ENCLOSURE 2

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

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License Nos.:	NPF-87 NPF-89
Report No.:	50-445/97-05 50-446/97-05
Licensee:	TU Electric
Facility:	Comanche Peak Steam Electric Station, Units 1 and 2
Location:	FM-56 Glen Rose, Texas
Dates:	February 2 through March 15, 1997
Inspectors:	A. T. Gody, Jr., Senior Resident Inspector H. A. Freeman, Resident Inspector V. L. Ordaz, Resident Inspector T. J. Polich, Project Manager T. R. Meadows, Reactor Inspector
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ATTACHMENT: Supplemental Information

EXECUTIVE SUMMARY

Comanche Peak Steam Electric Station, Units 1 and 2
NRC Inspection Report 50-445/97-05; 50-446/97-05

Operations

- Operators exhibited good communications, command and control, annunciator response, procedure usage, self-checking and peer-checking (Section O1.1).

- Surveillance tests were performed in accordance with procedures with good communications and command and control noted (Section O2.1).

- A weak work control process implementation resulted in not maintaining indicated control board work status current with the plant configuration (Section O2.2).

- The procedure for logging limiting conditions for operations statements into the control room log was unclear (Section O3.1).

Maintenance

- A lack of attention-to-detail led to mechanics applying incorrect torque values to fasteners during auxiliary feedwater pump discharge valve maintenance. This was a violation of procedures (Section M1.2).

- The maintenance activities on inverters were well controlled. The activities were characterized by thorough prejob briefings, excellent verification techniques, and appropriate supervision (Section M1.3).

- Improvements were noted during the closeout of a followup item on check valve maintenance. The development of a valve maintenance team and extensive training contributed to a reduction in check valve problems following maintenance during the last Unit 1 outage (Section M8.1, M8.2).

Engineering

- Improvements in Engineering performance were observed. Most significantly, potential engineering issues were raised and documented in a timely manner. This improvement allowed appropriate consideration for equipment operability and allowed management to prioritize the resolution of the issue (Section E1).

- The licensee appropriately resolved an issue concerning the equipment qualification of the containment high range radiation monitor in a timely and conservative manner (Section E1.2).

Plant Support

- The licensee generally controlled transient combustibles according to procedures and maintained the amount of combustibles in plant areas to a minimum. However, the licensee's failure to identify that transient combustible permits were not generated on two occasions indicated a lack-of-attention to detail (Section F2.1).

Report Details

Summary of Plant Status

Units 1 and 2 began and remained at approximately 100 percent power throughout the inspection period.

I. Operations

O1 Conduct of Operations

O1.1 Observations of Operator Performance

a. Inspection Scope (71707)

The inspectors conducted frequent reviews of ongoing plant operation by touring the plant and walking down control boards and safety systems. Operations personnel demonstrated a safety-conscious approach towards plant operations. The inspectors routinely observed activities in the control room. The inspectors compared the observed performance with expected performance as described in facility policies and procedures. Between March 3 and March 14, 1997, the inspector observed three different shift crews for continuous periods ranging from two to four hours. The inspectors observed four crew shift turnovers and approximately 20 hours of control room operations involving normal power operations activities.

b. Observations and Findings

The inspector noted that the individual operator turnover briefings were thorough and detailed and that both the oncoming and off going operators were alert and diligent in providing a detailed and professional turnover. Oncoming crew briefs were thorough and comprehensive with each member of the crew providing a status of activities and equipment for their areas.

Operators consistently displayed effective communications in accordance with management's expectations. Communications were clear and unambiguous. Communications outside the control room were generally formal.

The inspector noted that licensed reactor operators routinely exhibited good self-checking and peer-checking when manipulating controls and operating components.

Control room staffing met procedural and Technical Specification requirements and supervisory oversight of operators was appropriate. Control room access was limited by the unit supervisors and distractions to operators were minimized.

Throughout the inspection period, the inspectors noted that control room operators were attentive at their watch stations. Conduct of operation procedures and guidance on scanning the control boards and performing board walkdowns were reviewed. Operators were expected to review critical parameters every 15 minutes

and perform a complete board walkdown every two to four hours. The inspector found that expectations were being implemented and were appropriate. The inspectors noted good communication between operators and the unit supervisors.

Operators followed the appropriate procedures when they responded to alarms and during routine plant evolutions. Operators were generally aware of the status of annunciators and knowledgeable of the causes for disabled alarms.

