

ENCLOSURE 2

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

Docket Nos.: 50-445  
50-446

License Nos.: NPF-87  
NPF-89

Report No.: 50-445/98-06  
50-446/98-06

Licensee: TU Electric

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

Location: FM-56  
Glen Rose, Texas

Dates: August 2 through September 12, 1998

Inspector: Anthony T. Gody, Senior Resident Inspector

Approved By: Joseph I. Tapia, Chief, Branch A  
Division of Reactor Projects

Attachment 1: Supplemental Information

Attachment 2: List of Issues Identified During Licensee's Generic Letter 96-01  
Review

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## EXECUTIVE SUMMARY

Comanche Peak Steam Electric Station, Units 1 and 2  
NRC Inspection Report 50-445/98-06, 50-446/98-06

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

### Operations

- Control room operators used good self-verification techniques, were attentive to the control boards, and effectively identified adverse trends through reviews of operating logs, computer data, and strip chart traces (Section O1.1).
- Operators responded appropriately to a leaking in-core thimble tube (Section O1.2).
- While following up on previous issues related to control of switchyard activities, the licensee identified that excavation work had been conducted in the switchyard while simultaneously performing emergency diesel generator maintenance, a potentially risk-significant combination of activities (Section O8.1).

### Maintenance

- Maintenance personnel adhered to procedures, work orders, radiation work permits, and used good safety practices. Increased ownership of procedures and a reemphasis on procedure adherence expectations were observed (Section M1.1).
- The corrective maintenance backlog on the Unit 2 residual heat removal systems and the Unit 1 safety injection systems decreased notably since January 1998 (Section O2.1).
- In-core thimble tube maintenance was planned and implemented well. The licensee developed and successfully implemented plans to maintain dose ALARA. Clear and effective communications were observed (Section M1.5).
- Plant material condition continued to be excellent. Few packing leaks were detected, with all leakage properly controlled by drip containments constructed in accordance with procedures and properly tracked (Section M2.1).
- The licensee's decision to replace the Unit 2, Train A hydrogen recombiner power supply as a whole, rather than conduct troubleshooting in place, was a good use of spare parts to minimize equipment unavailability (Section M8.1).

### Engineering

- A thorough and intrusive Independent Safety Evaluation Group review of an NRC event notification resulted in the identification of an ambiguous hydrogen recombiner

surveillance procedure step. Following a more thorough review of past surveillance test results, the licensee declared the Units 1 and 2, Train A hydrogen recombiners inoperable (Section M8.1).

- System engineering support was evident in most aspects of plant operation and maintenance. Engineering products were of high quality and demonstrated a questioning attitude (Section E2.1).
- The system health process was objective and rigorous and was considered a program strength (Section E2.2).
- The licensee's NRC Generic Letter 96-01 review was extensive and thorough and identified over 500 safety-related contacts that had either not been tested or were not tested adequately (Section E8.1).
- Inadequate lockout relay testing issues were identified in September 1995 but were not reported until March 1998 as part of the licensee's NRC Generic Letter 96-01 review. Corrective actions for the Unit 2 lockout relay testing issues did not meet the licensee's commitment to complete their Generic Letter 96-01 program before the end of Unit 1 refueling outage in the Spring of 1998 (Section E8.1).

## Report Details

### Summary of Plant Status

Unit 1 remained at 100 percent power throughout the inspection period.

Unit 2 began the report period at 81 percent power because of main turbine blade vibration. On September 12, generation was increased to 100 percent because a change in local weather resulted in cooler lake temperatures, increased condenser vacuum, and decreased vibration of Blade 19.

## I. Operations

### **O1 Conduct of Operations**

#### O1.1 General Comments (71707)

Using Inspection Procedure 71707, the inspector conducted frequent reviews of ongoing plant operations. Through daily observations of control room activities, the inspector concluded that both units were operated by knowledgeable operators using good self-verification techniques and communications. Operator logs contained pertinent information, the proper level-of-detail, and were legible. Operators were attentive to the control boards and identified adverse trends through reviews of logs, computer data, and strip chart traces. In general, the conduct of operations was professional and safety-conscious; specific events and noteworthy observations are detailed in the sections below.

#### O1.2 Unit 1 Thimble Tube Leak

##### a. Inspection Scope (92901, 71707)

The inspector reviewed the licensee's response to a leaking Unit 1 in-core thimble tube.

##### b. Observations and Findings

The inspector found that operators referenced the appropriate alarm response procedures and communicated effectively. A timely containment entry was made to isolate the leaking in-core thimble tube and the in-core thimble tube was monitored for continued leakage. After receiving an additional leakage detection alarm, another timely containment entry was made to reisolate the leaking thimble tube. Additional observations on the recovery of the in-core thimble tube and troubleshooting efforts are contained in Section M1.2 of this report.

## **O2 Operational Status of Facilities and Equipment**

### **O2.1 Plant Tours and Engineered Safety Features Walkdowns**

#### **a. Inspection Scope (71707)**

The inspectors used Inspection Procedure 71707 to walk down accessible portions of the following engineered safety features systems:

- Unit 2, Train B Residual Heat Removal (RHR) System
- Unit 1, Train B Safety Injection (SI) System

#### **b. Observations and Findings**

The inspector found that the engineered safety features systems were generally in good condition. Material preservation was apparent. Some minor external leakage was observed and some evidence of past leakage was also noted. None resulted in any notable external corrosion. All observed leakage was properly controlled by liquid routing devices constructed in accordance with procedures and properly tracked.

