing of splice installation was done. Examples are as follows:

| | |
|---|---|
| IR ET-1-0005393 | IR ET-1-0005396 |
| IR ET-1-0005394 | IR ET-1-0006776 |
| IR ET-1-0005395 | IR ET-1-0014790 |

Accordingly, TUEC will assure that all QC inspections requiring witnessing for butt splices have been performed and properly documented; and verify that all butt splices are properly identified on the appropriate drawings and are physically identified within the appropriate panels.

3. The TRT found a lack of splice qualification requirements and provisions in the installation procedures to verify the operability of those circuits for which splices were being used.

Accordingly, TUEC shall develop adequate installation/inspection procedures to assure that the wiring splicing materials are qualified for the appropriate service conditions, and that splices are not located adjacent to each other.

4. Selected cable terminations were found that did not agree with their locations on drawings. Examples are as follows:

Panel CP1-ECPRCB-14, Cable E0139880
Panel CP1-ECPRTC-16, Cable E0110040
Panel CP1-ECPRTC-16, Cable E0118262
Panel CP1-ECPRTC-27, Cable EG104796
Panel CPX-ECPRCV-01, Cable EG021856
Panel CP1-ECPRCB-02, Cable NK139853 (nonsafety)

Accordingly, TUEC shall reinspect all safety-related and associated terminations in the control room panels and in the termination cabinets in the cable spreading room to verify that their locations are accurately depicted on drawings. Should the results of this reinspection reveal an unacceptable level of nonconformance to drawings, the scope of this reinspection effort shall be expanded to include all safety-related and associated terminations at CPSES.

5. The TRT found cases where nonconformance reports (NCRs) concerning vendor-installed terminal lugs in GE motor control centers had been improperly closed. Examples are NCR Nos. E-84-01066 through NCR E-84-01076, inclusive.

   Accordingly, TUEC shall reevaluate and redisposition all NCRs related to vendor-installed terminal lugs in GE motor control centers.

b. Electrical Equipment Separation

The TRT reviewed the separation criteria between separate cables, trays and conduits in the main control room and cable spreading room in Unit 1, and the compatibility of the electrical erection specifications with regulatory requirements. The TRT reviewed documentation and inspected random samples of separation between safety-related cables, trays and conduits and between them and nonsafety-related cables, trays and conduits.

1. In numerous cases, safety-related cables within flexible conduits inside main control room panels did not meet minimum separation requirements. Examples are as follows:

   Panel CP1-EC-PRCB-02
   Panel CP1-EC-PRCB-07
   Panel CP1-EC-PRCP-06
   Panel CP1-EC-PRCB-08
   Panel CP1-EC-PRCB-09

   Accordingly, TUEC shall reinspect all panels at CPSES, in addition to those in the main control room for Unit 1, that contain redundant safety-related cables within conduits, or safety and non-safety related cables within conduits, and either correct each violation of the separation criteria, or

demonstrate by analysis the acceptability of the conduit as a barrier for each case where the minimum separation is not met.

2. In several cases, separate safety and nonsafety-related cables and safety and nonsafety-related cables within flexible conduits inside main control room panels did not meet minimum separation requirements (Table 1 identifies examples of these cases). No evidence was found that justified the lack of separation.

   Accordingly, TUEC shall reinspect all panels at CPSES, in addition to those in the main control room of Unit 1, and either correct each violation of the separation criteria concerning separate cables and cables within flexible conduits, or demonstrate by analysis the adequacy of the flexible conduit as a barrier.

3. The TRT found that the existing TUEC analysis substantiating the adequacy of the criteria for separation between conduits and cable trays had not been reviewed by the NRC staff.

   Accordingly, TUEC shall submit the analysis that substantiates the acceptability of the criteria stated in the electrical erection specifications governing the separation between independent conduits and cable trays.