O2 Operational Status of Facilities and Equipment

O2.1 Operations Surveillance Tests

a. Inspection Scope (61726)

The inspectors observed all or portions of the following operational surveillance tests.

- Unit 1 safeguards slave relay actuation test
- Unit 2 turbine-driven auxiliary feedwater pump test
- Unit 2 emergency diesel generator operability test

b. Observations and Findings

The inspectors attended the prejob briefings and found that both the periodic and infrequent evolution tests were appropriately reviewed and that procedural requirements were discussed. During the tests, communications between the operators were good and the independent verification steps in the procedures were correctly performed. Operators demonstrated a thorough knowledge of the procedural requirements and demonstrated a questioning attitude. Unit supervisors exhibited good command and control of the surveillance activities observed. The inspectors verified that the surveillance tests met the Technical Specification requirements, tested the facility as described in the Final Safety Analysis Report (FSAR), were performed in accordance with the procedures, and that the equipment was appropriately restored following the surveillance tests. Surveillance test results were reviewed and the inspector found that the test requirements were satisfied.

O2.2 Configuration Control of Control Room Equipment

a. Inspection Scope (71707)

The inspectors reviewed the status of work request tags and stickers, and clearance tags hanging on control room equipment. The inspectors discussed findings with operations and work control management.

b. Observations and Findings

During a board walkdown on February 24, the inspector questioned the reactor operator on the status of a main generator primary water system trouble annunciator out-of-service tag. The reactor operator knew that the tag was placed on the annunciator because the input to the annunciator for the primary water shaft pump low differential pressure alarm was removed. The input was removed because the input created frequent spurious alarms. The inspector questioned the Unit 1 supervisor why the annunciator input had been out-of-service since July 1996. The unit supervisor reviewed the status of the work and found that the work was complete and that the annunciator had been back in service since January 1997. The tag was removed from the control board.

The inspectors reviewed the status of 25 other work request tags and found that five of the work requests were already closed. This indicated that unit supervisors may not have been following the guidance contained in the work control procedure which instructed them to remove the work request tags upon completion of the work. The inspector reviewed each of the closed work requests and found that their presence did not affect safe operation of the plant. One of the work requests on the control boards was found closed because an engineering review concluded that no problem existed. The work request was written by operators in October 1996 but was closed by an engineer in November 1996 without informing operations. The inspector found that this represented a weak work control process implementation which did not maintain indicated control board work status current with the plant configuration.

Both the operations manager and the work control manager agreed with the inspector's observations. The work control manager performed a review of each invalid work request tag to determine the cause. The licensee found that, in one case, the operator did not properly fill out the work request form. As a result, work control personnel did not know that a tag was hung on the control board. The licensee planned to perform additional reviews of the work control process as it applied to tags on the control boards. The inspectors will review the licensee's findings as an Inspection Followup Item (IFI 50-445(446)/9705-01).

O3 Operations Procedures and Documentation

O3.1 Control Room Log Review

a. Inspection Scope (71707)

As part of the continuing inspection of plant operations, the inspectors reviewed control room logs for accuracy and completeness.

b. Observations and Findings

The inspectors found that, generally, the control room logs were complete and accurate. However, the inspectors occasionally found inconsistencies in the logging of Technical Specification limiting conditions for operation (LCO) action statement entries. Some crews logged the entry and exit into LCO action statements into the control room logs while others only logged them into a separate LCO log. The inspectors reviewed the licensee's procedure for maintaining the control room log and the procedure for maintaining the LCO log and found that the management expectation for LCO action statement logging in the control room log was not clear. While it was expected that these types of entries would be made into the control room log by the procedure for maintaining the control room log, the procedure for maintaining the LCO log stated that the LCO log was considered an extension of the control room log. The licensee acknowledged the inspectors findings and indicated that they planned to clarify the expectation.

O8 Miscellaneous Operations Issues (92901)

O8.1 (Closed) Licensee Event Report (LER) 50-446/94011: missed surveillance due to administrative error. This LER was a minor issue and was closed.

O8.2 (Closed) VIO 50-446/9608-03: inadequate instructions contained in procedures IPO-010B, "Reactor Coolant Reduced Inventory Operations," and SOP-106B, "Boron Thermal Regeneration System (BTRS)," contributed to a loss of reactor vessel level event and an inadvertent boration event, respectively. The inspector verified that procedures SOP-106B and IPO-010B were revised to provide sufficient guidance for valve line up and venting of the reactor coolant system and to insure that a flow path through the BTRS is not initiated until water chemistry is verified. The inspector verified that the licensee's corrective actions stated in their response letter, dated September 12, 1996, were adequate.