The inspector noted that very few work request tags were hanging in the plant and found that the licensee had changed their practice of hanging tags on all equipment which had open work requests. The inspector reviewed the corrective maintenance work order backlog for the Unit 2 RHR and Unit 1 SI systems and found that they had both decreased notably. Since the beginning of 1998, the Unit 2 RHR system corrective maintenance backlog decreased from ten to seven, and the Unit 1 SI system corrective maintenance backlog decreased from 76 to 22. This decrease was partially attributable to increased ownership by maintenance and engineering and the past Unit 1 refueling outage.

The inspector found that engineered safety system controls and valves were in the proper standby positions, that appropriate valves were locked closed or open as needed, and concluded that each system's configuration was maintained properly.

## **O8 Miscellaneous Operations Issues**

### **O8.1 (Eclwup) Violation 50-445/9802-02: inadequate control of switchyard activities.**

In NRC Inspection Report 50-445(446)/9802, the inspectors documented that on March 21, during switching activities in the switchyard, an expected electrical transient resulted in a source range nuclear instrument flux doubling actuation and an automatic boration of the Unit 1 reactor coolant system from the refueling water storage tank while in Mode 2 following a planned shutdown. The inspectors reviewed the events leading up to the actuation and found that procedures did not adequately control switchyard activities to preclude the inadvertent automatic actuation of safety-related equipment. The licensee's immediate corrective actions involved reinforcing management expectations with GRT personnel on governing activities in the switchyard. The licensee

also strengthened notes in procedures involving high voltage switching activities, plant shutdown, and operation of the ex-core nuclear instrument systems. The licensee also indicated that they would consider further enhancements to the switchyard access control procedures.

On July 31, the licensee found that excavation work had been conducted in the switchyard simultaneous with emergency diesel generator maintenance activities. A Operation, Notification, and Evaluation (ONE) Form was written and the issue was appropriately classified as a plant incident report. Conducting maintenance in the switchyard simultaneous with emergency diesel generator, station service water, or turbine driven auxiliary feedwater maintenance has high potential risk-significance.

On August 21, the shift operations manager implemented shift orders that directed unit supervisors to ask the following questions prior to authorizing any access to the switchyard for anything other than routine rounds or inspections:

- (1) Are both trains of emergency diesel generators, service water, and the turbine driven auxiliary feedwater pump operable on both units? (If this is no, then do not admit entry without shift managers authorization.)
- (2) Is the activity scheduled? (If this is no, ensure the work week coordinator and switchyard coordinator are aware and agree with the activity, prior to admitting.)

The inspector found the temporary shift orders to control switchyard activities appropriate. The inspector will review changes to the switchyard access control processes once implemented by the licensee's switchyard task team.

O8.2 (Closed) Violation 50-445/9803-01: inadequate reduced inventory operating procedure.

In NRC Inspection Report 50-445(446)/9803, the inspector documented that the licensee had inappropriately changed Procedure IPO-010A, "Reactor Coolant System Reduced Inventory Operations." As a result of this procedure change, a partial loss of reactor vessel level instrumentation occurred during a reactor coolant system draining evolution with reactor vessel level near loop mid-plane. The licensee responded to the July 2, NRC Notice of Violation in a letter dated August 3. In their response, the licensee indicated that the violations concerning mid-loop level instrument problems, which occurred during reduced inventory operations, appeared to meet the new criteria for enforcement discretion. The inspector agreed that the licensee's corrective action process would have identified the Procedure IPO-010A inadequacies independent of the inspectors findings. Accordingly, the inspector concluded that the violation of Technical Specification 6.8.1, cited in the July 2, Notice of Violation met the new criteria for enforcement discretion because, consistent with Section VI.B.2.b of the NRC enforcement Policy, credit for licensee self-identification was warranted. Therefore, this non-repetitive, licensee-identified and corrected violation is now being treated as a non-cited violation, consistent with Section VII.B.1 of the NRC Enforcement Policy (50-445/9806-01).

## II. Maintenance

### **M1 Conduct of Maintenance**

#### M1.1 General

Personnel involved in maintenance and surveillance activities adhered to procedures, work orders, and radiation work permits. Technicians were knowledgeable and conscientious in leaving the work areas clean. Good use of personnel safety practices was observed. Increased ownership of procedures and a reemphasis of procedure adherence expectations were noted and were evident in the self-identification and correction of a number of minor procedure problems. Other issues and noteworthy observations are detailed in the following sections.

#### M1.2 Maintenance and Surveillance Observations

##### a. Inspection Scope (61726, 62707)

The inspectors reviewed the conduct of both surveillance and maintenance activities during the report period. These activities included:

- Unit 1, In-core thimble tube cleaning and solenoid valve troubleshooting
- Unit 2, Train B RHR system operability test
- Unit 1, Train B SI system operability test
- Unit 1, Train B SI system leakage walkdown
- Hydrogen analyzer analog channel operational test
- Unit 2, Train A hydrogen recombiner troubleshooting and repairs

Specific observations and findings are detailed in the following sections.

