ENCLOSURE 2

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket Nos.:	50-445; 50-446
License Nos.:	NPF-87; NPF-89
Report No.:	50-445/96-11; 50-446/96-11
Licensee:	TU Electric
Facility:	Comanche Peak Steam Electric Station, Units 1 and 2
Location:	FM-56, Glen Rose, Texas
Dates:	August 18 through September 28, 1996
Inspectors:	A. T. Gody, Senior Resident Inspector H. A. Freeman, Resident Inspector P. C. Gage, Reactor Inspector
Approved By:	J. I. Tapia, Chief, Project Branch A Division of Reactor Projects

EXECUTIVE SUMMARY

Comanche Peak Steam Electric Station, Units 1 and 2
NRC Inspection Report 50-445/96-11;50-446/96-11

This resident inspection included aspects of licensee operations, engineering, maintenance, and plant support. The report covers a 6-week period of resident inspection.

Operations

- Operations response to transients continued to be characterized by strong command and control and effective three-way communications (Section O1.1).
- Licensed operators were knowledgeable of degraded system conditions, potential consequences, and the appropriate responses (Section O2.1).
- Initial disposition of the operations notification and evaluation for a danger-tagged valve found out of position was inappropriate and would not have resulted in a root-cause analysis (Section M1.1).
- Appropriate pre-evolution briefings and good communications and self-verification techniques characterized the performance of two slave relay tests conducted by operators (Sections M4.2 and M4.3).

Maintenance

- The inspector identified that a danger-tagged valve found out of position for main feedwater pump maintenance was a violation of Station Administrative Procedure STA-605, "Clearance and Safety Tagging," (Section M1.1).
- Lack of attention to details and poor self-verification techniques led to a number of maintenance performance observations which included: the incorrect measurement of a safety-related pilot cell voltage and personnel safety weaknesses (Section M1.2).
- The method for transferring control of diver lines during an inspection of the service water intake bay was not thoroughly reviewed nor evaluated and led to their entanglement in Service Water Pump 1-01. The inspector determined that there was sufficient line to become entangled in both Unit 1 pumps (Section M1.3).
- The licensee's decision to suspend all diving activities until the resolution of the entangled service water pump plant incident was conservative (Section M1.3).
- A lack of attention to detail was evident in work order packages. Several steps had been performed in two work order procedures without the steps being signed. While not a violation of procedures, this practice did not meet licensee management's expectations (Sections M1.1 and M3.2).

- Instrument and control surveillances were characterized by excellent communications and good procedures adherence (Section M4.1).

- A maintenance preventable functional failure of a centrifugal charging pump lube oil pump coupling led to a conservative decision to inspect another pump's coupling (Section M7).

Engineering

- Appropriate involvement of both engineers and technicians was noted during the identification and repair of reactor coolant system cold leg temperature instrument loops (Section E2.1).

- Engineering appropriately considered the effect of a motor current indicator design change on operations (Section E2.2).

- The containment spray system was maintained and tested in accordance with design documents; however, the Technical Requirements Manual limits for pump flow and head were inconsistent with the implementing surveillance test and the Technical Specification (Section E3.1).

Plant Support

- The excellent use of a remotely operated vehicle and a radio transmitter dosimeter allowed the licensee to retrieve a highly radioactive object while receiving minimal dose (Section R1.2).

Report Details

Summary of Plant Status

Unit 1 remained at approximately 100 percent power for the entire inspection period.

Unit 2 began the inspection period at 100 percent power. On September 18, a lightning strike in the vicinity of the containment building induced a reactor trip. Unit 2 remained in Mode 3 to repair equipment problems until restart on September 20. Power was stabilized at 55 percent on September 22 to complete repairs on a feedwater pump, a heater drain pump, and a turbine plant cooling water pump. On September 27, the unit was returned to full power and remained there through the end of the inspection period.

I. Operations

O1 Conduct of Operations

O1.1 General Comments (71707)

Using Inspection Procedure 71707, the inspectors conducted frequent reviews of ongoing plant operations. In general, the conduct of operations was professional and safety-conscious; specific events and noteworthy observations are detailed in the sections below.