O8.3 (Closed) VIO 50-445/9602-02: inadequate alarm response and abnormal operating procedures resulted in repeated failures to place the plant in a condition to prevent a Unit 1 trip and safety injection on January 17, 1996, and a Unit 1 trip on January 22, 1996. The inspector verified that the corrective actions described in the licensee's response letter, dated April 3, 1996, were reasonable and complete.

O8.4 (Closed) VIO 50-445(446)/9604-01: failure to follow component configuration control procedures (four examples were cited). The licensee determined that the failure to follow configuration control procedures was due to less than adequate human performance and that it represented an apparent negative human performance trend. The inspector verified that the corrective actions described in the licensee's response letter, dated May 28, 1996, were reasonable and complete.

O8.5 (Closed) VIO 50-446/9611-01: Feedwater Pump 2A Seal Injection Filter 2-02 inlet isolation valve found in the open position, contrary to the attached danger tag

instruction requiring it to be in the closed position. The inspector verified that the corrective actions described in the licensee's response letter, dated November 8, 1996, were reasonable and complete.

II. Maintenance

M1 Conduct of Maintenance

M1.1 Maintenance Observations

a. Inspection Scope (62707, 61726)

The inspectors observed all or portions of the following maintenance and maintenance surveillance tests, reviewed the Technical Specification requirements, and verified compliance with station procedures:

- Planned maintenance on motor-driven Auxiliary Feedwater Pump 1-02 discharge isolation valve
- Emergent maintenance on Inverters IV1PC1 and IV1PC4
- Planned maintenance on Inverters IV1EC2, IV1EC3, IV1EC4, IV1PC2, and IV1PC3
- Emergent maintenance on Inverters IV2EC2 and IV2EC4
- Emergent maintenance on containment instrument air isolation valve

b. Observations and Findings

The inspectors found that maintenance was generally performed in accordance with procedures. Work packages were properly maintained and the appropriate approvals were obtained prior to work initiation. The inspectors observed maintenance personnel follow appropriate personnel safety practices. Foreign material exclusion procedure improvements were evident. Foreign material exclusion boundaries were properly established and materials entering the areas were properly controlled. The inspectors also observed maintenance personnel use appropriate radiological work practices. In general, the inspectors found that maintenance was performed in a safe manner. Specific observations and findings are detailed below.

M1.2 Incorrect Torque Applied during Auxiliary Feedwater Manual Valve Maintenance

a. Inspection Scope (62707)

On March 5, the inspector observed maintenance on the Unit 1, Train B motor-driven auxiliary feedwater pump manual discharge isolation valve performed under Work Order 4-96-102970. The inspector interviewed the maintenance personnel and reviewed the controlling work order and maintenance procedure to determine whether the activity was being conducted in accordance with approved procedures.

The inspector reviewed the test equipment calibration data.

a. Observations and Findings

The inspector observed two mechanics replace bolts in the valve operator with a higher strength bolt to solve a previously identified bolt stretching problem. One mechanic reviewed a table in the procedure to determine the required torque values for the bolts. Both mechanics verified that the torque wrench was set to this value and then the second mechanic torqued the bolts. The inspector noted that the mechanics had torqued the bolts to the wrong value. When informed of their mistake, the mechanics retorqued the bolts to the correct values.

Steps 8.6.1.3 and 8.6.1.12 of Procedure MSM-C0-8802, "Borg - Warner Pressure Seal Gate Valve Maintenance," Revision 1, required that the fasteners be torqued in accordance with Table 1. According to Table 1, the torque range for these fasteners was 170 - 190 foot-pounds and 75 - 85 foot-pounds respectively for Grade A193-B7 bolts and 65 - 95 foot-pounds and 20 - 30 foot-pounds respectively for Grade A193-B8 bolts. The mechanics installed Grade A193-B7 bolts and torqued them to the Grade A193-B8 range. The inspector concluded that torquing the high-strength fasteners to the low-strength fastener values was a failure to follow procedures (VIO 50-445/9705-02).