##### b. Observations and Findings

During the conduct of operations and instrument and control surveillances, the inspector observed effective three-way communications, good self-verification, and appropriate procedure adherence. Some procedure weaknesses were identified by the licensee and were dispositioned appropriately. Maintenance personnel adhered to personal safety practices and were observed conducting safety walkdowns prior to beginning work.

#### M1.3 Unit 1, Train B SI System Leakage Walkdown

##### a. Inspection Scope (61726)

The inspector observed operators conduct Equipment Test Procedure (ETP) 204A, "Safety Injection System Radioactive Leakage Inspection Test," in conjunction with a Unit 1, Train B, SI pump operability test.

b. Observations and Findings

ETP-204A is performed to identify, measure, and reduce leakage from parts of the SI system outside containment and is one of several surveillances coordinated by station administrative Procedure STA-705, "Radioactive Systems Leakage Inspection Program." STA-705 implements the requirements of Technical Specification 6.8.3, which requires the licensee is to establish a program to reduce leakage from those portions of systems outside containment that could contain highly radioactive fluids during a serious transient or accident to as low as practical. The inspector noted that the operators were using ETP-204A, Attachment 10.2 as a guide to identify specific components with bolted flanges that could leak. One valve could not be found in the room specified on the attachment and the SI pump operability test was stopped until it could be found. Operators appropriately reviewed system drawings and once the valve was found, the SI pump was restarted, and the component was checked. No leakage was identified. In addition, the need for several tag enhancements was identified. The inspector noted that operators appropriately initiated procedure changes and enhanced tag requests.

One issue was raised by the licensee during a review of corrective actions from this issue. Although ETP-204A was not intended to be used solely for walkdown of the components listed in Attachment 10.1 and 10.2, the procedure could potentially be misinterpreted to only require this. Rather, the pressurized portions of the entire system were intended to be walked down to look for leaks and operators were expected to use Attachments 10.1 and 10.2 as guides. The licensee found that most operators conformed with the more encompassing interpretation. The inspector concluded that the licensee was both thorough and aggressive in their effort to provide clarity on the intent of the procedure.

M1.4 Hydrogen Analyzer Analog Channel Operational Test

a. Inspection Scope (61726)

The inspector observed an Instrument and Control technician conduct an analog channel operational test on the hydrogen analyzer using a calibrated gas source.

b. Observations and Findings

The inspector verified that the certificate of purity for the test gas mixture was current. The instrument and control technician found that a procedure enhancement was needed to prevent any misunderstanding of the necessary valve alignment and appropriately implemented a procedure change request. The inspector reviewed the procedure change and found it responsive to the instrument and control technician's request.



M1.5 In-core Thimble Tube Maintenance

a. Inspection Scope (62707)

Following the leak in an in-core thimble tube described in Section O1.2 above, the inspector performed a containment entry while the unit was at 100 percent power to observe maintenance personnel conduct drying of the remaining in-core thimble tubes. In addition, the inspector discussed instrument and controls troubleshooting of a failed solenoid valve in a common thimble tube drain header.

b. Observations and Findings

The inspector found that the entire evolution was well planned and safely implemented in accordance with special procedures developed for the evolution. The licensee had trained a crew containing both licensee and contract personnel to use special equipment for drying each thimble tube wetted from the leaking in-core thimble tube. Any water in the intact in-core thimble tubes could adversely affect the licensee's ability to conduct an in-core flux map and, in the extreme, require a plant shutdown to repair. The licensee had indicated that this was the first time in-core thimble tube drying had been attempted at power.

The inspector focused on how the licensee minimized the risk of excessive radiation exposure to maintenance personnel and found that the licensee developed effective plans to maintain dose ALARA. For example, monitoring devices such as an air sampler and radiation detection equipment were used to continuously monitor conditions near the activity. Specific limits and action plans were developed and effectively implemented to minimize the potential for radiation overexposure. Clear and effective communications were observed by the inspector.

Instrument and controls troubleshooting revealed that the in-core thimble tube header solenoid operated drain valve had not been wired properly and may have contributed to the excessive amount of water in the remaining thimble tubes. This problem was appropriately corrected by a design change.

**M2 Maintenance and Material Condition of Facilities and Equipment**

M2.1 General

a. Inspection Scope (71707)

During periodic tours and surveillance observations throughout the facility, the inspectors observed the plant material condition. During daily observations the inspectors reviewed equipment out-of-service logs, the condition of running equipment, and the licensee's problem identification process.

b. Observations and Findings

The material condition of the facility continued to be excellent. Few packing leaks were detected. The small amount of radioactive leakage present was properly controlled by drip containments and hoses properly routed to radioactive drains. The emergency diesel generators were clean and without any notable oil leaks. All observed safety-related equipment had visible oil indication in their sight glasses.

**M8 Miscellaneous Maintenance Issues**

M8.1 Hydrogen Recombiner Heater Electrical Resistance Measurements

a. Inspection Scope (61726, 62707, 37551)

The inspector reviewed the licensee's corrective actions following an independent safety evaluation group (ISEG) review of an NRC event notification report (EN#34524) dated July 16, describing an inadequate methodology for measuring the electrical resistance of hydrogen recombiner heaters.

b. Observations and findings

The licensee's ISEG review was thorough and intrusive. Although the original subject of the NRC event notification report was later found not to be an issue at this site, the ISEG review of the electric recombiner surveillance test procedure identified a procedure weakness which resulted in both the Unit 1 and 2, Train A hydrogen recombiners being declared administratively inoperable until further testing could be done.