4. The TRT found two minor violations of the separation criteria inside panels CP1-EC-PRCB-09 and CP1-EC-PRCB-03 concerning a barrier that had been removed and redundant field wiring not meeting minimum separation. The devices involved with the barrier were FI-2456A, PI-2453A, PI-2475A, and IT2450, associated with Train A; and FI-2457A, PI-2454A, PI-2476A, and IT-2451, associated with Train B. The field wiring was associated with devices HS-5423 of Train B and HS-5574, nonsafety-related.

   Accordingly, TUEC shall correct two minor violations of the separation criteria inside panels CP1-EC-PRCB-09 and CP1-EC-PRCP-03 concerning a barrier that had been removed and redundant field wiring not meeting minimum separation.

Table 1

Examples of Cases of Safety or Nonsafety-Related Cables

In Contact With Other Safety-Related Cables Within Conduits in Control Room Panels

1. Control Panel CP1-EC-PRCB-02 - Containment Spray System

| Cable No. | Train | Related Instrument |
|---|---|---|
| EG139373 | B (green) | Undetermined |
| E0139010 | A (orange) | Undetermined |

2. Control Panel CP1-EC-PRCB-07 - Reactor Control System

| Cable No. | Train | Related Instrument |
|---|---|---|
| EG139383 | B (green) | Reactor manual trip switch |
| E0139311 | A (orange) | Undetermined |

3. Control Panel CP1-EC-PRCP-06 - Chemical & Volume Control System

| Cable No. | Train | Related Instrument |
|---|---|---|
| EG139335 | B (green) | LCV-112C |
| E0139301 | A (orange) | Undetermined |

4. Control Panel CP1-EC-PRCB-09 - Auxiliary Feedwater Control System

| Cable No. | Train | Related Instrument |
|---|---|---|
| E0139753 | A (orange) | FK-2453A |
| E0139754 | A (orange) | FK-2453B |
| E0139756 | B (green) | FK-2454A |
| EG139288 | B (green) | FK-2454B |

c. Electrical Conduit Supports

The TRT examined the nonsafety-related conduit support installation in selected seismic Category I areas of the plant. The support installation for non-safety related conduits less than or equal to 2 inches was inconsistent with seismic requirements and no evidence could be found that substantiated the adequacy of the installation for nonsafety-related conduit of any size. According to Regulatory Guide 1.29 and FSAR Section 3.7B.2.8, the seismic Category II and nonseismic items should be designed in such a way that their failure would not adversely affect the function of safety-related components or cause injury to plant personnel.

Accordingly, TUEC shall propose a program that assures the adequacy of the seismic support system installation for nonsafety-related conduit in all seismic Category I areas of the plant as follows:

1. Provide the results of seismic analysis which demonstrate that all nonsafety-related conduits and their support systems, satisfy the provisions of Regulatory Guide 1.29 and FSAR Section 3.7B.2.8.

2. Verify that nonsafety-related conduits less than or equal to 2 inches in diameter, not installed in accordance with the requirements of Regulatory Guide 1.29, satisfy applicable design requirements.

d. Electrical QC Inspector Training/Qualifications

The TRT examined electrical QC inspector training and certification files, and requirements for personnel testing, on-the-job training, and recertification. The TRT also interviewed selected electrical QA/QC personnel.

1. The TRT found a lack of supportive documentation regarding personnel qualifications in the training and certification files, as required by procedures and regulatory requirements. Also, the TRT found a lack of documentation for assuring that the requirements for electrical QC inspector recertification were being met. Specific examples are:

   ° One case of no documentation of a high school diploma or General Equivalency Diploma.

- One case of no documentation to waive the remaining 2 months of the required 1 year experience.

- One case where a QC technician had not passed the required color vision examination administered by a professional eye specialist. A makeup test using colored pencils was administered by a QC supervisor, was passed, and then a waiver was given.

- Two cases where the experience requirements to become a Level 1 technician were only marginally met.

- One case of no documentation in the training and certification files substantiating that the person met the experience requirements.