The inspector found that Table 1 of Procedure MSM-C0-8802 was somewhat confusing due to the generic nature of the procedure. The table listed torque values for an 18-inch pneumatic-hydraulic valve, a 4-inch motor operated valve, 3, 4, 6 and 8-inch gear-operated valves, and a 3-inch manual valve. However, when the correct valve size and fastener were located on the table, two torque ranges were listed (and footnoted by asterisks). These footnotes were defined in the bottom third of the table. The inspector found the table was not very well designed and may have contributed to the mechanic overlooking the correct value.

The licensee reviewed management expectations with all mechanics onsite to emphasize that both workers are expected to verify the torque value from the table during both the torque wrench setup and the torque witness evolution. In this instance, the required torque value was not verified by both mechanics. The licensee reviewed approximately 30 other work orders that had used the same generic procedure and discovered three others that documented that incorrect torque values had been applied to the valves. Of these, one was similar in that a higher-strength bolt was installed but was torqued to the lower-strength bolt value. The licensee also found that the mechanics were not challenged by the simple nature of the maintenance and may not have been paying close attention. At the end of the inspection period, the licensee was reviewing the clarity of the procedure and considering changing the torque table to be based on bolt material, size, and number of threads per inch.

The inspector found that the licensee promptly took action to correct the error and prevent recurrence. Additionally, the licensee appropriately reviewed prior work documents to determine if similar errors had previously occurred. The number of previous errors does not indicate a programmatic breakdown. The inspector found that the licensee's effort to reemphasize management's expectations for required torque verification were appropriate.

M1.3 Inverter Maintenance

a. Inspection Scope (62707)

During the inspection period, the inspectors observed maintenance activities on several inverters (both Class 1E and non-Class 1E) in both units. Both planned and emergent maintenance on both the newer Solid-state Controls Incorporated inverters and the older Elgar inverters were observed by the inspectors. The inspectors attended prejob and postjob briefings, observed the conduct of maintenance, reviewed the maintenance procedures, reviewed standard and abnormal operating procedures, discussed the compensatory actions with operators, and discussed the maintenance with the electricians.

b. Emergent Maintenance on Solid-state Controls Incorporated Inverters

On February 4, the inspectors observed emergent maintenance on Unit 1 (Solid-state Controls Incorporated) inverters IV1PC1 and IV1PC4 to adjust the frequency which had drifted out of tolerance and rendered the inverters inoperable. The licensee concluded that the frequency had drifted high due to a combination of lower temperatures caused by a recently installed room cooler design modification and initial inverter burn-in.

During the prejob briefing, operators discussed switching the inverters to bypass rather than switching to the alternate inverters. A revised troubleshooting plan was developed which appropriately detailed the activity. The inspectors verified that the applicable Technical Specification was entered and exited and that operators properly implemented the inverter operating procedure for switching to bypass. The electricians exhibited ownership over the inverters, and practiced good electrical safety techniques. The postjob briefing appropriately reflected the questions raised during the prejob briefing regarding the preference to stay on bypass power during the frequency adjustment rather than switching power to the alternate inverter. The licensee planned to incorporate this preferred method into the inverter operating procedure.

On February 13, the inspector observed the licensee measure and adjust the running frequency on the other five running Unit 1 inverters (IV1EC2, IV1EC3, IV1EC4, IV1PC2, and IV1PC3). The licensee performed this planned maintenance as a precaution to measure and adjust the running frequency prior to the inverter becoming inoperable. As noted during the previous maintenance on Inverters

IV1PC1 and IV1PC4, the maintenance activity was performed while the inverter was in bypass.

The inspector found that the licensee controlled these maintenance activities well. The operations crew handled each inverter as a separate maintenance activity. The unit supervisor conducted a prejob briefing before each activity and also conducted a postjob critique. The field support supervisor and the system engineer were present during the entire evolution.

The inspector noted that communications and self-verification techniques were excellent. Prior to the start of each activity, the field support supervisor contacted the control room via radio so that the control room knew exactly when the Technical Specification limiting condition for operation action statement was entered. Both operations and maintenance utilized three way communications and self-verification prior to performing each step.

c. Emergent Maintenance on Elgar Inverters

The inspectors observed emergent maintenance on Unit 2 (Elgar) Inverters IV2EC2 and IV2EC4. The licensee had implemented a periodic thermographic inspection of the Elgar inverters based on prior failures experienced over the past 15 months. These inspections identified elevated temperatures on several electrolytic capacitors and jumpers in the inverters. A failure of Inverter IV2EC2 could have tripped the reactor due to loss of power to the feedwater isolation valves.