On July 22, the ISEG found that the step for taking heater resistance measurements, if performed literally, would result in a missed surveillance. The ISEG appropriately wrote a ONE Form to review the impact that the procedure weakness had on the implementation of the surveillance. A review of past surveillance test data revealed that the surveillance procedure had been conducted inconsistently. On August 31, the licensee reclassified the ONE Form to require an operability review and a quick technical evaluation. It was determined that both the Unit 1 and 2, Train B hydrogen recombiners had been tested correctly on July 21 and 22. However, the licensee could not conclusively determine that both Train A recombiners were tested properly. As a result, on August 31 the licensee entered the Technical Specification 3.6.4.2 Limiting Condition for Operation (LCO) which required the Train A hydrogen recombiner be returned to an operable status or the unit be shutdown in 30 days. The quick technical evaluation concluded that the hydrogen recombiners were functional but not operable. On September 1, the licensee conducted surveillances on both Train A hydrogen recombiners. Both Train A recombiners passed their surveillance tests but the Unit 2, recombiner heater current was erratic and the licensee conservatively remained in the Unit 2 Technical Specification LCO.

The inspector observed electrical maintenance planners walk down the job prior to developing the work instructions to determine if any personnel safety hazards existed. Electricians conducting troubleshooting adhered to good personnel safety practices. The system engineer provided near continuous support and used thermography equipment to aid in the troubleshooting. Rather than continuing to troubleshoot the equipment, the licensee replaced most of the defective cabinet and restored the hydrogen recombiner to an operable status.

c. Conclusions

The inspector concluded that the ISEG review was thorough and intrusive. Maintenance personnel placed a high priority on personnel safety. The system engineer was actively involved in troubleshooting and the subsequent corrective actions. The licensee's decision to replace the faulty equipment as a whole rather than conduct troubleshooting in the field was a good use of spare parts to minimize equipment unavailability.

M8.2 (Closed) Violation 50-445/9802-05: failure to follow new fuel receipt procedures.

The inspector reviewed the licensee's corrective actions and found them complete. New fuel receipt procedures were appropriately modified to make it easier for crane operators to comply with them. In addition, the licensee effectively reemphasized the expectations of responsible managers on ONE Form closure.

### III. Engineering

#### **E2 Engineering Support of Facilities and Equipment**

##### E2.1 General Observations

a. Inspection Scope (37551)

During routine plant tours and while observing maintenance and surveillance activities, the inspector evaluated engineering support to operations and maintenance. In addition, the inspector conducted daily reviews of ONE Form issuance and resolution.

b. Observations and Findings

System engineer support was evident in nearly all aspects of plant operation and maintenance. Observed system engineer involvement included knowledge of degraded system performance and identification of adverse trends, assistance in troubleshooting and maintenance planning, involvement in the assessment of industry operating experience, involvement in the corrective action process, and facilitating emergent issue resolution and operability evaluations. The inspector noted that overall, engineering products were of high quality and demonstrated a questioning attitude.

E2.2 System Health Program

a. Inspection Scope (37551)

The inspector assessed the 1998 second quarter system health review.

b. Observations and Findings

The licensee's system health review process is conducted quarterly and is intended to provide an effective tool for system engineers and licensee management to focus resources on the systems that do not meet performance goals. Systems are rated using four assessment colors, green, white, yellow, and red (green being the best and red being the worst). To determine ratings for each system, system engineers assembled available system performance data, and with the assistance of operations and maintenance personnel, determined the ratings for each system. In addition, maintenance rule system ratings were included.

The 1998 second quarter system health review identified an overall improving system performance trend. Of the 142 systems monitored, 18 had improving trends and 2 were downgraded. The two systems that were downgraded were the Unit 1 and Unit 2 reactor coolant systems. These systems were downgraded primarily because of the reactor coolant system reduced inventory level instrumentation reliability issues described in NRC Inspection Report 50-445(446)/9803. Seventeen systems were listed as requiring increased monitoring as required by 10 CFR 50.65 (a)(1).

The inspector found that the system health process was objective and repeatable. Results of the system health review were clear and always focused on system performance issues. Planned corrective actions were typically clear and had reasonably estimated completion dates.

c. Conclusions

The inspector found that the system health process presented a clear focus on safety system reliability and prioritization of corrective actions. The inspector concluded that system health was a program strength.