O1.2 Lightning Induced Reactor Trip (Unit 2)

a. Inspection Scope (93702)

On September 18, with Unit 2 operating at 100 percent of rated power, a lightning strike induced a voltage transient in Loops 2 and 4 cold leg temperature instruments of the reactor coolant system. This, in turn, caused a reactor trip. The inspectors responded to the control room and observed the operators' response to the event, including: operator monitoring of annunciators and parameter trends, supervisory oversight, and the implementation of emergency operating procedures.

b. Observations and Findings

The voltage transient caused the indicated temperature to rise on the Reactor Coolant System Loops 2 and 4 cold leg temperature instruments. The increase in indicated temperature caused the temperature compensated over-temperature/nitrogen-16 setpoint to drop for the two channels. The magnitude of the drop was such that the setpoint became less than actual power and caused a reactor trip.

The inspectors responded to the control room and verified that all safety equipment responded as required. The inspectors noted the control room crew responded well to the situation. Their response was characterized by strong command and control and effective three-way communications. The inspectors verified that the crew used the appropriate emergency procedures.

O2 Operational Status of Facilities and Equipment

O2.1 Unit 1 Auxiliary Feedwater System

a. Inspection Scope (71707)

The inspector performed periodic tours of the plant in accordance with Inspection Procedure 71707, discussed observations with the appropriate system engineer and licensee management, and independently verified operator knowledge of current plant conditions.

b. Observations and Findings

During a routine plant tour, the inspector observed that the pump discharge piping to Steam Generator 1-02 in the turbine driven auxiliary feedwater pump was warm to the touch. The inspector was concerned that the backleakage of hot water into the auxiliary feedwater system could heat the auxiliary feedwater piping sufficiently to result in voids and a subsequent waterhammer if the auxiliary feedwater system was actuated.

The inspector discussed the concern with the system engineer and found that the system engineer was aware of the auxiliary feedwater system backleakage from Steam Generator 1-02. The system engineer indicated that the check valve in the discharge piping to Steam Generator 1-02 had already been selected to be replaced with a nozzle check valve during the next refueling outage. In addition, the system engineer indicated that he periodically used an ultrasonic probe to determine if voiding was occurring in the auxiliary feedwater system piping. The system engineer was not aware that the backleakage into the identified portion of piping could be felt so close the pump. He independently walked down that portion of piping and also requested maintenance engineering support to determine the extent of leakage with acoustic monitoring equipment. The leakage was determined to be very small and was not adversely affecting operability.

The inspector questioned several reactor operators on different shifts concerning the indications and consequences of excessive auxiliary feedwater backleakage. The inspector found that all the operators interviewed knew how to identify excessive auxiliary feedwater system backleakage, knew the potential consequences, were sensitive to periodic monitoring of the degraded condition, and were knowledgeable of the abnormal operating procedures for correcting excessive auxiliary feedwater system temperatures.

c. Conclusions

The inspector concluded that the degraded auxiliary feedwater system condition was being appropriately monitored and that existing plant procedures, operator

training, and system engineering involvement precluded the potential for auxiliary feedwater voiding and a subsequent waterhammer from occurring.

O8 Miscellaneous Operations Issues (92901)

O8.1 (Closed) Violation 50-445/9517-01: operators inadvertently aligned the Unit 1 refueling water storage tank to the Spent Fuel Pool X-01 while attempting to purify the refueling water storage tank. The inspectors verified the licensee's corrective actions to prevent recurrence which included: (1) a design modification to the spent fuel pool ventilation registers; (2) the installation of a camera to allow control room operators to monitor spent fuel pool level; (3) management re-emphasis on pre-evolutionary briefs and self checking; and (4) a design change to raise the refueling water storage tank low level alarm above the Technical Specification (TS) required minimum level of 95 percent. The inspectors verified that the licensee's corrective actions had been implemented and concluded that they were sufficient to prevent a similar occurrence.

II. Maintenance

M1 Conduct of Maintenance

M1.1 Main Feedwater Pump (Unit 2)

a. Inspection Scope (62707)

The inspector observed maintenance to repair Main Feedwater Pump 2-01, a risk-significant component within the scope of the maintenance rule, and reviewed the clearance tags and work order procedure.

b. Observations and Findings

On September 23, while observing maintenance activities on the feedwater pump, the inspector noticed that a danger tag was hung on Seal Injection Filter 2-02 isolation valve (2FW-0509). The inspector noted that the tag (2-96-02507-0036) required that the valve be closed but that the valve handle was in line with the piping, which indicated that the valve was open. An auxiliary operator verified that the valve was fully open and reported that information to the control room. The control room directed the auxiliary operator to place the danger-tagged valve in the required (close) position. The licensee then reverified the entire clearance lineup.