During the maintenance, the inspector found that the licensee proactively replaced all of the capacitors as opposed to only those that were affected by the high temperatures. Electricians exercised caution when installing the capacitors and jumpers on the inverters, and ensured that all of the connections were tight. The electricians performed an overall inspection of each inverter, and found a hairline crack on one alarm relay. The alarm relay was functional, nevertheless, the relay was replaced. This was an example in which electricians exhibited a good questioning attitude. The inspector verified that postjob thermography readings on the capacitors and jumpers were acceptable.

During the activity, the electricians used the appropriate safety gear. However, the inspector did observe a potentially unsafe clearance practice. At the request of the senior electrician at the scene, a licensed senior operator approved a change in the clearance to eliminate one tag. While implementing this change, the senior electrician incorrectly assumed that it was not necessary to open the breaker to remove all power from the inverter. An electrician appropriately identified that the inverter was not deenergized prior to commencing maintenance. The clearance was then completed as originally prepared.

d. Conclusions

The inspectors found that the prejob briefings thoroughly reviewed the actual procedures to be implemented, including the method for transferring to bypass power prior to performing maintenance. Operators reviewed which equipment would be affected by a loss of the inverter bus and the appropriate contingency actions. The licensee discussed communications and licensee supervision stressed verification techniques. Following several of the maintenance activities, the licensee conducted a postjob briefing where maintenance, operations and engineering discussed whether the activity could have been better performed.

The inspectors found that the concerns on inverter maintenance identified in NRC Inspection Report 50-445/96-17; 50-446/96-27 were not observed during these maintenance activities. The inspectors found that operators and electricians demonstrated a high level of verification prior to operating any component, that communications were effective and formal, and that the maintenance was controlled according to procedures.

M1.4 Containment Instrument Air Isolation Valve Emergent Maintenance

a. Inspection Scope (62707)

The inspector attended the prejob briefing, observed the conduct of maintenance, discussed planned operator compensatory actions with operators, and discussed the conduct of the online maintenance with licensee management for maintenance on a Unit 2 containment service air isolation valve.

b. Observations and Findings

While touring the Unit 2 containment penetration rooms, a licensed reactor operator detected that Containment Instrument Air Isolation Valve 2HV-3487 was leaking air from the pneumatic controller. Had this valve failed closed, a plant shutdown would result because instrument air for valves inside the containment would be isolated. In particular, pressurizer level and pressure control would be lost. The inspector noted that the licensee quickly developed and approved a maintenance plan to bypass air around the isolation valve using a high pressure hose tapped into test valves upstream and downstream of the isolation valve. This allowed online maintenance of the isolation valve while still supplying the containment with air. The inspector also reviewed the licensee's 10 CFR 50.59 safety evaluation of the procedure and found that it was adequate.

The licensee entered Technical Specification 3.6.3 for inoperable containment isolation valves as soon as the work began. The inspector observed workers remove and replace the valve diaphragm although they had already found that the leak was actually caused by a loose diaphragm cap screw. The inspector observed that the isolation valve was repaired, tested, and returned to service without

incident. The Technical Specification was exited well within the action statement limits.

M8 Miscellaneous Maintenance Issues (92902)

M8.1 (Closed) Inspection Followup Item 50-445/9511-02: incorporation of vendor recommendations into procedures. A number of Westinghouse bolted bonnet swing-check valves had a history of both external leakage between the body to bonnet interface, and internal seat leakage. The leaks resulted in forced outages, increased radioactive waste processing, and extended a refueling outage.

The licensee found that the external leakage occurred when the bonnet did not seat properly during assembly. The licensee modified the procedure to prevent body-to-bonnet tilting and consequent uneven gasket crushing during assembly. The licensee also modified the procedure to verify that no foreign material was present on the seating surfaces prior to assembly and to verify dimensional acceptability of the seating surface. Each of these modifications was designed to eliminate the cause of previous leaks.

Previous root-cause investigations into swing-check valve seat leakage found that inconsistent blue-checking practices were a contributing factor. The inspector noted that the maintenance procedure relied heavily on skill of the craft in this area and discussed this finding with the licensee. The licensee agreed that the blue-checking process required properly trained and qualified mechanics. Prior to the last Unit 1 refueling outage, the licensee established and trained a group of technicians to specifically work on valves. Mechanics were trained on the use of several types of compounds and on acceptance criteria for blue-checking check valve seats. Extensive training was provided on different types of seat lapping and polishing tools with vendor assistance. The valve team worked on a large population of swing-check valves during the last Unit 1 outage.