Accordingly, TUEC shall review all the electrical QC inspector training, qualification, certification and recertification files against the project requirements and provide the information in such a form that each requirement is clearly shown to have been met by each inspector. If an inspector is found to not meet the training, qualification, certification, or recertification requirements, TUEC shall then review the records to determine the adequacy of inspections made by the unqualified individuals and provide a statement on the impact of the deficiencies noted on the safety of the project.

2. The TRT found a lack of guidelines and procedural requirements for the testing and certifying of electrical QC inspectors. Specifically, it was found that:

   - No time limit or additional training requirements existed between a failed test and retest.

   - No controls existed to assure that the same test would not be given if an individual previously failed that test.

   - No consistency existed in test scoring.

   - No guidelines or procedures were available to control the disqualification of questions from the test.

   - No program was available for establishing new tests (except when procedures changed). The same tests had been utilized for the last 2 years.

   Accordingly, TUEC shall develop a testing program for electrical QC inspectors which provides adequate administrative guidelines, procedural requirements and test flexibility to assure that suitable proficiency is achieved and maintained.

The deficiencies identified with the electrical QC inspections have generic implications to other construction disciplines. The implications of these findings will be further assessed as part of the overall programmatic review of QC inspector training and qualification and the results of this review will be reported under the QA/QC category on "Training and Qualification."

II. Civil/Structural Area

a. Unable to Justify Reinforcing Steel Omitted in the Reactor Cavity

The TRT investigated a documented occurrence in which reinforcing steel was omitted from a Unit 1 reactor cavity concrete placement between the 812-foot and 819-foot ½-inch elevations. This reinforcement was installed and inspected according to drawing 2323-S1-0572, Revision 2. However, after the concrete was placed, Revision 3 to the drawing was issued showing a substantial increase in reinforcing steel over that which was installed. Gibbs & Hill Engineering was informed of the omission by Brown & Root Nonconformance Report CP-77-6. Gibbs & Hill Engineering replied that the omission in no way impaired the structural integrity of the structure. Nevertheless, the additional reinforcing steel was added as a precaution against cracking which might occur in the vicinity of the neutron detector slots should a loss of coolant accident (LOCA) occur. A portion of the omitted reinforcing steel was also placed in the next concrete lift above the 819-foot ½-inch level. This was done to partially compensate for the reinforcing steel omitted in the previous concrete lift and to minimize the overall area potentially subject to cracking.

The TRT requested documentation indicating that an analysis was performed supporting the Gibbs & Hill conclusion. The TRT was subsequently informed that an analysis had not been performed. Therefore, the TRT cannot determine the safety significance of this issue until an analysis is performed verifying the adequacy of the reinforcing steel as installed.

Accordingly, TUEC shall provide an analysis of the as-built condition of the Unit 1 reactor cavity that verifies the adequacy of the reinforcing steel between the 812-foot and 819-foot ½-inch elevations. The analysis shall consider all required load combinations.

b. Falsification of Concrete Compression Strength Test Results

The TRT investigated allegations that concrete strength tests were falsified. The TRT reviewed an NRC Region IV investigation (IE Report No. 50-445/79-09; 50-446/79-09) of this matter that included

interviews with fifteen individuals. Of these, only the alleger and one other individual stated they thought that falsification occurred, but they did not know when or by whom. The TRT also reviewed slump and air entrainment test results of concrete placed during the period the alleger was employed (January 1976 to February 1977) and did not find any apparent variation in the uniformity of the parameters for concrete placed during this period. Although the uniformity of the concrete placed appears to minimize the likelihood that low concrete strengths were obtained, other allegations were raised concerning the falsification of records associated with slump and air content tests. The Region IV staff addressed these allegations by assuming that concrete strength test results were adequate. Furthermore, a number of other allegations dealing with concrete placement problems (such as deficient aggregate grading and concrete in the mixer too long) were also resolved by assuming that concrete strength test results were adequate. The TRT agrees with Region IV that, while the preponderance of evidence suggests that falsification of results did not take place, the matter cannot be resolved completely on the basis of concrete strength test results, especially if there is any doubt about whether they may have been falsified. Due to the importance of the concrete strength test results, the TRT believes that additional action by TUEC is necessary to provide confirmatory evidence that the reported concrete strength test results are indeed representative of the strength of the concrete installed in the Category I concrete structures.