TS 6.8.1 requires the licensee to establish, implement, and maintain procedures covering the applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978. TS 6.8.1 applies to Station Administrative Procedure (STA) STA-605, "Clearance and Safety Tagging," Revision 13. Isolation Valve 2FW-0509 being open, contrary to Clearance Tag 2-96-02507-0036, is a

violation of TS 6.8.1 in that STA-605 required that the valve be placed in the required position and prohibited changing the designated position of the valve (50-446/9611-01).

The inspector concluded that the licensee's initial disposition of the incorrect valve position documented on an Operations Notification and Evaluation (ONE) Form was inappropriate. The inspector was concerned that the root cause, whether it was a training issue or the inappropriate manipulation of a danger-tagged valve, would be ignored if dispositioned as "Manager's Trend System." The inspector discussed the issue with the shift operations manager and concluded that the licensee intended to perform further investigations into the issue. The following day, the disposition of the ONE Form was changed to "Deficiency Resolution," which the inspector concluded was appropriate in that it would result in a root cause evaluation.

The inspectors reviewed the work order being used by mechanical maintenance and noted that the workers were performing steps to remove a bearing housing, but had not signed off previous steps, which included verification that appropriate housekeeping boundaries were established and that required piping and temperature instruments to be removed. The inspectors noted that these activities had in fact been accomplished. The inspectors concluded that this was a lack of attention to detail and did not meet management's expectations for performing and documenting work.

M1.2 Class 1E Station Batteries Weekly Inspection

a. Inspection Scope (61726)

The inspectors reviewed Procedure MSE-S0-5000, "Class 1E Station Batteries Weekly Inspection," Revision 0, and observed portions of the weekly battery surveillance for the Unit 1, Train A batteries.

b. Observations and Findings

While observing pilot cell voltage measurements on Station Battery BT1ED1, the inspector noted that the electricians did not connect the voltmeter in accordance with the referenced procedure diagram. For personnel safety reasons, the inspector waited until the electrician's hands were clear of energized equipment and then questioned them on the improper voltage measurement. The electricians reviewed the measurements that they had just taken and agreed that they had incorrectly measured the pilot cell voltage. The inspector observed the electricians properly measure the pilot cell voltage and document the correct data in the work package.

The inspector noted that Step 8.2.3 of Procedure MSE-S0-5000 was identified with a V symbol, which stood for verification and required either a documented signoff or data entry. The inspector identified that neither the person performing the step nor the data recorder were aware of the mistaken voltage reading.

The inspector discussed the lack of self-verification with licensee management. Licensee management agreed that the lack of self-verification did not meet their expectations.

The inspector noted that the licensee did not initiate a ONE form on the personnel error. The inspector discussed the threshold for writing ONE forms with the site vice president at an interim exit meeting. The site vice president discussed his expectations regarding writing ONE forms with the electrical maintenance manager. Subsequently, a ONE form was written concerning the lack of self-verification. The inspector concluded that it was written clearly and properly dispositioned.

The inspector also noted that, while one electrician adjusted the voltage, the other measured the 135 Vdc output of the Class 1E battery charger using a digital voltmeter. The electrician measuring the voltage had both hands holding test leads inside the energized cabinet with the voltmeter balanced on one raised leg while balancing himself with the other leg. The inspector was concerned that the electricians were not demonstrating the proper attention to electrical safety and provided the observation to licensee management.

The inspector concluded that the observed routine surveillance activity demonstrated a lack of attention to detail by electricians in the areas of self-verification and personal safety.

