

APPENDI.

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-445/91-66 Unit 1 Operating License: NPF-87
50-446/91-66 Unit 2 Construction Permit: CPPR-127
Expiration Date: August ., 1992

Licensee: TU Electric
Skyway Tower
400 North Olive Street
Lock Box 81
Dallas, Texas 75201

Facility Name: Comanche Peak Steam Electric Station, Units 1 and 2

Inspection At: Glen Rose, Texas

Inspection Conducted: November 20, 1991, through January 7, 1992

Inspectors: D. N. Graves, Senior Resident Inspector
R. M. Latta, Resident Inspector
R. J. Evans, Resident Inspector

Reviewed by: L. A. Yandell 1/22/92
L. A. Yandell, Chief, Project Section B Date
Division of Reactor Projects

Inspection Summary

Inspection Conducted November 20, 1991, through January 7, 1992
(Report 50-446/91-66)

Areas Inspected: Unannounced resident safety inspection of Unit 2 activities were performed including: followup on previously identified items and NRC Bulletins; followup on construction deficiencies; preoperational test program implementation verification, including plant tours, prerequisite test witnessing, work observations and the system turnover process; and corrective actions.

Results: Within the areas inspected, further improvement was noted in general plant housekeeping. In general, the preoperational activities observed were well controlled and executed; however, one violation (paragraph 6.4) was identified regarding the falsification of a prerequisite test's data by an instrument and control (I&C) technician. Strong management oversight was evident in the resolution of construction deficiencies and quality assurance involvement in corrective actions for identified deficiencies.

Open Item 445/9013-03; 446/9013-03 and Inspection Followup Item 445/9026-02; 446/9026-02 were reviewed and closed. Significant deficiency analysis

reports (SDARs) CP-86-24, CP-87-103, CP-87-108, CP-88-L21, CP-91-04, and CP-91-07 were reviewed and closed. IE Bulletin 77-01 and NRC Bulletin 39-02 were reviewed and closed.

Inspection Conducted November 20, 1991, through January 7, 1992
(Report 50-445/91-66)

Areas Inspected: No inspection activities were conducted on Unit 1, however, Open Items 445/9013-03 and 445/9026-02 were closed for Unit 1 based on the programmatic similarities with the associated Unit 2 open items.

Results: Not applicable.

DETAILS1. PERSONS CONTACTED

- *M. R. Blevins, Director of Nuclear Overview
- *H. D. Bruner, Senior Vice President
- R. J. Daly, Manager, Startup
- *J. L. French, Independent Advisory Group
- J. H. Greene, Licensing Engineer
- *S. W. Harrison, Manager, Unit 2 Project Overview
- *T. L. Heatherly, Licensing Engineer
- *T. A. Hope, Unit 2 Licensing Manager
- D. C. Kross, Unit 2 Operations Manager
- *D. M. McAfee, Manager, Quality Assurance
- J. W. Muffett, Manager of Project Engineering
- *S. S. Palmer, Stipulation Manager
- *D. Pendleton, Unit 2 Regulatory Services Manager
- *C. K. Rau, Unit 2 Project Manager
- *D. W. Schmidt, Quality Construction Supervisor
- *R. L. Spence, Unit 2 Quality Control Manager
- *C. L. Terry, Chief Engineer
- *O. L. Thero, Citizens Association for Sound Energy
- *J. E. Wren, Construction Quality Assurance Manager

*Present at the exit interview.

In addition to the above personnel, the inspectors held discussions with various operations, engineering, technical support, maintenance, and administrative members of the licensee's staff.

Also present at the exit interview was V. G. Gaddy, NRC Intern.

2. UNIT 2 TOURS (71302)

During this inspection period, routine tours of the Unit 2 facility were conducted in order to assess equipment conditions, security, and adherence to regulatory requirements. In particular, plant areas were examined for evidence of fire hazards and installed instrumentation damage and to determine the acceptability of system cleanliness controls and general housekeeping. Additionally, the inspectors conducted evaluations of existing plant programs for the preservation and maintenance of installed systems and components.

During the performance of routine plant tours, no violations or deviations were identified. Housekeeping, including the control of combustible materials, was good and appropriate provisions for the segregation and control of Q-listed material had been implemented. The inspectors also determined that installed systems and components were being appropriately protected and that, in general, the observed work activities were well controlled.

3. ACTIC (ON PREVIOUS INSPECTION FINDINGS (92701)

3.1 (Closed) Open Item 445/9013-03; 446/9013-03: Replacement component control and preventive maintenance program concerns

TU Electric's letter, TXX-4109, dated February 13, 1984, documented a deficiency involving grounded secondary windings on ferroresonant transformers used in the Westinghouse safety-related inverters. When the TXX letter was submitted, there were nine spare transformers in the warehouse and four transformers installed in each unit. The proposed corrective actions for the identified transformer deficiency included the return of all 17 transformers to Westinghouse for repair by the manufacturer (General Electric).