Accordingly, TUEC shall determine areas where safety-related concrete was placed between January 1976 and February 1977, and provide a program to assure acceptable concrete strength. The program shall include tests such as the use of random Schmidt hammer tests on the concrete in areas where safety is critical. The program shall include a comparison of the results with the results of tests performed on concrete of the same design strength in areas where the strength of the concrete is not questioned, to determine if any significant variance in strength occurs. TUEC shall submit the program for performing these tests to the NRC for review and approval prior to performing the tests.

c. Maintenance of Air Gap Between Concrete Structures

The TRT investigated the requirements to maintain an air gap between concrete structures. Based on the review of available inspection reports and related documents, on field observations, and on discussions with TUEC engineers, the TRT cannot determine whether an adequate air gap has been provided between concrete structures. Field investigations by B&R QC inspectors indicated unsatisfactory conditions due to the presence of debris in the air

gap, such as wood wedges, rocks, clumps of concrete and rotofoam. The disposition of the NCR relating to this matter states that the "field investigation reveals that most of the material has been removed." However, the TRT cannot determine from this report (NCR C-83-01067) the extent and location of the debris remaining between the structures.

Based on discussions with TUEC engineers, it is the TRT's understanding that field investigations were made but that no permanent records were maintained. In addition, it is not apparent that the permanent installation of elastic joint filler material ("rotofoam") between the Safeguards Building and the Reactor Building, and below grade for the other concrete structures, is consistent with the seismic analysis assumptions and dynamic models used to analyze the buildings, as these analyses are delineated in the Final Safety Analysis Report (FSAR). The TRT, therefore, concludes that TUEC has not adequately demonstrated compliance with FSAR Sections 3.4.1.1.1, 3.8.4.5.1, and 3.7.B.2.8, which require separation of Seismic Category I buildings to prevent seismic interaction during an earthquake.

Accordingly, TUEC shall:

1. Perform an inspection of the as-built condition to confirm that adequate separation for all seismic category I structures has been provided.

2. Provide the results of analyses which demonstrate that the presence of rotofoam and other debris between all concrete structures (as determined by inspections of the as-built conditions) does not result in any significant increase in seismic response or alter the dynamic response characteristics of the Category I structures, components and piping when compared with the results of the original analyses.

d. Seismic Design of Control Room Ceiling Elements

The TRT investigated the seismic design of the ceiling elements installed in the control room. The following matrix designates those ceiling elements present in the control room and their seismic category designation:

| | | |
|---|---|---|
| 1. | Heating, Ventilating and Air Conditioning | - Seismic Category I |
| 2. | Safety-Related Conduits | - Seismic Category I |
| 3. | Nonsafety-Related Conduits | - Seismic Category II |
| 4. | Lighting Fixtures | - Seismic Category II |
| 5. | Sloping Suspended Drywall Ceiling | - Non-Seismic |
| 6. | Acoustical Suspended Ceiling | - Non-Seismic |
| 7. | Lowered Suspended Ceiling | - Non-Seismic |

According to Regulatory Guide 1.29 and FSAR Section 3.7B.2.8, the seismic Category II and nonseismic items should be designed in such a way that their failure would not adversely affect the functions of safety-related components or cause injury to operators.

For the nonseismic items (other than the sloping suspended drywall ceiling), and for nonsafety-related conduits whose diameter is 2 inches or less, the TRT could find no evidence that the possible effects of a failure of these items had been considered. In addition, the TRT determined that calculations for seismic Category II components (e.g., lighting fixtures) and the calculations for the sloping suspended drywall ceiling did not adequately reflect the rotational interaction with the nonseismic items, nor were the fundamental frequencies of the supported masses determined to assess the influence of the seismic response spectrum at the control room ceiling elevation would have on the seismic response of the ceiling elements.