M1.3 Diver Hose Becomes Entangled in Service Water Pump

a. Inspection Scope (62707, 71707)

The inspector's review of an incident in which a diver's hose became entangled in an operating service water pump included observation of a pump recovery planning meeting, a performance enhancement review committee meeting, an inspection of the service water intake bay layout, and a discussion of the causes and preventive measures with management.

b. Observations and Findings

On September 4, a contract dive team was performing an annual inspection of the service water intake structure for silt, debris, and freshwater clams when the diver's lines became entangled in a running Unit 1 service water pump. The diver disconnected the lines and made an emergency ascent to the surface. At the same time, control room operators noted a sudden drop in indicated flow rate and secured the running pump.

The inspection was being conducted in a common bay that supplied all four service water pumps (two per unit). From west to east, the pumps are ordered: 1-02, 1-01, (Unit 1); 2-02, 2-01, (Unit 2). Because the diver was using hard hat equipment, line tenders were required to assist the diver and to ensure that the lines

did not drift into the pump bays. The dive team was using two tenders to control the lines (one near each end of the walkway). When control of the lines was passed from the individual at the east side of the walkway to the individual at the west side, the east side tender let go of the lines. The inspector calculated that the amount of free line when the transfer took place was more than sufficient to become entangled in the service water pump. Additionally, the inspector found that, while improbable, there was enough line in the water to become entangled in both Pumps 1-01 and 1-02.

Discussions with licensee management and other personnel involved in the incident revealed that the pre-evolutionary brief was thorough in providing direction to personnel involved in emergency procedures, general control of hoses, personnel safety practices, communication responsibilities, and coordination responsibility. Nevertheless, the inspector found that the specific method for transferring control of the diver's lines was not reviewed and evaluated sufficiently prior to the dive to prevent the incident. The inspector concluded that the licensee's decision to declare the service water pump operable following visual inspections and a surveillance test was appropriate. The inspector noted that the licensee's decision to cancel any further diving activities, including a dive of the safe shutdown impoundment, until the plant incident review completed was conservative. The inspector concluded that the licensee's decision to classify the event as a plant incident was appropriate.

M1.4 Conduct of Maintenance Conclusions

The inspectors concluded that maintenance was conducted in a manner which did not always assure that personnel safety and equipment operability were maintained. Several examples of weak attention to detail in the planning and conduct of maintenance were directly observed by the inspectors. Poor planning resulted in a diver's hose being entangled in a running service water pump (Section 1.3). Electricians were observed to measure safety-related battery voltage incorrectly and demonstrate weak personal safety practices (Section M1.2). A violation was identified by the inspectors when a danger-tagged valve was found out of position (Section M1.1). In addition, the ONE form written on the danger-tagged valve finding was not initially characterized in a manner that would result in the cause being identified.

M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 Unit 2 Steam Plant Pump Failures

a. Inspection Scope (62707)

In accordance with NRC Inspection Procedure 62707, the inspectors periodically observed the conduct of repairs on several steam plant pumps within the scope of the maintenance rule to determine the cause of the failures and the licensee's corrective actions.

b. Observations and Findings

The inspectors observed a mechanic honing damaged edges on the heater drain pump casing while not wearing protective eye wear. The inspectors discussed the observation with the mechanic, who immediately put safety glasses on. The inspectors discussed this observation with maintenance management and they indicated that the mechanic was not meeting their expectations regarding personnel safety. The inspectors agreed.

The inspectors planned to review the licensee's root cause analysis of the pump failures and their maintenance rule disposition as an inspection followup item (IFI 50-446/9611-02).

M3 Maintenance Procedures and Documentation

M3.1 Unit 2 Rod Drop Testing

a. Inspection Scope (71707, 62707)

During a plant tour on September 19, the inspectors observed reactor engineers implement portions of rod drop testing in accordance with Work Order 5-96-500300-AB.

b. Observations and Findings

The inspector reviewed the work package and found that work was in progress without an approval signature. The inspector questioned the reactor engineer, who indicated that they had discussed the work with the Unit 2 supervisor in a pre-evolutionary brief and that he directed them to begin work. The inspector questioned the unit supervisor, who indicated that the reactor engineers were only setting up equipment and that he had not given permission to begin rod drop testing.

The inspector also observed that the space on the work order for the radiation protection signature had an "N/A" in it. Rod drop testing procedure required the

reactor engineers to enter the Unit 2 containment to set up their equipment. The inspector also questioned the reactor engineers on the "N/A" and they indicated that they had discussed the containment entry with the lead radiation protection technician.