As a result of the licensee's investigation of a reactor trip which occurred on April 4, 1990, it was determined that only 12 of the 17 transformers on site had actually been returned to Westinghouse for repair. As previously documented in NRC Inspection Report 50-445/90-13; 50-446/90-13, three of the five spare transformers not returned to Westinghouse for repair were subsequently installed in Unit 1.

During this reporting period, the inspectors confirmed that two of the nonrepaired transformers installed in Unit 1 had been satisfactorily tested in accordance with the test procedure described in Westinghouse Technical Bulletin NSD-TB-84-11. It was also determined that a third transformer, installed in Unit 1, has been in operation since August 1989, which satisfied the 6-month operating time specified in NSD-TB-84-11 (i.e., indicative of a satisfactory transformer). The two remaining transformers have been satisfactorily tested in accordance with NSD-TB-84-11.

The inspectors also reviewed the licensee's response to this issue which was contained in TU Electric's letter, TXX-91191, dated May 31, 1991. As documented in this letter, this oversight occurred due to the existence of two material management organizations. The Operations Material Group and the Construction Material Group each served their respective organizations. The five transformers which were not returned to the manufacturer were in the custody of the Operations Material Group. Because the two organizations operated separately, the requirement to return the potentially defective transformers was not adequately communicated to the Operations Material Group. Currently, the Material Management Organization provides an integrated material control function and serves both operation and construction, which should preclude recurrence of this type of event.

A separate but related issue identified in this open item involved a weakness in the licensee's in-service maintenance (ISM) program. The inspectors reviewed Corrective Action Request CAR-87-070, which incorporated the licensee's response to several ISM issues, including some components which were inadvertently not included in the preventive maintenance program.

Based on the inspectors' review of the licensee's corrective and preventive actions associated with the safety-related ferroresonant transformers and the

ISM program, it was determined that appropriate measures had been implemented to address the identified deficiencies. Therefore, this item is closed for both Units 1 and 2.

3.2 (Closed) Inspector Followup Item 445/9026-02; 446/9026-02: Emergency Diesel Generator Fuel Injection Pump Failure

This issue involved the failure of Emergency Diesel Generator (EDG) 1EG1, Fuel Injection Pump RB-2. Specifically, on July 12, 1990, subsequent to the conduct of a surveillance test (OPT-214A) of the Train A EDG, the licensee identified that five of the nine socket head cap screws, which secured Fuel Injection Pump RB-2, were broken.

During this reporting period, the inspectors reviewed the documentation associated with this issue which included: Operation Notification Evaluations (ONE) Form FX-90-1890, various maintenance work order forms, Technical Evaluation (TE) Forms PE-90-2054 and PE-90-2055, Technical Review Report TRR-90-03, and the Metallurgical Engineer Device reports concerning bolt failure and pump debris. As concluded by the licensee's evaluation of this event, the EDG fuel injection pump socket head cap screws failed by tensile overload. Furthermore, the licensee's evaluations determined that although the cause of the failure of these fasteners could not be definitely established, the probable cause was the presence of foreign material (possible paint chips), which clogged the delivery valve or injector, thus resulting in an overpressure condition. Based on this premise, the licensee initiated corrective actions, which included the examination of the fuel line filters for contamination and the verification of fastener preload on the remaining fuel injector socket head cap screws. This process did not identify any additional deficiencies and the operability of the Train A EDG was established subsequent to the successful completion of surveillance test OPT-214A on July 14, 1991. Additionally, the licensee developed commitment data forms for the Unit 2 EDG fuel injection pumps which incorporated pertinent preventive maintenance actions.

Based on the inspectors' reviews of the supporting documentation, it was determined that appropriate preventive and corrective actions had been implemented to address the identified deficiency for both Units 1 and 2. Therefore, this item is closed for Units 1 and 2.

4. LICENSEE ACTION ON 10 CFR PART 50.55(e) DEFICIENCIES (92700)

4.1 (Closed) Construction Deficiency (SDAR CP-86-24): "Unqualified Space and Motor Heaters"

This potential deficiency involved the use of environmentally unqualified motor operator switch compartment space and motor heaters which were connected to Class 1E circuits. Specifically, for selected Limitorque motor-operated valves and for the Class 1E pump motors associated with the residual heat removal (RHR), charging, and safety injection (SI) pumps, space heaters and motor heaters had been supplied with purchased equipment to be used as a deterrent to moisture buildup and to keep motor windings dry until either the

equipment was placed into service or the equipment was installed in a controlled environment. However, as indicated in Westinghouse Electric Corporation letter, File No. TBX/TCS-1.3.123, dated November 15, 1985, "Motor operator switch compartment space heaters and motor heaters were not included in any environmental testing performed by W. As such, the heaters cannot be considered qualified and could compromise valve operation under accident conditions if connected directly to an IE power source."