**E8 Miscellaneous Engineering Issues**

- E8.1 (Closed) Unresolved Item 50-445(446)/9802-01, Licensee Event Report (LER ) 50-445/97004-00, LER 50-445/97004-01, LER 50-445/97004-02, LER 50-445/97004-03, LER 50-445/97004-04, LER 50-445/97004-05, and LER 50-445/97004-06: inadequate surveillance testing identified during the licensee's review of NRC Generic Letter 96-01, "Testing of Safety-Related Logic Circuits."

a. Inspection Scope (92903, 61726, 71707)

The inspector used Inspection Procedures 92903, 61726, and 71707 to ascertain the effectiveness of corrective actions associated with the licensee's review of NRC Generic Letter 96-01. The inspector's review consisted of surveillance observations; a technical review of surveillance procedures; timeliness of limiting condition for operation entries and exits; adequacy of technical justifications for selected notices of enforcement discretion requests; a review of past, current, and planned licensee corrective actions; and interviews with licensee management, operators, maintenance technicians, engineers, and regulatory compliance personnel.

b. Observations and Findings

A compilation of the issues and their corresponding LER, notice of enforcement discretion date, Technical Specification requirements, and surveillance procedures changed is contained in Attachment 2 to this report. Overall, the inspector found that the licensee's identification of the problems were generally in accordance with their commitments to NRC Generic Letter 96-01 and that their corrective actions were appropriate with one exception. The exception involved a lack of timeliness associated with lockout relay testing and is discussed below.

Surveillance tests that were performed during power operations were well written, appropriately minimized the potential impact on safe plant operation, and were implemented without any notable problems. Plant operators appropriately entered Technical Specification LCO's during the surveillance tests, maintained effective communications, and were generally cognizant of all testing being performed.

One issue was identified by the inspector associated with a planned load-shed test of Breaker XEB4-3 described in LER 97-004, Supplement 3. The inspector found that the licensee's initial plans for load-shed testing of Breaker XEB4-3 at power did not literally comply with their Technical Specification surveillance requirement that the test be conducted while the plant was shutdown.

Each of the inadequate Technical Specification surveillances listed in Attachment 2, represent failures to comply with Technical Specification surveillance requirements of low significance. The licensee found that the Technical Specification surveillance test procedures developed before plant operation failed to include over 440 relay contacts and failed to adequately test over 60 relay contacts. These failures resulted in incomplete implementation of approximately 10 different Technical Specification surveillance requirements. Subsequent testing of these relay contacts resulted in no failures and demonstrated that they were reliable and that the missed surveillance tests posed little risk towards safe plant operation. This licensee-identified and corrected violation is being treated as a non-cited violation, consistent with Section VII.B.1 of the NRC Enforcement Policy (50-445(446)/9806-02).

The inspector reviewed past corrective actions and found that the licensee's review of NRC Information Notice (IN) 91-13, "Inadequate Testing of Emergency Diesel Generators," identified three concerns about testing emergency diesel generators. The first concern was related to adequately testing the non-1E load shed function of the emergency diesel generator load sequencer and the licensee concluded in their review that their surveillance procedures were adequate. The licensee later found during their Generic Letter 96-01 review that this conclusion was not correct. The second concern was related to whether testing of diesel generator loads actually reflected the design accident loads. The licensee's review of this concern was thorough and found that testing was adequate. The third concern was related to determining if emergency diesel generator testing adequately considered ambient air intake temperature during surveillance testing. The inspector found that, although the specific issue was investigated by the licensee, no decisive corrective actions were developed. The inspector noted that the design limit for the emergency diesel generator air intake temperature was 110 F. The inspector also noted that the ambient air temperature in Glen Rose, Texas could easily exceed this design assumption during the summer months. Through discussions with engineers, the inspector found that the licensee had concluded that they did not need to test the emergency diesel generator at an ambient temperature of 110 F because sufficient margin existed for almost any postulated normal operating condition. This was a reasonable argument considering the fact that the emergency diesel generator capacity well exceeded the design loading. No provisions were established to monitor the ambient air temperature. As such, the inspector was concerned that if the ambient temperature exceeded the 110 F design assumption, the "outside design bases" issue would not be identified and no engineering review would take place as required by 10 CFR Part 50, Appendix B. The licensee appropriately responded by implementing ambient air temperature monitoring and initiating a design change to increase the ambient air temperature design assumption.

The inspector found that the licensee's initial ISEG review of Information Notice 95-15, "Inadequate Logic Testing of Safety-Related Circuits," was nearly complete when NRC Generic Letter 96-01 was issued. In 1996, the licensee transferred their Information Notice 95-15 review into their Generic Letter 96-01 program. In September 1995, the licensee had found that certain safety-related circuits described in Final Safety Analysis Report, Section 7.3 were not being tested as required. Specifically, interlocks for the component cooling water and station service water pumps that prevent manual or automatic starts during a safety-injection or loss-of-offsite power signal were known not to have been tested. Because the licensee did not recognize that these tests were also required by plant Technical Specifications, the licensee did not report the missed Technical Specification surveillance until LER 97-004, Supplement 5, dated March 24, 1998, was issued. Corrective actions for this issue were completed on Unit 1 in accordance with the licensee's commitments to the NRC in their response to Generic Letter 96-01, and the Unit 2 corrective actions will be completed during the next Unit 2 shutdown.

c. Conclusions

The licensee identified that a number of Technical Specification required surveillance tests failed to include or adequately test over 500 safety-related relay contacts. The licensee's corrective actions were extensive and thorough, however, the reporting and resolution of lockout relay contact testing issues identified in September 1995 was not timely.

E8.2 (Closed) Violation 50-445/9803-03: failure to perform adequate engineering review which may have contributed to partial loss of reactor vessel level indication.