The inspector observed a reactor engineer perform work inside an energized cabinet while wearing a metal ring and watch. Once the reactor engineer paused to connect the next wire, the inspector discussed electrical safety practices with the engineer and he removed the ring and watch.

The inspector discussed conduct of maintenance with operations, radiation protection, and reactor engineering management. The shift operations manager discussed his expectations regarding work package signatures with the unit supervisor and issued a lessons learned message to all operations supervision. The radiation protection manager discussed when it is appropriate to place an "N/A" in the radiation protection block with the work control manager. The reactor engineering manager reinforced his expectations regarding attention to detail and electrical safety to his reactor engineers.

The inspector concluded that work activities in this area were not meeting licensee management expectations. Additionally, the inspector concluded that the observations represented poor electrical safety practices by engineering personnel and a lack of understanding of work document expectations by unit supervision.

M3.2 Staging and Partial Fabrication of Turbine-Driven Auxiliary Feedwater Pump Piping

a. Inspection Scope (71707, 62707)

During a plant tour on September 19, the inspectors observed contract personnel implement portions of Work Order 2-95-100995-00, which involved the installation of a 6-inch vent line for the turbine-driven auxiliary feedwater pump flash tank for Design Modification 95-000054-00-00.

b. Observations and Findings

The inspector noted that the work was being performed safely and in accordance with station procedures. A fire permit was properly posted and a fire watch was present. The welder was using weld material with the proper documentation. The inspector found that the workers had completed a number of steps that were not initialed, some had been completed several days earlier. The inspector questioned the contract supervisor present and he initialed the steps that had been completed.

M3.3 Maintenance Documentation Conclusions

The inspectors noted that a fairly high percentage of the maintenance activities observed involved findings of incomplete or incorrect documentation. These types

of observations are discussed in Sections M1.1, M3.1, and M3.2. The inspector concluded that these observations were a departure from previous performance and represented poor documentation and attention to detail.

M4 Maintenance Staff Knowledge and Performance

M4.1 Instrument and Control Surveillance Observations

a. Inspection Scope (61726)

The inspectors observed all or portions of the following surveillance tests:

- Steam Generator 1-01 narrow range level channel operational test and calibration (INC-7322A) on September 18
- Unit 2 Reactor Coolant Flow Loop 3 channel operational test and calibration (INC 7768B) on September 18

b. Observations and Findings

The inspectors found that the surveillances were performed professionally and that the communication between the technicians was excellent. The surveillance procedures were followed and verification and independent verification steps were performed correctly.

M4.2 Unit-1, Train B, Safeguards Slave Relay K614 Actuation Test

a. Inspection Scope (62703)

On August 20, the inspector observed the licensee perform a Train B safeguards slave Relay K614 actuation test.

b. Observations and Findings

The pre-evolutionary brief was focused on self-verification and expected plant response, which the inspector found appropriate. The unit supervisor established an environment conducive to participation of the personnel involved, and all personnel involved in the evolution took part in the discussion.

During the surveillance test, operators appropriately communicated with each other and unit supervision. The inspector noted that good independent and self-verification techniques were used.

The inspector reviewed past surveillances and found that the licensee had performed the quarterly surveillance within the required TS interval for the past 3 years. The inspector reviewed the Updated Final Safety Analysis Report and plant

drawings, determined that the slave relay test satisfied the licensee's commitments to periodically test the engineered safety feature actuation signal, and concluded that the surveillance test was sufficient to partially verify the operability of the containment ventilation isolation.

M4.3 Unit 1, Train A, Safeguards Slave Relay K609 Actuation Test

a. Inspection Scope (61726)

On August 30, the inspector observed the licensee perform a Train A safeguards slave Relay K609 actuation test. The test was being reperformed due to Train A emergency diesel generator speed fluctuations observed the previous day. The inspector questioned operators and technicians on the fluctuations and subsequent troubleshooting efforts and testing prior to performance of the surveillance test on August 30.

b. Observations and Findings

The inspector reviewed the troubleshooting of the Train A emergency diesel generator speed control, which included a complete system walkdown and visual inspection, and found the scope appropriate. In addition, a complete emergency diesel generator surveillance was performed while monitoring portions of the speed and voltage control circuitry.