As previously documented in NRC Inspection Report 50-445/89-52; 50-446/89-52, this issue, which was determined to be nonreportable by the licensee, was reviewed and closed for Unit 1. During this reporting period, the inspectors reviewed the licensee's final report on this issue, which was contained in TU Electric's letter, TXX-6083, dated November 14, 1986. Additionally, the inspectors reviewed the licensee's supporting documentation for nonreportability and examined the program for disconnecting the space heaters from their Class IE circuits in order to provide proper electrical isolation and separation.

Based on the inspectors review of TU Electric (TUE) Forms 90-21 and 90-29, and the evaluation of a representative sample of startup work packages (SWPs), it was determined that appropriate corrective actions had been implemented to disconnect the power cables to the unqualified space and motor heaters on affected components. The inspectors also concluded that the licensee had appropriately addressed the reportability aspects of this issue. Therefore, this construction deficiency is closed for Unit 2.

4.2 (Closed) Construction Deficiency (SDAR CP-87-103): "Cracked Gears in Limitorque HBC-3 Operators"

This reportable deficiency involved the identification of cracks in the web area of the cast bronze sector gears on Limitorque HBC-3 valve operators. Specifically, as identified on Problem Reports PR 87-128 and -253, two of the bronze sector gears, which are utilized on Limitorque Model SMB-00 motor operators equipped with HBC-3 drives, were found to have visible defects with cracks through the casting area.

As previously documented in NRC Inspection Report 50-445/89-27; 50-446/89-27, this construction deficiency was reviewed and closed for Unit 1 based on the replacement of the defective gears in the 10 Limitorque operators which utilize HBC-3 drives in Unit 1.

Relative to Unit 2, the inspectors determined that the licensee has implemented similar corrective actions, which included the replacement of the defective gears in the 10 Limitorque operators which utilize HBC-3 drives. The inspectors also determined that the licensee had provided appropriate notification of this potential defect to the supplier pursuant to the provisions of 10 CFR Part 21, as documented in TU Electric's letter, TXX-88020, dated January 21, 1988.

Additionally, the inspectors reviewed the work packages for the following valve operators in order to confirm the completeness of these activities:

<u>UNIT 2 VALVE NO.</u>	<u>WORK ORDER NO.</u>
2-HV-4512	SWP-11214
2-HV-4513	SWP-11208
2-HV-4514	SWP-11212
2-HV-4515	SWP-11209
2-HV-4524	SWP-11215
2-HV-4525	SWP-11213
2-HV-4526	SWP-11210
2-HV-4527	SWP-11211
2-HV-4286	WO-C880008361
2-HV-4287	WO-C880007309

No discrepancies were identified during this review process and it was determined that appropriate corrective actions had been implemented to address the identified deficiency, including the required 10 CFR Part 21 reportability notification. Therefore, this item is closed for Unit 2.

4.3 (Closed) Construction Deficiency SDAR CP-87-108: "Auxiliary Feedwater (AFW) Pumps Low Suction Pressure Spurious Trips"

This deficiency involved the spurious actuation of the low suction pressure trip function associated with the AFW pumps. Specifically, the low suction pressure switches associated with the motor-driven AFW pumps and the pressure switches associated with the turbine-driven AFW pump could have caused spurious trip signals. As documented in TU Electric's letter, TXX-6886, dated October 26, 1987, this condition could have resulted in the tripping of the AFW pumps due to pressure oscillations in the suction lines experienced during pump startup. As previously documented in NRC Inspection Report 50-445/89-36; 50-446/89-36, this item was reviewed and closed for Unit 1 based on the removal of the suction pressure trips from the associated AFW pump circuits.

During this reporting period, the inspectors reviewed the licensee's corrective actions for Unit 2, which included the removal of the low suction pressure signals for both of the motor-driven AFW pumps and the turbine-driven AFW pump in accordance with Design Change Authorization DCA-86372. The inspectors also reviewed the governing I&C diagrams (M2-2206 and M2-2207) and determined that appropriate revisions had been incorporated and that the Design Basis Document DBD-ME-206 had been revised to reflect the required functions and operating modes of the AFW pumps, including their essential instrumentation features.

Based on these reviews, the inspectors determined that appropriate corrective actions had been initiated to resolve the identified construction deficiency. Therefore, this item is closed for Unit 2.

4.4 (Closed) Construction Deficiency SDAR CP-88-021: "Overtorquing of Instrumentation Tubing Clamps During Installation"

This construction deficiency involved the potential overtorquing of instrument tubing clamps. In particular, the maximum torque requirements for setting Hilti

Kwik bolts and installing attachments to unistrut channels exceeded the maximum torque for I. C. White Company instrument tubing clamps. As previously documented in NRC Inspection Report 50-445/89-66; 50-446/89-66, this issue was reviewed and closed for Unit 1 based on the incorporation of an alternate tubing clamp design, a revision of the installation specification, and the implementation of instrumentation tubing walkdowns performed in accordance with Procedure CPE-SWEC-FVM-IC-069.