The inspector noted that during the 4 months since completing the outage, no operational leakage problems have been identified on the Unit 1 swing-check valves which were worked during the outage. In addition, the number of external check valve leaks declined significantly. These changes are attributed to a general improvement in the quality of check valve maintenance which was precipitated by the procedure enhancements and training. The inspector concluded that the procedure changes and improved training would result in overall improved swing-check valve performance over time.

M8.2 (Closed) Inspection Followup Item 50-446/9610-01: check valve leakage caused the safety injection system to be pressurized beyond its design pressure of 1750 psig. The licensee identified that safety injection system piston-check valves contributed to the Unit 2 safety injection system pressurization. Additionally, leaking Unit 1 safety injection system piston-check valves caused the accumulators to leak as identified in NRC Inspection Report 50-445/96-17; 50-446/96-17.

As with the Westinghouse swing-check valve maintenance problems, the licensee found crew-to-crew inconsistencies in blue-checking. The licensee also found that the piston-check valve procedures only required visual exams to verify unspecified plug and body bore clearances. The licensee modified the piston-check valve procedure to include piston-to-seat interface and plug and body-bore measurements. The inspector found that the procedure changes were well researched and provided appropriate acceptance criteria. To address the crew-to-crew inconsistencies, the licensee provided training to mechanics on blue-checking. The inspector found that the Unit 1 safety injection system piston-check valves had not been worked during the last outage. The inspector concluded that the procedure changes and improved training would result in overall improved piston-check valve performance over time.

M8.3 (Closed) Inspection Followup Item 50-446/9606-03: potential generic issue associated with conoseal failures. The inspector reviewed the licensee's evaluation of the conoseal gasket leakage following the second Unit 2 refueling outage which concluded that no generic problem existed with the gaskets. The licensee concluded that a scratch or dent in the conoseal gasket, most likely caused during the installation process, caused the leak. The inspector found that the licensee's evaluation was acceptable and concluded that the damage caused during installation reflected inattention-to-detail during maintenance.

III. Engineering

E1 Conduct of Engineering

E1.1 General

Throughout the inspection period, the inspectors reviewed control room logs, operations notification and evaluation (ONE) forms, attended Plan-of-the-Day meetings, and discussed issues with licensee management. The inspectors evaluated the licensee's response to engineering issues for priority of resolution and documentation of the issue. The inspectors noted a marked improvement in documenting engineering issues. In particular, three significant issues were documented on ONE forms and brought to operations and management attention. In these cases, operations was able to evaluate the potential impact on equipment operability and implement compensatory actions, and licensee management was able to ensure that the issues were appropriately prioritized with adequate resources. Some of the issues are discussed below.

E1.2 Containment High Range Radiation Monitor Environmental Qualification

a. Scope (37551, 71707)

The inspector reviewed the licensee's documentation and resolution of an engineering issue dealing with the qualification of the high range radiation monitors. The inspector reviewed the licensee's compensatory actions and the Technical

Specifications for compliance. The inspector discussed the issue with the environmental qualifications engineer and with the engineering technical support manager.

b. Observations and Findings

This issue was initially raised at San Onofre Nuclear Generating Station and was documented in their LER 96-005. San Onofre documented that moisture could permeate the cable jacket or connectors and cause a loss of signal, rendering the detector inoperable. The licensee first learned of the issue at an industry environmental qualifications symposium held in October 1996. Because the issue was again raised at the February 1997 meeting, and because no generic applicability information was available, the licensee decided to document the issue on a ONE form. The inspector found that the licensee had appropriately documented the engineering issue on a ONE form, determined potential the impact and required compensatory measures, and then resolved the issue.

The issue involved Sorrento Electronics high range radiation monitors using Rockbestos cables. Because the detectors operated in the pico-ampere range, any moisture intrusion would cause serious signal degradation. The licensee concluded that the qualification tests performed by San Onofre did not accurately model the Comanche Peak facility design and equipment configuration. The test used a different type of connector and did not include a vertical loop design as installed in the Comanche Peak facilities. The inspector found that the licensee's conclusion was reasonable.

While the issue was being resolved, the licensee declared the detectors inoperable and then developed an alternate method of monitoring containment high range radiation. The inspector found that the licensee's compensatory actions were appropriate and met the requirements of Technical Specification 3.3.3.3. Overall, the inspector found that the licensee handled the issue in a conservative and timely manner.