The inspector noted that the pre-evolutionary brief prior to performing the slave relay test appropriately focused on equipment and personnel safety. The contingency action plan considered the potential failure modes and the appropriate operator actions, both in the control room and in the field. The inspector noted that the contingency plans considered the troubleshooting effort and included compensatory actions which would provide diagnostic information in addition to safety controls.

The slave relay start of the emergency diesel generator start was performed satisfactorily and the surveillance was completed satisfactorily.

M7 Quality Assurance in Maintenance Activities

a. Inspection Scope (62707)

The inspectors reviewed a licensee finding of improperly performed maintenance on a centrifugal charging pump/lube oil pump coupling. The inspection included a review of the maintenance procedure and work orders used to perform the maintenance and a review of the licensee's actions to correct the problem.

b. Observations and Findings

On September 10, a Unit 1 control room operator noted that the light for the running centrifugal charging pump auxiliary lube oil pump was lit, indicating that the pump was running on Pump 1A. The auxiliary lube oil pump starts when oil pressure from the shaft-driven lube oil pump falls below a preset value. Operators secured the centrifugal charging pump after starting the other train pump. The licensee's subsequent investigation revealed that the coupling between the shaft-driven lube oil pump and the charging pump had been incorrectly assembled and had failed. Maintenance repaired the coupling and restored the pump to an operable status.

The inspector attended a licensee meeting concerning the status of the couplings to the other centrifugal charging pump lube oil pumps. System engineering concluded that the failure was an isolated occurrence and that the other pumps were not affected. The mechanical maintenance manager took a more conservative position that Pump 2B in Unit 2 should also be inspected because one of the mechanics involved in the incorrect assembly of Pump 1A was also involved in the maintenance of Pump 2B. At the next available outage window, mechanics disassembled the coupling and verified that the coupling had been correctly assembled. The inspector concluded that the additional verification of Pump 2B was conservative.

The inspector noted that the licensee had appropriately classified the failure as a maintenance preventable functional failure.

M8 Miscellaneous Maintenance Issues (92902)

M8.1 (Closed) Violation 50-445(446)/9512-01: the licensee failed to define an interval for calibration of the low battery voltage shutdown device in eight Class 1E safety-related Elgar inverters. The inspectors concluded that the corrective actions described in the licensee's response letter, dated October 6, 1995, were appropriate. No similar problems were identified.

M8.2 (Closed) Violation 50-445(446)/9513-01: the licensee failed to establish, implement, and maintain procedures. Three examples were given: written procedures established for the operation and maintenance of the safety-related auxiliary feedwater system were not followed by the operator; written procedures were not established and implemented for the operation and maintenance of the auxiliary feedwater system; and an STA for work requests and work orders did not establish the requirement that procedures should be followed. The inspectors reviewed the corrective actions described in the licensee's response letter, dated October 2, 1995, and found them reasonable and complete. No similar problems were identified.

III. Engineering

E2 Engineering Support of Facilities and Equipment

E2.1 Unit 2 Reactor Coolant Loop Cold Leg Temperature Elements

a. Inspection Scope (92902, 92903)

The inspector attended troubleshooting planning meetings, reviewed reactor coolant loop cold leg resistive temperature detector design changes, and reviewed time-domain reflectometer troubleshooting results following the Unit 2 reactor trip from a lightning strike.

b. Observations and Findings

The inspector noted that the discussions during the licensee's troubleshooting planning meetings were open and conducive to participation by all who attended. Both technicians and engineers were present and provided recommendations to licensee management. The licensee used a time-domain reflectometer to identify problems with cable runs between the reactor coolant system cold leg temperature elements and the instrument racks in the electrical control building. The licensee provided the results to an independent contractor for analysis.

The time-domain reflectometer results indicated that some impedance mismatches occurred in the instrument cables at containment penetrations but that they were minor and of little consequence. However, the results also indicated that the shield conductors on two temperature instruments for Reactor Coolant System Loops 2 and 4 were grounded fairly close to the temperature element inside containment.