During this reporting period, the inspectors reviewed the licensee's response to this issue, which was documented in TU Electric's letter, TXX-91285, dated October 30, 1991. The inspectors also reviewed the Unit 2 Installation Specification CPES-I-2002, Revision 1, "Installation of Piping/Tubing and Instrumentation," and the controlling tubing support system drawings/isometrics. Additionally, the inspectors reviewed a selected sample of completed work packages associated with the installation of tubing supports.

Based on these reviews, it was determined that the licensee's construction program for Unit 2 safety-related instrument tubing includes the redesign, replacement, or verification of existing installations to confirm their compliance with revised design drawings. Furthermore, the validated design and installation drawings, along with the installation specification, are utilized as the basis for rework/replacement activities and the associated quality control inspections of safety-related tubing clamps.

As determined by the inspectors, these programmatic modifications were consistent with the previously accepted Unit 1 resolution of this construction deficiency in that the new three-bolt clamp tube supports are being used in Unit 2 as a three-directional restraint. The installation drawing permits the three-bolt clamp to be installed on structural steel members, unistrut channels, or concrete surfaces using Hilti Kwik bolts. Additionally, for single-bolt clamp designs using unistrut channels, Unit 2 installation drawings have been revised to allow the use of this clamp on unistrut channels for three dimensional restraint applications.

Based on the above reviews and evaluations, the inspectors determined that the licensee has developed appropriate corrective measures to address the identified deficiency. Therefore, this construction deficiency is closed for Unit 2.

4.5 (Closed) Construction Deficiency (SDAR CP-91-04): "Containment Electrical Penetration Structural Weld Indications"

On June 24, 1991, TU Electric notified NRC Region IV of a potentially reportable deficiency involving rejectable indications in the containment electrical penetration structural welds. As initially reported, this issue involved 75 Unit 2 electrical penetrations, which lacked the volumetric examination required by the ASME Code. Subsequent ultrasonic examination of these penetrations indicated that three of the penetrations contained rejectable indications. During this reporting period, the inspectors reviewed the licensee's final report associated with this issue, which was contained in TU Electric's letter, TXX-91393, dated October 23, 1991. Additionally, the

inspectors reviewed ABB Impell's Calculation 0218-CS-017 and the construction work packages for the affected electrical penetrations (2-E-008, -072, and -073).

Based on these reviews, the inspectors determined that the supporting calculation adequately established that the presence of the identified indications would not have impaired the functional capability of these penetrations. Notwithstanding this analytical basis for the acceptability of these components, Unit 2 project management expeditiously directed the removal (grinding out) of these indications and the weld repair of the subject electrical penetrations. Accordingly, this strong management support, which was reflected in the engineering and construction resources applied to this activity, was identified as an organizational strength.

Based on the above reviews and evaluations, it was concluded that the licensee had appropriately addressed the reportability aspects of this construction deficiency. Furthermore, it was determined that excellent Unit 2 project management oversight had resulted in the creditable resolution of the identified deficiency. Therefore, this item is closed for Unit 2.

4.6 (Closed) Construction Deficiency (SDAR CP-91-07): "Laminar Indications in Auxiliary Feedwater System Pipe"

This construction deficiency involved a potentially reportable condition in which laminar indications were discovered in a section of installed 4-inch carbon steel AFW piping. Specifically, during the licensee's performance of ultrasonic inspection on AFW piping using an "A-scan," ultrasonic scope revealed an area of lamination approximately 7 inches long by 6 inches wide.

As documented in the licensee's final report of this issue, contained in TU Electric's letter, TXX-91413, dated November 11, 1991, two pieces of the pipe were removed from the AFW system and ultrasonic inspection was performed using a second, more advanced "A-scan" scope. This inspection revealed no laminar indications.

Subsequent evaluations performed by the licensee indicated that the initial ultrasonic scope readings were attributable to a loose jam-nut in the transducer lead connection, which resulted in interference in the sound path when the scope was used in the multi-echo mode. As determined by the inspectors, the scope transducer, lead, and connection were replaced and the ultrasonic equipment was recalibrated. This repaired scope was then used to reinspect the subject AFW piping with no indications of laminations identified. Additionally, as established by the licensee, the initial scope had not been utilized in the multi-echo mode during the applicable calibration period; therefore, other readings taken by this scope were not in question.

Based on the inspectors' review of the associated documentation, it was determined that the licensee had implemented appropriate corrective actions to address the identified deficiency. Furthermore, it was concluded that the licensee's determination, that this condition was not reportable, was appropriate. Therefore, this construction deficiency is closed for Unit 2.

5. FOLLOWUP ON NRC BULLETINS (92701)

5.1 (Closed) IE Bulletin 77-01: "Pneumatic Time Delay Relay Setpoint Drift"

This bulletin identified operational difficulties associated with setpoint drift on pneumatic time delay relays used in the control circuitry for selected emergency diesel generators. Specifically, the relays involved were identified as ITE Imperial, Catalog Nos. J20T3/J13P20 and J20T3/J13P30. As previously documented in NRC Inspection Report 50-445/89-22; 50-446/89-22, this issue was reviewed and closed for Unit 1.