Accordingly, TUEC shall provide:

1. The results of seismic analysis which demonstrate that the nonseismic items in the control room (other than the sloping suspended drywall ceiling) satisfy the provisions of Regulatory Guide 1.29 and FSAR Section 3.7B.2.8.

2. An evaluation of seismic design adequacy of support systems for the lighting fixtures (seismic Category II) and the suspended drywall ceiling (nonseismic item with modification) which accounts for pertinent floor response characteristics of the systems.

3. Verification that those items in the control room ceiling not installed in accordance with the requirements of Regulatory Guide 1.29 satisfy applicable design requirements.

4. The results of an analysis that justify the adequacy of the nonsafety-related conduit support system in the control room for conduit whose diameter is 2 inches or less.

5. The results of an analysis which demonstrate that the foregoing problems are not applicable to other Category II and nonseismic structures, systems and components elsewhere in the plant.

e. Unauthorized Cutting of Rebar in the Fuel Handling Building

The TRT investigated an alleged instance of unauthorized cutting of rebar associated with the installation of the trolley process aisle rails in the Fuel Handling Building. The claim is that during installation of 22 metal plates in January 1983, a core drill was used to drill about 10 holes approximately 9 inches deep. The TRT reviewed the reinforcement drawings for the Fuel Handling Building and determined that there were three layers of reinforcing steel in the top reinforcement layer of the slab. This reinforcement layer consisted of a No. 18 bar running in the east-west direction in the first and third layers, and a No. 11 bar running in the north-south direction on the second layer. The review also revealed that the layout of the reinforcement and the trolley rails was such that the east-west reinforcement would interfere with the drilling of holes along only one rail location. However, if 9-inch holes were drilled, both the first and third layers of No. 18 reinforcement would be cut. Design Change Authorization No. 7041 was written for authorization to cut the uppermost No. 18 bar at only one rail location, but did not reference authorization to cut the lower No. 18 bar. DCA-7041 also stated that the expansion bolts and base plates may be moved in the east-west direction to avoid interference with reinforcement running in the north-south direction. The information, described in DCA-7041, was substantiated by Gibbs & Hill calculations. If the ten holes were actually drilled 9 inches deep, then the allegation that the reinforcement was cut without proper authorization would be valid.

Accordingly, TUEC shall provide:

1. Information to demonstrate that only the No. 18 reinforcing steel in the first layer was cut, or

2. Design calculations to demonstrate that structural integrity is maintained if the No. 18 reinforcing steel on both the first and third layers was cut.

III. Test Programs Area

a. Hot Functional Testing (HFT)

The TRT reviewed a sample of the completed data packages for HFT preoperational test procedures, pertinent startup administrative procedures, NRC inspection reports, and the preoperational test index and its schedule. The TRT also inspected test deficiency reports

(TDRs) that were generated as a result of test deficiencies found prior to and during HFT.

1. Chapter 14 of the FSAR and Regulatory Guide 1.68 provide requirements for the conduct of preoperational testing. In reviewing test data packages, the TRT found that certain test objectives were not met. It appears that the Joint Test Group approved incomplete data packages for at least three preoperational hot functinal tests. These were:

| Test Procedure | Deficiency |
|---|---|
| 1CP-PT-02-12, "Bus Voltage and Load Survey" | Because acceptable voltages could not be achieved with the specified transformer taps, they were changed. A subsequent engineering evaluation required returning to the original taps, but no retest was performed. |
| 1CP-PT-34-05, "Steam Generator Narrow Range Level Verification" | Level detectors 1-LT-517, 518 and 529 were replaced with temporary equipment of a design that was different from that which was to be eventually installed |
| 1CP-PT-55-05 "Pressurizer Level Control" | Level detector 1-LT-461 appeared to be out of calibration during the test and was replaced after the test. The retest approved by the JTG was a cold calibration rather than a test consistent with the original test objective, which was to obtain satisfactory data under hot conditions. |

Accordingly, TUEC shall review all complete preoperational test data packages to ensure there are no other instances where test objectives were not met, or prerequisite conditions were not satisfied. The three items identified by the TRT shall be included, along with appropriate justification, in the test deferral packages presented to the NRC.