In NRC Inspection Report 50-445(446)/9803, the inspector found that the licensee had failed to perform a technical evaluation of the use of test equipment for troubleshooting reduced inventory level indication problems as required by Procedure MDA-111, "Troubleshooting Activities." This procedure violation may have contributed to a partial loss of reactor vessel level instrumentation during a reactor coolant system draining evolution with reactor vessel level near the loop mid-plane. The licensee responded to the July 2, NRC Notice of Violation in a letter dated August 3. In their response, the licensee indicated that the violations concerning mid-loop level instrument problems, which occurred during reduced inventory operations, appeared to meet the new criteria for enforcement discretion. The inspector agreed that the licensee's corrective action process would have identified the Procedure MDA-111 violations independent of the inspectors findings. Accordingly, the inspector concluded that the violation of Technical Specification 6.8.1, cited in the July 2, Notice of Violation met the new criteria for enforcement discretion because, consistent with Section VI.B.2.b of the NRC Enforcement Policy, credit for licensee self-identification was warranted. Therefore, this non-repetitive, licensee-identified and corrected violation is now being treated as a non-cited violation, consistent with Section VII.B.1 of the NRC Enforcement Policy (50-445/9806-03).

#### IV. Plant Support

### **R1 Radiological Protection and Chemistry Controls**

#### R1.1 General

a. Inspection Scope (71750)

The inspectors observed radiological protection activities during routine tours and observation of maintenance and surveillance activities. The inspectors reviewed the primary and secondary water chemistry and radiation protection department logs.

b. Observations and Findings

The inspectors found that the use of temporary, radiological drip containments increased slightly due to a small increase in total system leakage. All drip containments were properly installed and logged. The inspectors noted excellent radiological support

of maintenance activities, particularly during the thimble tube cleaning work on Unit 1. The inspectors found that the licensee continued to closely control water chemistry and take aggressive actions to correct any readings that were outside the prescribed guidelines.

**S1 Conduct of Security and Safeguards Activities**

S1.1 General

a. Inspection Scope (71750)

The inspectors observed security and safeguards activities during routine tours, at protected area access facilities, and at compensatory posts throughout the inspection period.

b. Observations and Findings

The inspectors found that security officers were attentive and conducted their duties in a professional manner. Officers were knowledgeable of their post requirements. The licensee was responsive to special security needs as they arose.

**V. Management Meetings**

**X1 Exit Meeting Summary**

The inspector presented the results of the inspection to members of licensee management on September 15, 1998. The licensee acknowledged the findings presented. No proprietary information was identified.



## ATTACHMENT 1

### SUPPLEMENTAL INFORMATION

#### PARTIAL LIST OF PERSONS CONTACTED

##### Licensee

C. L. Terry, Senior Vice President and Principal Nuclear Officer  
M. R. Blevins, Vice President, Nuclear Operations  
J.J. Kelly, Vice President, Nuclear Engineering and Support  
R. Flores, System Engineering Manager  
D.L. Walling, Plant Modification Manager  
S. Sawa, Outage Manager  
D.L. Davis, Nuclear Overview Manager  
M. L. Lucas, Maintenance Manager  
T.P. Clouser, Shift Manager  
G.L. Merka, Senior Nuclear Specialist

#### INSPECTION PROCEDURES USED

IP 37551: Onsite Engineering  
IP 61726: Surveillance Observations  
IP 62707: Maintenance Observations  
IP 71707: Plant Operations  
IP 71750: Plant Support Activities  
IP 92901: Followup - Plant Operations  
IP 92903: Followup - Engineering

#### ITEMS OPENED, CLOSED, AND DISCUSSED

##### Opened

50-445/9806-01	NCV	Inadequate reduced inventory operating procedure.
50-445(446)/9806-02	NCV	Inadequate surveillance testing identified during the licensee's review of NRC Generic Letter 96-01, "Testing of Safety-Related Logic Circuits."
50-445/9806-03	NCV	Failure to perform an engineering review required by procedures which may have contributed to a partial loss of reactor vessel level indication.

##### Closed

50-445/9803-01	VIO	Inadequate reduced inventory operating procedure.
50-445/9806-01	NCV	Inadequate reduced inventory operating procedure.
50-445/9802-05	VIO	Failure to follow new fuel receipt procedures.

50-445(446)/9802-01	URI	Inadequate surveillance testing identified during the licensee's review of NRC Generic Letter (GL) 96-01, "Testing of Safety-Related Logic Circuits."
50-445/97004-00, 01, 02, 03, 04, 05, and 06	LER	Inadequate surveillance testing identified during the licensee's review of NRC Generic Letter 96-01, "Testing of Safety-Related Logic Circuits."
50-445/9803-03	VIO	Failure to perform an engineering review required by procedures which may have contributed to a partial loss of reactor vessel level indication.
50-445(446)/9806-02	NCV	Inadequate surveillance testing identified during the licensee's review of NRC Generic Letter 96-01, "Testing of Safety-Related Logic Circuits."
50-445/9806-03	NCV	Failure to perform an engineering review required by procedures which may have contributed to a partial loss of reactor vessel level indication.