During this reporting period, the inspectors reviewed the licensee's corresponding corrective actions for Unit 2. In particular, the inspectors reviewed the application of these pneumatic time delay relays as delineated in Stone and Webster Engineering Corporation Letter 2SWEC-9102192, dated December 5, 1991. Based on this review, it was determined that 18 ITE Imperial relays, Catalog No. J13P3012, were identified on Unit 2 elementary diagrams. However, none of these relays were employed in safety-related functions. Based on this review, the inspectors concluded that the technical concerns identified in IE Bulletin 77-01 had been appropriately resolved. Therefore, this item is closed for Unit 2.

5.2 (Closed) NRC Bulletin 89-02: "Stress Corrosion Cracks in Bolting Material for Anchor Darling Swing Check Valves"

This bulletin addressed a generic concern with Anchor Darling swing check valves, Model 5350W, and check valves of similar design which utilize Type 410 stainless steel internal preloaded bolting. Specifically, several operating plants reported stress-corrosion induced cracks on the bolts which secure the check valve swing arm to the valve body. The bulletin requested licensees to inspect the retaining block stud on the particular model of Anchor Darling check valves and to identify and inspect other valves using similar designs and materials.

During this reporting period, the inspectors reviewed the licensee's response to this bulletin, which was contained in TU Electric's letter, TXX-91434, dated November 26, 1991. As stated in this letter, TU Electric had not purchased any Anchor Darling, Model 5350W, swing check valves for application at Comanche Peak Steam Electric System. Furthermore, the licensee stated that they had not purchased any check valves with highly stressed, preloaded, internally wetted pins or threaded members which employ Type 410 martensitic stainless steel or 17-4 pH stainless steel.

Based on the inspectors' review of the licensee's response to this bulletin, it was determined that this item is closed for Units 1 and 2.

6. PREOPERATIONAL TEST PROGRAM IMPLEMENTATION VERIFICATION (71302)

Relative to the preoperational test program, the inspectors evaluated implementation of the licensee's management control system to determine if jurisdictional controls were observed for system turnovers, that

systems/components undergoing testing were properly tagged and controlled, that maintenance activities and preoperational tests were adequately performed, that test discrepancies were properly identified, and that test procedures and operational verifications were satisfactorily conducted.

6.1 Prerequisite Test on Reactor Coolant Pump No. 3 Motor

The inspectors witnessed the performance of the initial motor rotation and prerequisite test run for the reactor coolant pump Motor No. 3, including the pretest briefing. The test engineer conducted the briefing in the control room with the personnel participating in the test, including the field supervisor, the Unit 2 reactor operator, an auxiliary operator, an electrician, and an I&C technician. The briefing included a discussion of the parameters that needed to be observed and recorded, and which indications would be cause for terminating the test.

The inspectors verified with the test engineer that all of the required test prerequisites had been met in accordance with Test Instruction XCP-EE-9, "Initial Motor Rotation and Run-in." These prerequisites included items such as temporary motor cooling, cooling air flow paths, calibration of protective relays, motor case grounding, and decoupling of the pump from the motor.

The initial motor rotation check was performed to confirm that the motor was rotating in the correct direction. This step was performed, and the motor was subsequently started and operated for 2 hours. The inspectors verified that motor bearing temperatures and stator winding temperatures were being monitored as required.

During the performance of this test, no deficiencies were identified, and the test was conducted in a cautious, professional manner.

6.2 System Flush Witnessing

During this reporting period the inspectors witnessed all aspects of the system flushing activities associated with the refueling water storage tank supply header to the RHR and SI pumps. These activities were conducted in accordance with Procedure XCP-ME-4 and Flush Plan No. 2FP-5800-08 A/B. In particular, the inspectors reviewed the prerequisite test documentation which verified the proper valve lineups and the availability of support systems/components. The inspectors also reviewed the prerequisite test documentation, which verified the proper valve lineups and the availability of support systems/components. Additionally, the inspectors witnessed the starting of the RHR pumps and the SI pumps and the succeeding system flow path initiating activities. Subsequent to the completion of these flushing activities, the inspectors witnessed the system cleanliness verifications of the associated suction line strainers.

Based on the review of these test records and work observations, the inspectors determined that these prerequisite test activities were properly performed in accordance with the governing procedures, including the cleanliness requirements specified in Startup Administrative Procedure SAP-24 "System Cleanliness

Requirements and Control." It was also noted that the startup test personnel were knowledgeable of test parameters and the associated acceptance criteria.

No deficiencies were identified during the flushing of the refueling water storage tank supply header and, in general, it was determined that these prerequisite flushing activities were well controlled and executed and that the test results were properly documented.

6.3 AFW Pump Motor Installation

The inspectors observed a portion of the activities associated with installing the motor for AFW Pump 2-02 (Startup Work Authorization 81108). The rigging activities were observed to be in accordance with the work document. Installation of the motor was delayed when the construction personnel determined that a flush pipe support provided insufficient clearance to allow the motor to pass through the opening. Work was halted while arrangements were made to remove the section of flush pipe interfering with the motor installation.