The inspector reviewed the design change to isolate the grounds on the two instrument loops and found it to be complete and that it recommended the appropriate repair. The design change directed technicians to cut the shield wire in the first termination box from the temperature element. The inspector concurred with the licensee's conclusion that this repair would prevent induced current flow from an induced voltage potential between buildings which could occur during a lightning strike.

c. Conclusions

The inspector concluded that the licensee demonstrated appropriate involvement of both engineers and technicians in the identification and repair of the reactor coolant system cold leg temperature element instrument loops.

E2.2 Unit 2 Reactor Coolant Pump 2-04 Ammeter

a. Inspection Scope (92903)

The inspector reviewed a temporary design modification which removed a failed Reactor Coolant Pump 2-04 motor ammeter from the control room.

b. Observations and Findings

The inspector reviewed the licensee's 10 CFR 50.59 evaluation and design change which removed the Reactor Coolant Pump 2-04 motor current indication from the control room. The inspector found that the 10 CFR 50.59 and design change documents were complete and well written.

The inspector noted that the licensee had developed changes to their reactor coolant pump standard operating procedure, which required an auxiliary operator to monitor the Reactor Coolant Pump 2-04 motor current locally at the motor control center. The inspector concluded that the licensee appropriately considered the affect the unavailability of reactor coolant pump motor current would have on an operator.

E3 Engineering Procedures and Documentation

E3.1 Containment Spray System Walkdown

a. Scope (37551, 71707)

The inspector performed a partial walkdown of accessible portions of the Unit 2 containment spray system. The inspector reviewed the Final Safety Analysis Report, design basis documents, TS, the Technical Requirements Manual, and surveillance test procedures.

b. Observations and Findings

The inspector found that the containment spray system was maintained in a condition as described in the Final Safety Analysis Report and was tested in accordance with TS and ASME Section XI requirements. The inspector verified that the flow and head test points were values which were analyzed in accident analysis.

Additionally, the inspector found that the requirements listed in the Technical Requirements Manual for testing the containment spray system were inconsistent with the TS and the surveillance test. The licensee agreed that the wording in the Technical Requirements Manual should be clarified to more closely match the TS and initiated a design change. The inspector concluded that the inconsistency was administrative and that the surveillance test demonstrated each pump's operability.

E8 Miscellaneous Engineering Issues (92700)

E8.1 (Closed) LER 50-445/94004: failure of annunciator - required TS actions for quadrant power tilt ratio were not performed. Approximately 4 hours following a Unit 1 load reduction to 50 percent power on August 22, 1994, the licensee identified that the quadrant power tilt ratio had exceeded the TS 3.2.4 limit of 1.02 and that the computer alarm had not sounded. The licensee identified that the alarm had been set to 1.05 rather than 1.02 since initial plant startup and that the required surveillance to determine that the quadrant power tilt ratio be within this limit while above 50 percent power by calculating the ratio at least once per 12 hours when the alarm is inoperable was not performed. The licensee determined that the condition was applicable to both units and immediately corrected the setpoints.

The licensee conducted an evaluation and found that the computer point was originally set at 1.05 and that a design change was issued to change the setpoint to 1.02 in 1990. The licensee determined that a software vendor had changed the alarm limit to 1.02 but had not changed the alarm constant. The licensee reviewed archived data and determined that no significant quadrant power tilting had occurred since the previous refueling outages of the two units while greater than 50 percent power. The TS requirement was not applicable below 50 percent power. On August 22, 1994, quadrant power tilt had exceeded 1.02 while power was approximately 49 to 50 percent. The licensee also discovered that, even though quadrant power tilt had exceeded 1.02 for approximately 7 hours following a runback to approximately 55 percent power on May 14, 1996, they were in compliance with the TS action statement.

The inspector reviewed the licensee's root cause determination and corrective actions and determined them to be thorough. The inspector also reviewed the TS limiting condition for operation action statement for exceeding 1.02 and concluded that the licensee was in compliance during these two events.

IV. Plant Support

R1 Radiological Protection and Chemistry Controls

R1.1 General (71707)

During periodic plant tours, the inspectors noted that radiation workers adhered to their radiation work permits and followed appropriate radiation work practices. Radiation workers were observed utilizing the radiation protection staff in determining the specific hazards that they could encounter during their assigned activities. The inspectors observed that radiological hazards were properly posted and controlled in a manner that promoted ALARA (as low as reasonably achievable).