Discussed

50-445/9802-02	VIO	Inadequate control of switchyard activities.
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LIST OF ACRONYMS USED

ALARA	As Low As Reasonably Achievable
CFR	Code of Federal Regulations
ETP	Equipment Test Procedure
IPO	Integrated Operating Procedure
ISEG	Independent Safety Evaluation Group
LCO	Limiting Condition for Operation
LER	Licensee Event Report
NRC	Nuclear Regulatory Commission
ONE	Operation, Notification, and Evaluation
RHR	Residual Heat Removal
SI	Safety Injection

**ATTACHMENT 2**

**List of Issues Identified During Licensee's Generic Letter 96-01 Review**

Description of Issue	LER Number and Date 50-445/	NOED Date/ Letter Date	TS Requirement(s)	Procedure Developed or Changed
Inadequate testing of Solid State Protection System (SSPS) P-11 input relays. [ONE 97-641]	97004-00 6/24/97	None	Table 4.3-2, Item 10a: ESFAS - pressurizer pressure (P-11)	Units 1 and 2 INC-7723A, B INC-7724A, B INC-7725A, B
Failure to perform slave relay testing of Service Water Pump motor non-1E space heaters. [ONE 97-1091]	97004-01 10/9/97	None	Table 4.3-2, Item 1b: ESFAS - safety injection, automatic injection	Units 1 and 2 OPT-469A, B OPT-493A, B
Failure to perform required testing of all combinations of input for source range nuclear instrument block (P-10) and feedwater isolation for steam generator hi-hi level and safety injection. [ONE 97-1465]	97004-02 11/18/97	None	Table 4.3.1, Item 20: Reactor Trip System Instrumentation Surveillance Requirements - automatic trip and interlock logic Table 4.3-2, Item 5a: ESFAS - turbine trip and feedwater isolation, automatic actuation logic and actuation relays	Units 1 and 2 OPT-447A, A-1 OPT-448A, A-1 OPT-445B, B-1 OPT-446B, B-1
Train B Emergency Diesel Generator 24-hour load testing procedure failed to include breaker XEB4-3. [ONE 98-182]	97004-03 2/13/98	NRR 98-6-003 2/20/98 -Ltr.- 2/24/98	Each diesel generator shall be demonstrated operable; at least once per 18 months, during shutdown, TS 4.8.1.1.2.f.4a: by simulating a loss-of-offsite power only and verify deenergization of the emergency busses and load shedding... TS 4.8.1.1.2.f.6a: by simulating a loss-of-offsite power in conjunction with a safety injection actuation test signal and verify deenergization of the emergency busses and load shedding...	Unit 2 PPT-S2-7409B PPT-G0-1001
Failure to ensure adequate safety injection sequencer contact delay times. [ONE 98-184]	97004-03 2/13/98	None	Each diesel generator shall be demonstrated operable; at least once per 18 months, during shutdown, TS 4.8.1.1.2.f.6b: by simulating a loss-of-offsite power in conjunction with a safety injection actuation test signal and verify that the emergency diesel generator starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds...	Unit 1 PPT-S1-7410A PPT-S1-7411B  Unit 2 PPT-S2-7410A PPT-S2-7411B

Description of Issue	LER Number and Date 50-445/	NOED Date/ Letter Date	TS Requirement(s)	Procedure Developed or Changed
<p>Failure to develop adequate testing of the 6.9kV and 480V power supply degraded voltage starts for the emergency diesel generators (62-2 time delay relay). [ONE 98-247]</p>	<p>97004-04 3/3/98</p>	<p>None</p>	<p>Table 4.3-2, Items 8d, e, f: ESFAS - loss of power, 6.9kV degraded voltage, 480V degraded voltage, and 480V low grid undervoltage</p>	<p>Units 1 and 2 OPT-221A, B</p>
<p>Inadequate testing of safety injection and blackout sequencer load group contacts. [ONE 98-290]</p>	<p>97004-05 3/10/98</p>	<p>NRR 98-6-004 3/11/98 -Ltr.- 3/13/98</p>	<p>Each diesel generator shall be demonstrated operable; at least once per 18 months, during shutdown, <u>TS 4.8.1.1.2.f.4b</u>: by simulating a loss-of-offsite power only and verify that the emergency diesel generator starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds... <u>TS 4.8.1.1.2.f.6b</u>: by simulating a loss-of-offsite power in conjunction with a safety injection actuation test signal and verify that the emergency diesel generator starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds...</p>	<p><u>SIS Contacts</u> OPT-TP-98A-1 OPT-TP-98A-2 OPT-TP-98B-1 OPT-TP-98B-2 PPT-S1-7414A PPT-S1-7415B PPT-S2-7414A PPT-S2-7415B  <u>BOS Contacts</u> PPT-TP-98A-2 PPT-TP-98B-3 PPT-S1-7410A PPT-S1-7411B PPT-S2-7410A PPT-S2-7411B</p>
<p>Testing of non-class 1E motor control center load shedding scheme failed to confirm that shedding is accomplished by undervoltage relays instead of emergency diesel generator breaker closure. [ONE 98-296]</p>	<p>97004-05 3/12/98</p>	<p>NRR 98-6-005 3/13/98 -Ltr.- 3/17/98</p>	<p>Each diesel generator shall be demonstrated operable; at least once per 18 months, during shutdown, <u>TS 4.8.1.1.2.f.4a</u>: by simulating a loss-of-offsite power only and verify deenergization of the emergency busses and load shedding... <u>TS 4.8.1.1.2.f.6a</u>: by simulating a loss-of-offsite power in conjunction with a safety injection actuation test signal and verify deenergization of the emergency busses and load shedding...</p>	<p><u>Unit 1</u> PPT-S1-7408A PPT-S1-7409B  <u>Unit 2</u> PPT-S2-7408A PPT-S2-7409B</p>