During a review of the work document, the inspectors observed that it contained a Unit 2 impact form, which is a mechanism for assessing impact of Unit 2 activities on Unit 1. While this form was not required per Startup Administrative Procedure CP-SAP-06, "Control of Work on Station Components after Release from Construction to Startup," it had been completed and included in the package. The impact sheet instructions stated, in part, that the work document was to be returned to Unit 2 work control center for a new impact analysis prior to pump installation. When questioned by the inspectors why a new impact analysis had not been performed, the construction foreman and construction engineer replied that this was not necessary because the pump had been decoupled from the motor and had not been removed. The inspector then questioned the individual who wrote the impact sheet and determined that the intent had been to return the work document for a new impact analysis prior to motor installation. This intent was not conveyed in the text of the impact sheet, nor was the instruction questioned by the construction foreman. The impact sheet was subsequently revised to clearly state the author's intent and work was continued. While in this instance the lack of clarity in the instruction and questioning by the foreman had no safety significance, it demonstrates the need for emphasis on attention to details during the performance of work activities.

6.4 Falsified Prerequisite Test Data

On December 6, 1991, the NRC was informed by the Unit 2 startup manager that an I&C technician had falsified the data pertaining to a prerequisite test.

The technician had been directed to calibrate, if necessary, and perform prerequisite Test Instruction XCP-EE-28, "Plant Computer/Emergency Response Facilities Computer Field Input Verification," on Temperature Element 2-TE-2496-1, which was the Train B motor-driven AFW pump outboard bearing's temperature input to the plant computer. The calibration check was performed under SWP Z-10595 with the data recorded on Data Sheet ICA-105-2. The task was defined as a function check only, with the provisions that as long as the "as-found" values were within tolerance, no calibration would be

necessary. The tasks were completed and forwarded to the startup test engineer for review. The test engineer observed that two of the data points recorded on the ICA-105-2 were incorrect and directed the technician to perform the tasks again using the proper inputs. This additional XCP-EE-28 test data sheet was documented, by the technician, to have been completed and a new XCP-EE-28 test data sheet (for information only) was placed in the SWP reflecting the new data. The EE-28 test data was not part of the SWP and was subsequently filed in the startup record center in accordance with Startup Administrative Procedure CP-SAP-11, "Review, Approval, and Retention of Test Results."

On December 5, 1991, an I&C supervisor was reviewing the SWP for closure and observed that the data recorded on the ICA-105-2 in the package, which was recorded for information only, did not match the data that was on the copy of the XCP-EE-28 test data sheet, which had been included in the work package by the technician. The supervisor questioned the technician regarding the difference in recorded data and the technician responded that he had performed the XCP-EE-28 prerequisite test per the test engineer's instructions. The supervisor then queried the technician as to who had assisted in the performance of the XCP-EE-28 test, knowing that it typically required two or three technicians to be performed in a timely manner. The technician initially replied that he had performed it by himself, but, under further questioning by the supervisor, admitted that he had entered the data without actually performing the test.

Unit 2 management was notified late in the afternoon on December 5, and TU Electric management was notified the following morning. The resident inspectors were also notified on December 6. TU Electric management terminated the individual's protected area access and instructed him to report to work on the morning of December 9. Upon arriving for work, the individual was interviewed by the startup test manager, at which time he again admitted falsifying the test data and indicated to the startup test manager that there were no unusual circumstances involved and that no programs or procedures had influenced him in his actions. Following this interview, the individual's employment was terminated.

TU Evaluation Form 91-3109 was written to document the occurrence of this event and to provide a final resolution of the issue. In addition to reperforming the prerequisite test to obtain the correct data, the licensee was manually reviewing vaulted work documents to identify any other activities that the technician may have been involved in that may require retesting. This review was in progress at the end of this inspection period. The licensee also conducted a meeting with all startup test engineers and test technicians to discuss the seriousness of falsification of documentation. The individual had been assigned to the startup organization since September 23, 1991, and was qualified as a Level II test technician on November 11, 1991. Prior to this period, he had been employed at other facilities.

The falsification of prerequisite test data constituted a violation of 10 CFR Part 50.9, which requires, in part, that information required to be maintained by the Commission's regulations by an applicant shall be accurate in all material respects. Appendix B of 10 CFR 50, Criterion XVII, requires, in

part, that sufficient records shall be maintained to furnish evidence of activities affecting quality, and that the applicant shall establish requirements concerning record retention. Contrary to these requirements, the prerequisite test data filed regarding the performance of the XCP-EE-28 test was not accurate in that the documented test was not performed.

6.5 Summary of Findings

The observation of prerequisite testing, including training, was well controlled and executed. The observed maintenance activity was well performed and controlled with the exception of the Unit 2 impact sheet. One violation of 10 CFR Part 50.9 occurred as a result of a technician falsifying prerequisite test data.