E1.3 Single Failure Potentially Outside of Design Basis

a. Inspection Scope (37551, 71707)

By reviewing NRC Daily Events Reports, the licensee identified a scenario which could place the plant outside of the design basis as described in the Final Safety Analysis. The inspector reviewed the licensee's documentation, the operability determination, and discussed the licensee's plans for resolution.

b. Observations and Findings

On January 28, the licensee identified that an accident scenario reported by Seabrook on December 12, 1996, could potentially place both units outside of the

design basis. The scenario involved a main steamline or feedwater line break from a generator supplying the turbine-driven auxiliary feedwater pump (TDAFWP), coincident with a failure of one train of the solid state protection system which, in turn, would prevent the automatic start of one motor-driven auxiliary feedwater pump and the opening of another steam supply valve to the TDAFWP. The scenario postulated that the operating motor-driven auxiliary feedwater pump was supplying the generator with the break and that the steam supply to the turbine-driven auxiliary feedwater pump was from the same generator. The licensee documented the condition on a ONE form. On February 3 the licensee determined that the scenario was applicable and that it was outside the accident analysis described in the Final Safety Analysis Report. The licensee made a 1-hour nonemergency report in accordance with 10 CFR 50.72(b)(1) and followed with Licensee Event Report 445/97-001.

The inspector found that the licensee had appropriately documented the condition on a ONE form in a timely manner and that the licensee's operability determination was acceptable. The licensee took credit for operator action to start other train of motor-driven auxiliary feedwater pump. At the end of the inspection period, the licensee was developing a design change which would prevent this scenario. The inspector will review the licensee's design change and implementation schedule as followup to the licensee event report.

E8 Miscellaneous Engineering Issues (92902)

E8.1 (Closed) LER 50-446/96005: both main feedwater pumps tripped while resetting the control system due to personnel error. The error occurred when the pump computer central processing units were reset. The licensee committed to upgrade the applicable vendor installation procedure to prevent another recurrence. The inspector verified that the revised procedure had been corrected as stated by the licensee and determined that the procedure was adequate.

E8.2 (Closed) LER 50-445/95003: loss of both condensate and feed pumps due to a failure of a nonsafety related inverter which resulted in a manual reactor trip. The licensee's corrective actions were to repair and perform a functional test of the affected inverter. The licensee also committed to perform a design modification to prevent future loss of power to the subject relays that caused the pumps to trip on a false low lube oil pressure signal. The inspector verified that all of the licensee's corrective actions for this Unit 1 issue were completed.

E8.3 (Closed) LER 50-445/95004: allowed outage time exceeded in conjunction with enforcement discretion for the Unit 1 TDAFWP that tripped on overspeed. The NRC had granted enforcement discretion to allow the licensee to remain in Mode 3 (hot standby), while testing was performed on the pump. The inspector reviewed subsequent licensee actions to prevent overspeed trips on TDAFWPs. These actions included maintenance and engineering enhancements, design modifications intended to prevent moisture entrainment in the pump governor valve and to remove

and limit the amount of water that passes through the turbine on a cold start. The licensee also enhanced associated surveillance procedures and increased TDAFWP inspection activities. The inspector concluded that the licensee had taken appropriate actions to prevent further overspeed trips.

E8.4 (Closed) Violation 50-446/9528-01: containment penetration overheating. In April 1995, the inspectors identified that the licensee had been frequently operating all four of their Unit 2 upper feedwater preheater bypass penetrations above their steady state design limit of 150°F for several years. The inspector reviewed the licensee's corrective actions and implementation of revised operating procedures and concluding that they were effective.

IV. Plant Support

R1 Radiological Protection and Chemistry Controls

a. Inspection Scope (71750)

The inspectors observed radiological protection activities during routine tours and observations of maintenance activities, walked down selected doors that were required to be locked for radiation protection purposes, and reviewed primary and secondary water chemistry results.

b. Observations and Findings

The inspectors found that radiation protection technicians were present during maintenance activities in radiation areas, as expected. All of the selected doors that were required to be locked for radiation protection purposes were verified to be locked by the inspectors. The licensee closely monitored primary and secondary chemistry results, and the inspectors found that the results were within the prescribed limits.