Description of Issue	LER Number and Date 50-445/	NOED Date/ Letter Date	TS Requirement(s)	Procedure Developed or Changed
<p>Inadequate testing of the control room emergency filtration/pressurization system emergency recirculation function. [ONE 98-306]</p>	<p>97004-05 3/17/98</p>	<p>None</p>	<p>TS 4.7.7.1.i: each control room emergency filtration/pressurization system shall be demonstrated operable at least once per 10 months by verifying that each system actuates on an actual or simulated safety injection, loss of offsite power, or intake vent-high radiation signal</p>	<p>OPT-TP-98A-3 OPT-210</p>
<p>Inadequate surveillance testing for TS 4.8.1.1.2.f.4a, 4b, 6a, 6b, and 4.8.1.2. Specifically, (a) certain lockouts which ensures non-1E equipment separates from the A.C. busses, actuate equipment, and preclude equipment from attempting to load onto the vital A.C. busses, (b) certain multiple contact in series that bypass emergency diesel generator trips, (c) certain motor control center load seal in contacts that ensure equipment that was previously operating does not attempt to inappropriately re-load on the bus, and (d) 480V undervoltage relays to load shed the emergency fill fire pump were not tested. [ONE 98-366]</p>	<p>97004-05 3/24/98</p>	<p>RIV 98-4-007 3/13/98 -Ltr.- 5/27/98  NRR 98-6-006 4/8/98 -Ltr.- 4/10/98</p>	<p>Each diesel generator shall be demonstrated operable; at least once per 18 months, during shutdown, TS 4.8.1.1.2.f.4a: by simulating a loss-of-offsite power only and verify deenergization of the emergency busses and load shedding... TS 4.8.1.1.2.f.4b: by simulating a loss-of-offsite power only and verify that the emergency diesel generator starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds... TS 4.8.1.1.2.f.6a: by simulating a loss-of-offsite power in conjunction with a safety injection actuation test signal and verify deenergization of the emergency busses and load shedding... TS 4.8.1.1.2.f.6b: by simulating a loss-of-offsite power in conjunction with a safety injection actuation test signal and verify that the emergency diesel generator starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds...</p>	<p>Unit 1 PPT-S1-7408A PPT-S1-7410A PPT-S1-7414A PPT-S1-7421A PPT-S2-7421A OPT-TP-98A-4 OPT-TP-98A-5 OPT-TP-98A-6 OPT-TP-98A-7 PPT-S1-7409B PPT-S1-7411B PPT-S1-7415B PPT-S1-7422B OPT-TP-98A-8 OPT-TP-98A-9 OPT-TP-98A-10 OPT-TP-98A-11  Unit 2 PPT-S2-7421A PPT-G0-1001 PPT-TP-98B-4 OPT-TP-98B-4* OPT-TP-98B-5* OPT-TP-98B-6* OPT-TP-98B-7* PPT-S2-7422B PPT-S2-7422A PPT-G0-1001 PPT-TP-98B-5 OPT-TP-98B-8* OPT-TP-98B-9* OPT-TP-98B-10* OPT-TP-98B-11*</p> <p>* next shutdown</p>

Description of Issue	LER Number and Date 50-445/	NOED Date/ Letter Date	TS Requirement(s)	Procedure Developed or Changed
<p>Failure to perform adequate testing of redundant support equipment for emergency diesel generators. [ONE 98-578]</p>	<p>97004-06 4/8/98</p>	<p>None</p>	<p>TS 4.8.1.1.2: Each diesel generator shall be demonstrated operable; at least once per 31 days...</p>	<p>TLCOAR T1-98-0025 and T2-98-0022 initiated</p> <p><u>Units 1 and 2</u> OPT-241A OPT-241B*</p> <p>* next shutdown</p>
<p>Failure to test the emergency diesel generator trip path when alternate offsite power is in service. [ONE 98-578]</p>	<p>97004-06 4/8/98</p>	<p>None</p>	<p>Each diesel generator shall be demonstrated operable; at least once per 18 months, during shutdown TS 4.8.1.1.2.f.10: by verifying that with the diesel generator operating in a test mode, connected to its bus, a simulated safety injection signal overrides the test mode...</p>	<p>OPT-241A OPT-241B*</p> <p>* next shutdown</p>
<p>Failure to adequately test load shedding the containment hydrogen recombiner from the vital busses. [ONE 98-641]</p>	<p>None</p>	<p>None</p>	<p>Each diesel generator shall be demonstrated operable; TS 4.8.1.1.2.a.5: at least once per 31 days by verifying that the generator is synchronized, loaded to between 6,300 and 7,000KW and operates at this load condition for at least 60 minutes... TS 4.8.1.1.2.f.7: at least once per 18 months by verifying that the diesel generator operates for at least 24 hours...</p>	<p>Rather than change procedures, the licensee revised Calculations EE-CA-007-3376 EE-CA-007-3377 EE-CA-007-3378 to account for the recombiner load. Recombiner load shed is no longer required for operability.</p>