7. SYSTEM TURNOVER PROCESS INSPECTION (71302)

An inspection of the turnover process of plant equipment to the startup organization was performed to ascertain whether the process was effectively controlled by the licensee. Specific items inspected included review of selected startup administrative procedures, desktop review of a subsystem recently turned over to startup, walkdown of the subsystem, and review of the schedule for turnover of plant systems to operations.

7.1 Startup Administrative Procedures Review

The requirements and responsibilities for transferring custody of systems for subsystems from construction to startup and from startup to operations were described in Procedure CP-SAP-03b, Revision 3, "Turnover of Station Components from Construction to Startup." The procedure listed the requirements for developing system turnover packages, compiling punchlists of incomplete work or damaged equipment, and distribution, review, and acceptance of the turnover packages. A second procedure, CP-SAP-03A, Revision 2, "Release of Station Components from Construction to Startup," described the requirements and responsibilities for transferring jurisdictional control of components for performance of prerequisite testing. This procedure controlled the release of components to startup to allow for testing without the actual transfer of custody of the components. A review of the procedures did not identify any deficiencies in the administrative control of the turnover process.

Tagging of plant components was described in Procedure CP-SAP-04, Revision 9, "Jurisdictional/Custody Transfer Tagging." Since the majority of component release and turnover to startup had been completed, the procedure was recently revised to no longer require the use of jurisdictional and custody tags or stickers. Alternate procedures were in place to control danger, caution, and temporary modification tags. Preventive maintenance of equipment in control of startup was governed by Procedure CP-SAP-25, Revision 5, "Unit 2 Preventive Maintenance Program." Additionally, a startup maintenance department had been established to monitor and control component maintenance. This group reported directly to the startup manager. Although this area was not inspected in depth, the overall control of preventive maintenance, including staffing, appeared to be very good.

Procedure CP-SAP-26, Revision 0, "Startup Operating Instructions," described the development, approval process, and use of startup operating instructions (SOIs). SOIs provided instructions for system operation necessary to support testing (such as flushing) where normal operating procedures do not exist. Section 4.3 described the process of approval of SOIs. The responsible startup test engineer prepared the SOI and the shift supervisor approved the SOI. Per Step 4.3.4, the approved SOI was assigned a number, logged into the index, and placed in the SOI book in the control room. Step 4.3.5 provided instructions for operations management to periodically (at least every 14 days) review the SOI book and indicate their concurrence by signing the cover sheet.

An audit of the SOI book, located in the Unit 2 control room, was performed. The inspector determined that instead of a SOI book or a master index, a filing cabinet filing system, with multiple indexes by system, was utilized. Additionally, two procedures were found that did not have the required 14-day management reviews. Additionally, the operations management review, required by Section 4.5 of the procedure, was inconsistent and not clearly described in detail in the procedure. This apparent weakness in management control over SOIs was reported to operations management. Prompt corrective actions were taken, including a review of Procedure CP-SAP-26 requirements, audit of the file system, and discussion of operations' responsibilities with startup personnel. The licensee planned to revise CP-SAP-26 to delete Step 4.3.5 (the step was not needed because each procedure had expiration dates, normally 30 days), revise the requirement for a book to exist, and clarify the requirements for review by operations' management.

7.2 Desktop Review of Subsystem Boundary Package

A review of the Unit 2 Subsystem 2-4901B, chemical and volume control system, was performed to determine if the boundaries were properly established. The review consisted of inspection of the applicable boundary drawings, the computer database of components in the boundary package, and the most current system punchlist. All components listed in the database were shown on the boundary drawings. The boundary appeared well defined and all lines contained definite boundary endpoints. This database was determined to be accurate and complete. A second database that listed each individual component in the plant and who had jurisdictional custody was noted to exist. A third database was used to list all open items, such as nonconformance reports, against each component. Several drawing errors were observed but none were considered significant. The minor deficiencies were referred to the licensee. The turnover package was reviewed and was noted to have all attachments that were required by procedure. The requirements for administrative control of boundary packages were determined to be effectively implemented.

7.3 Subsystem Walkdown

Portions of Boundary Subsystem 2-4901B, part of the chemical and volume control system, were walked down to determine if construction of the system had been completed. Pipe spool pieces were missing in selected areas to support system flushing. The licensee planned to install the permanent spool pieces after

flushing. Selected valve stem leakoff lines were disconnected or had incorrect slopes due to being stepped on. Rework of tubing was planned for a later date because of potential damage that may occur as construction and startup continues. Permanent plant tags were observed on the equipment, but not jurisdictional/custody tags (no longer required by procedure). Overall, the equipment was observed to be permanently installed and ready for testing. Pipe supports were incomplete but were to be turned over under a different package and process.