R1.2 Fuel Pin End Cap Retrieval

a. Inspection Scope (71750)

The inspectors reviewed the licensee's retrieval of a fuel pin end cap from the spent fuel pool transfer canal by observing a video tape of the evolution and discussing the survey and retrieval process with members of the radiation protection staff.

b. Observations and Findings

On August 18, the licensee identified a small cylindrical object in the Unit 1 transfer canal sump which had a dose rate of 200 Roentgen per hour beta dose on contact and 90 Roentgens per hour gamma. The object, believed to be a fuel pin end cap noted missing during a previous refueling, was discovered while draining the sump area to support canal repairs. The licensee retrieved and placed the object into the spent fuel pool in a locked basket.

The inspectors found that the licensee made excellent use of a remotely operated vehicle and radio transmitter dosimeter to perform the initial survey in the sump and to identify the object. The inspectors also found that the licensee's mockup was effective as evidenced by the extremely low dose (3.3 millirem) received during retrieval of the object.

R8 Miscellaneous Radiological Protection and Chemistry Issues (92904)

R8.1 (Closed) Violation 50-445(446)/9606-02: involved several examples of radiation workers not adhering to their radiation work permit requirements. The site radiation protection manager distributed a site-wide lessons learned memorandum and conducted training for radiation protection personnel. The inspectors reviewed the training records for the radiation protection personnel and concluded that the appropriate personnel attended the training. Additionally, the inspectors reviewed the lessons learned memorandum, discussed its contents with a number of maintenance personnel, and concluded that radiation workers were generally cognizant of their radiation work permit requirements and how to use the process for deviations.

F2 Status of Fire Protection Facilities and Equipment

a. Inspection Scope (71750)

The inspector sampled the operation of normally open, double fire doors for freedom of movement and proper operation and discussed the results with the licensee.

b. Observations and Findings

On July 30, the inspector verified that the doors operated freely and that the closure device ensured that the passive door would close before the active door fully shut. However, the inspector noted that the lower flush bolt on one door had been tripped and that the door would not swing shut until the bolt was reset. The inspector found the licensee's decision to randomly check the flush bolts during normal visual inspections every 3 months to be appropriate. By the end of the inspection period, the licensee had identified two other instances where a flush bolt had been tripped. The licensee was determining if additional actions were required to address the bolts.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at an interim exit on September 20 and at a final exit meeting on September 26, 1996. The interim exit was held to present the findings Mr. Gage, in conjunction with the resident inspectors, identified. The licensee acknowledged the findings presented. No proprietary information was identified during the exit meetings.

ATTACHMENT

PARTIAL LIST OF PERSONS CONTACTED

TU Electric

Blevins, M. R., Plant Manager
Byrd, R. C., Mechanical Maintenance Manager
Curtis, J. R., Radiation Protection Manager
Flores, R., System Engineering Manager
Kelley, J. J., Vice President, Nuclear Engineering and Support
Kross, D. C., Operations Support Manager
Moore, D. R., Operations Manager
Muffett, J. W., Station Engineering Manager
Terry, C. L., Group Vice President, Nuclear Production

INSPECTION PROCEDURES USED

37551	Onsite Engineering
61726	Surveillance Observations
62707	Maintenance Observations
71707	Plant Operations
71750	Plant Support Activities
92700	Onsite Followup of Written Reports of Nonroutine Events at Power Reactor Facilities
92901	Followup - Plant Operations
92902	Followup - Maintenance
92903	Followup - Engineering
92904	Followup - Plant Support
93702	Prompt Onsite Response To Events At Operating Power Reactors

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-446/9611-01	VIO	failure to follow station tagout procedures during feedwater pump maintenance
50-446/9611-02	IFI	turbine plant pump failures

Closed

50-445/9517-01	VIO	failure to follow procedure while aligning the refueling water cleanup system
50-445(446)/9512-01	VIO	failure to define calibration interval for low battery voltage shutdown device in eight Class 1E safety-related Elgar inverters
50-445(446)/9513-01	VIO	failure to follow procedures with regard to the auxiliary feedwater system
50-445/94004	LER	failure to perform required TS surveillance for quadrant power tilt ratio
50-445(446)/9606-02	VIO	failure to follow radiation work permit procedures