F2 Status of Fire Protection Facilities and Equipment

F2.1 Control of Transient Combustibles

a. Inspection Scope (71750)

During periodic tours, the inspectors reviewed the licensee's control of transient combustibles. When transient combustible materials were noted, the inspectors verified that permits had been issued in accordance with procedures. Two situations were noted where transient combustibles were identified by the inspectors and permits had not been issued. The inspectors reviewed the licensee's process for controlling transient combustibles and reviewed the licensee's corrective actions.

b. Observations and Findings

The inspectors identified some wooden plugs being used in the emergency diesel generator building exterior wall spare penetrations. The exterior wall was considered a fire boundary. The inspector found that a transient combustible permit was not written for the use of wooden plugs. The licensee immediately wrote a ONE form and a transient combustible permit for the wooden plugs. No compensatory measures were required due to the insignificant amount of combustible material (approximately 5 pounds) and the location of the penetrations. The licensee intended to replace the wooden plugs with metal ones when they became available. The inspector found that the ONE form did not include actions to verify whether there were wooden plugs in the remaining three emergency diesel generator rooms until questioned by the inspector. No other wooden plugs were subsequently identified. The licensee's failure to write a transient combustible permit violated their plant procedure for controlling the storage of combustible materials within 50 feet of an exterior plant building wall. However, the amount of transient material was negligible, and the licensee's immediate corrective actions to generate a permit and pursue the installation of metal plugs were appropriate.

During the inspection period, the inspector noted that a crane was parked within a few feet of the Unit 1 containment building for several days. The inspector questioned the licensee regarding the seismic qualifications and combustibility of the crane. The inspector reviewed the licensee's analysis and found that the licensee had analyzed for tornado generated missiles and for potential seismic concerns from the crane. However, a transient combustible permit covering the diesel fuel in the crane was not generated. Station procedures required that a transient combustible permit be generated for a vehicle parked within 50 feet of a plant area for more than 24 hours. The amount of the diesel fuel in the crane was minimal and did not impact the operability of containment. The licensee generated a permit following the inspector's questions.

c. Conclusions

The inspectors concluded that the licensee generally controlled transient combustibles according to procedures and maintained the amount of combustibles in plant areas to a minimum. These two exceptions constitute violations of minor significance and are being treated as a Non-Cited Violation, consistent with Section IV of the NRC Enforcement Policy (NCV 50-445(446)/9705-03). These examples are indicative of a lack of attention-to-detail.

V. Management Meetings

X1 Exit Meeting Summary

The licensee did not identify any information that was reviewed during the inspection period as proprietary.

ATTACHMENT

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

C. L. Terry, Group Vice President, Nuclear Production
M. R. Blevins, Plant Manager
J. J. Kelley, Vice President, Nuclear Engineering and Support
R. D. Walker, Regulatory Affairs Manager
T. A. Hope, Regulatory Compliance Manager
M. L. Lucas, Maintenance Manager

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

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-445(446)/9705-01	IFI	control room equipment configuration control
50-445/9705-02	VIO	incorrect torque applied during auxiliary feedwater valve maintenance
50-445(446)/9705-03	NCV	failure to follow control of transient combustibles procedure

Closed

50-445/9602-02	VIO	inadequate alarm response and abnormal operating procedures led to a trip and safety injection
50-445(446)/9604-01	VIO	four examples of failure to follow component configuration control procedures
50-445/9511-02	IFI	incorporation of vendor recommendations into procedures
50-446/9528-01	VIO	containment penetration overheating
50-446/9606-03	IFI	conoseal failure generic implications
50-446/9608-03	VIO	inadequate procedures contribute to a loss of reactor vessel level indication and inadvertent boration
50-446/9610-01	IFI	training and performance of check valve maintenance
50-446/9611-01	VIO	failure to follow procedures for clearance during feedwater pump maintenance
50-445(446)/9705-03	NCV	failure to follow control of transient combustibles procedure
50-446/94011	LER	missed surveillance due to administrative error
50-445/95004	LER	allowed outage time exceeded in conjunction with enforcement discretion for turbine-driven auxiliary feedwater pump maintenance
50-445/95003	LER	failure of nonsafety related inverter result in reactor trip
50-446/96005	LER	personnel error caused trip of both main feedwater pumps
50-445/9705-02	VIO	incorrect torque applied during auxiliary feedwater valve maintenance

LIST OF ACRONYMS USED

BTRS	boron thermal regeneration system
FSAR	Final Safety Analysis Report
IFI	inspection followup item
LCO	limiting conditions for operation
LER	licensee event report
NCV	noncited violation
ONE	operations notification and evaluation
psig	pounds per square inch (gage)
TDAFWP	turbine-driven auxiliary feedwater pump
VIO	violation