7.4 Turnover Schedule

Most plant components are under the control of startup. A few systems had been turned over to operations, including fire protection and ventilation subsystems, communications, security, and waste management systems. A large percentage of systems are scheduled for turnover in the September-October 1992 time frame to support Unit 2 fuel load, currently scheduled for December 1992. The high number of systems scheduled for turnover in such a short time frame will put a heavy work load on operations to comply with Procedure STA-802, Revision 9, "Acceptance of Station Systems and Equipment." The general acceptance process consists of a review of the punchlist, walkdown of the systems, and review of testing status. The heavy turnover schedule may overload the department performing the acceptance and could lead to inadequate reviews to meet the fuel load schedule. Startup has planned to turn over subsystems early if the criteria for turnover are completed. No indications of premature turnovers to meet schedules were identified.

7.5 Summary of Findings

The startup administrative procedures were found to be complete and effectively implemented. Lack of compliance with one procedure was identified during the inspection, but the licensee took prompt corrective action to correct the deficiency. One boundary package was reviewed and was noted to be technically accurate and in compliance with the applicable administrative procedure. A walkdown of the boundary was performed and no significant discrepancies were identified. The current process for the turnover of systems can be effectively completed by the licensee using the controls currently established, as long as jurisdictional boundaries are maintained and adhered to. However, the inspectors noted that the high number of system turnovers scheduled for the September through October 1992 timeframe could significantly challenge the licensee's resources. Over all, the turnover of systems from construction to startup was a well controlled and implemented process.

8. CORRECTIVE ACTION (92700, 92720)

During this reporting period, the inspectors reviewed the licensee's corrective action program to determine if adequate management controls and administrative procedures had been developed to identify deficiencies, provide comprehensive followup action, and correct safety-related deficiencies.

8.1 Transfer of Material from the Investment Recovery Yard

As a result of the routine review of all completed TUE Forms provided to the inspectors, a procedural concern regarding the transfer of surplus material from the licensee's investment recovery yard to the construction warehouse was identified. In particular, as documented on TUE Forms 91-2039, -2386, and -2570, several instances had been identified involving the return to safety-related stock of material from the investment recovery yard. Further evaluations within this area revealed that this issue had been identified during the conduct of Quality Assurance Surveillance QAS-91-135, as documented on a programmatic/repetitive TUE Form 91-2699.

In addition to the above referenced reviews, the inspectors conducted a walkdown of the investment recovery yard, which is located north of the Unit 2 construction parking lot in the owner controlled area, and participated in a meeting with representatives from the materials management, licensing, and quality assurance organizations. Based on the results of these inspection activities, it was ascertained that recent revisions to the governing procedures had been initiated, which precluded the return (quality control acceptance) of safety-related material back into the stock system from the investment recovery yard. Specifically, Materials Management Organization Procedure MMO 4.02, Revision 5, "Receipt, Storage Issues, and Shipping of Construction Material, Parts, and Components," has been modified to control the return of any items, which are returned to the warehouse from the investment recovery yard. Furthermore, this procedure currently prohibits the return of any safety-related material to the warehouse from the investment recovery yard, except material which is to be used in a nonsafety-related application.

With respect to the hardware-related deficiency (identified on TUE Form 91-2039), the 16 nuts, which had been returned from the investment recovery yard and were subsequently installed in a safety-related system, were removed and replaced.

8.2 Copes Vulcan Valve Fasteners

During this reporting period, the NRC was advised of a potentially reportable issue involving the manufacturer's substitution of fastener materials on the bonnet-to-yoke joint on Copes Vulcan valves. Specifically, the subject socket head cap screws were specified to be ASTM A193, B6. However, as identified in TUE Form 91-2592, the installed bonnet to yoke fasteners are potentially nonstrain hardened austenitic stainless steel B8 material (ASTM F837 XM7), which exhibits significantly lower yield strength properties.

Unit 1 was advised of this issue based on the initiation of TEs 3443 and 3454. As a result of these TEs from Unit 2 and the results of the Unit 2 testing, ONE Form FX-91-1663 was initiated on December 10, 1991. This ONE Form identified a generic concern with the fastener material used for mounting the valve yoke to the valve bonnet. An operability determination has been developed by the licensee based on an analysis which indicated that all Unit 1 Copes Vulcan valves have yoke-to-bonnet stress levels which were less than the installed fastener's minimum yield strength.

The inspectors will continue to monitor the licensee's activities within this area and the results of these evaluations will be documented in a subsequent inspection report.

8.3 Summary of Findings

The inspectors determined that appropriate procedural controls had been developed in response to the material control issues identified in the referenced TUE Forms and in Quality Assurance Surveillance QAS-91-135. It was also concluded that the Unit 2 quality organization was instrumental in the early identification and rapid resolution of this potentially significant issue. Accordingly, this aggressive action, which was directed by quality assurance management, is identified as a strength. The inspectors will continue to monitor the licensee's activities in this area and will document the results in a subsequent inspection report.

9. EXIT MEETING (30703)

An exit meeting was conducted on January 7, 1992, with the persons identified in paragraph 1 of this report. The licensee did not identify as proprietary any of the materials provided to, or reviewed by, the inspectors during this inspection. During this meeting, the inspectors summarized the scope and findings of the inspection.