2. The TRT noted during a review of HFT completed test data that the JTG did not approve the data until after cooldown from the test. The tests are not considered complete until this approval is obtained. In order to complete the proposed post-fueling, deferred preoperational HFT, the JTG, or a similarly qualified group, must approve the data prior to proceeding to initial criticality. The TRT did not find any document providing assurance that TUEC is committed to do this.

   Accordingly, TUEC shall commit to having a JTG, or similarly qualified group, review and approve all post-fueling preoperational test results prior to declaring the system operable in accordance with the technical specifications.

3. The TRT pointed out that in order to conduct preoperational tests at the necessary temperatures and pressures after fuel load, certain limiting conditions of the proposed technical specifications cannot be met, e.g., all snubbers will not be operable since some will not have been tested.

   Accordingly, TUEC shall evaluate the required plant conditions for the deferred preoperational tests against limiting conditions in the proposed technical specifications and obtain NRC approval where deviations from the technical specifications are necessary.

4. Data for the thermal expansion tests (which have not yet been approved by the JTG) did not provide for traceability between the calibration of the measuring instruments and the monitored locations, as required by Startup Administrative Procedure-7. The information was separately available in a personal log held by Engineering.

   Accordingly, TUEC shall incorporate the information necessary to provide traceability between thermal expansion test monitoring locations and measuring instruments. TUEC shall also establish administrative controls to assure appropriate test and measuring equipment traceability during future testing.

b. Containment Intergrated Leak Rate Testing (CILRT)

The TRT reviewed the data package for the CILRT performed on Unit 1, and discussed the conduct of the test with TUEC and NRC personnel who participated in or witnessed it.

Apparently after repairing leaks found during the first two attempts, the third attempt at a CILRT was successful. It was successfully completed after three electrical penetrations were isolated because the leakage through them could not be stopped. Though the leaks were subsequently repaired and individually tested with satisfactory results, NRC approval was not obtained to perform the CILRT with these penetrations isolated. In addition, leak rate calculations were performed using ANSI/ANS 56.8, which is neither endorsed by the NRC nor in accordance with FSAR commitments.

Accordingly, TUEC shall identify to NRC any other differences in the conduct of the CILRT as a result of using ANSI/ANS 56.8 rather than ANSI N45.4-1972. Additionally, TUEC shall identify to NRC all other deviations from FSAR commitments.

c. Prerequisite Testing

The TRT reviewed FSAR commitments, startup administrative procedures, prerequisite test records, craft personnel qualification records, and discussed them with startup and craft management personnel. The TRT also observed test support craft personnel at work and interviewed some of them to gain familiarity with their attitudes and capabilities.

The review of test records revealed that craft personnel were signing to verify initial conditions for tests in violation of startup Administrative Procedure-21, entitled: "Conduct of Testing" (CP-SAP-21). This procedure requires this function to be performed by System Test Engineers (STE). Startup management had issued a memorandum improperly authorizing craft personnel to perform these verifications on selected tests.

Accordingly, TUEC shall rescind the startup memorandum (STM-83084), which was issued in conflict with CP-SAP-21, and ensure that no other memoranda were issued which are in conflict with approved procedures.

d. Preoperational Testing

The TRT assessed the preoperational test program by reviewing administrative procedures, interviewing startup personnel, and examining test records, schedules, system assignments, subsystem definition packages, and the master data base.

Problems found with test data are addressed in section III.a of this enclosure. The TRT also found that STEs were not being provided with current design information on a routine, controlled basis, and had to update their own material when they considered it appropriate.

Accordingly, TUEC shall establish measures to provide greater assurance that STEs and other responsible personnel are provided with current controlled design documents and change notices.