ENCLOSURE 2

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket Nos.:	50-445 50-446
License Nos.:	NPF-87 NPF-89
Report No.:	50-445/97-17 50-446/97-17
Licensee:	TU Electric
Facility:	Comanche Peak Steam Electric Station, Units 1 and 2
Location:	FM-56 Glen Rose, Texas
Dates:	July 20 through August 30, 1997
Inspectors:	G. E. Werner, Acting Senior Resident Inspector H. A. Freeman, Resident Inspector R. L. Nease, Technical Assistant, Division of Reactor Projects W. C. Sifre, Resident Inspector, South Texas Project W. J. Wagner, Reactor Inspector, Division of Reactor Safety
Approved By:	J. I. Tapia, Chief, Projects Branch A Division of Reactor Projects
ATTACHMENT:	Supplemental Information

EXECUTIVE SUMMARY

Comanche Peak Steam Electric Station, Units 1 and 2
NRC Inspection Report 50-445/97-17; 50-446/97-17

Operations

- The inspectors determined that operations personnel operated the plant in a safety conscious manner with appropriate management oversight (Section O.1.1).

- Housekeeping and material condition of plant equipment were excellent (Section O.1.1).

- A violation of Technical Specification 6.8.1 was identified with three examples of operators failing to follow procedures. The three recent incidents involved errors due to inattention-to-detail. The licensee acknowledged the need to evaluate whether an adverse trend was occurring and the need for additional corrective actions (Section O8.1).

Maintenance

- The failure to have a spare orifice available was a poor work practice which resulted in taking safety-related equipment out of service without the capability to repair the deficiency (Section M1.3).

- The control room emergency pressurization surveillance was conducted by knowledgeable and conscientious engineers. Their performance was good, however, some weaknesses were identified in the documentation of the test results (Section M1.4).

- The corrective actions taken for prior failures of the transfer cask grapple had been ineffective in resolving the gripper problems. The licensee was currently taking appropriate steps to resolve the problems with the transfer assembly (Section M2.1).

- The technician's previous action to pry open the transfer cask grapple when they had trouble releasing it, and then not document this action in a work request or a corrective action document, was inappropriate (Section M2.1).

- The inspectors identified a violation of Technical Specification surveillance requirements when the licensee failed to perform stroke time testing of a containment isolation valve following actuator maintenance (Section M7).

- The inspectors concluded that the licensee failed to follow the procedure in at least one instance when a containment isolation valve bushing was modified without

proper documentation, review and approval. As part of this issue, a review of similar vendor-recommended maintenance activities that may have been conducted without proper approval will be conducted. The inspectors also found that steam generator atmospheric relief valves had not been properly classified in maintenance documents. These issues will remain unresolved pending the licensee's investigation (Section M7).

Engineering

- The inspector determined that no adverse operational concerns existed with the reactor coolant leakage from Pressurizer Safety Valve 2-8010B (Section E2).

Plant Support

- The inspectors determined that radiological postings were current, plant personnel were aware of radiological work permit requirements and radiation protection personnel provided good support to work activities (Section R1).

- The inspector identified a violation of illumination requirements within the protected area. Security personnel responded immediately and installed temporary lighting (Section S1).

- The inspector concluded that the Thermo-Lag fire barrier installations, located in Rooms 1-096 and 1-241, were easy to inspect and showed no signs of degradation or damage. A noncited violation was identified for discrepancies between actual Thermo-Lag barrier locations and completed inspection forms (Section F2).

Report Details

Summary of Plant Status

Unit 1 and Unit 2 operated at 100 percent power throughout the inspection period.

I. Operations

O1 Conduct of Operations

O1.1 Plant Tours (71707)

a. Inspection Scope

The inspectors conducted frequent plant tours to verify safe operation of plant equipment and to inspect general plant material and housekeeping conditions. As part of the tours, the inspectors performed routine control room observations, and walkdowns of safety-related flow paths and locked component lists.

b. Observations and Findings

Overall, the inspectors determined that operations personnel operated the plant in a safety conscious manner with appropriate management oversight. Safety systems were properly aligned. Plant housekeeping and material condition of plant equipment were excellent. The inspectors identified several minor housekeeping and equipment material deficiencies. These deficiencies were appropriately dispositioned by the licensee.

O.1.2 Clearance Tag Verification

a. Inspection Scope (71707)

The inspector reviewed the clearance tags hanging on Waste Gas Compressor X-02, checked the position of the tagged components, the locations of the tags, and compared them to the positions on the clearance document.

b. Observations and Findings

The inspector noted that the equipment nomenclature on several of the tags had been changed by the individual hanging the tags and that the tags were attached to the appropriate components. Additionally, the inspector noted that the required position on one of the tags had been changed from "auto after close' to "close."

The inspector reviewed the electrical drawing and concluded that the clearance planner had incorrectly interpreted the note which stated, "3 position spring return right to center standard handle." The close position was to the left and was not spring returned to the center position. The "close" position was appropriate for the switch.

The inspector verified that the changes had been authorized by a cognizant authority and that corrections to the master equipment list were planned or in progress to correct the required location/position. The inspector found that the clearance was appropriate for the maintenance activity.

O4 Operator Knowledge and Performance (71707, 61726)

The inspectors performed a field observation of Emergency Diesel Generator (EDG) 1-02 operability test. The systems performed as expected and no concerns were identified.

O8 Miscellaneous Operations Issues (92901)

O8.1 Closed IFI 50-446/9714-02: while performing OPT-457B, "Train A Safeguards Slave Relay K740 and K741 Actuation Test," Revision 2, a licensed operator failed to perform a step in the procedure. The operator missed Step 8.8 which required Valve 2-8812A to be closed and as a result, the surveillance test failed to meet its acceptance criteria. The test failure resulted from improperly positioning a valve prior to test actuation. Although the surveillance test failed, the system was still capable of performing its safety function.

Technical Specification (TS) 6.8.1 requires that written procedures be established, implemented, and maintained covering activities recommended in Regulatory Guide 1.33, Revision 2, Appendix A. Appendix A requires general operating procedures for power operation, startup, and shutdown of safety-related systems and for conducting maintenance. The failure of the operator to position the valve in accordance with Procedure OPT-457B is the first example of a violation of TS 6.8.1 (50-445(446)/9717-01). Two additional examples of a failure to follow procedures were identified during this inspection period.

On August 7 during the post maintenance testing of EDG 2-01, an operator failed to immediately load the EDG as required by Procedure OPT-214B, "Diesel Generator Operability Test," Revision 4, Step 8.1.V and the EDG tripped on reverse power. No safety consequence was involved since the EDG was already inoperable as a result of maintenance. However, the failure of the operator to immediately load the EDG in accordance with the procedure is the second example of a violation of TS 6.8.1 (50-445(446)/9717-01).

On August 21 operations personnel identified that the Unit 1 chemical and volume control system cation bed was not properly secured in accordance with Procedure SOP-103, "Chemical and Volume Control System," Revision 10. The cation bed was placed in service for lithium control. An auxiliary operator opened the bypass valve but failed to close the inlet and outlet valves to the bed as required by Step 5.3.10. Indicated flow through the bed was zero and a subsequent chemistry analysis identified a slight decrease in lithium of approximately 0.02 ppm. Reactor coolant chemistry remained within desired limits. The failure of the auxiliary operator to close the inlet and outlet valves of the cation bed is the third example of a violation of TS 6.8.1 (50-445(446)/9717-01).

The inspectors determined that the corrective actions taken for each individual error were appropriate. However, the three recent incidents involved errors due to inattention-to-detail and the licensee acknowledged the need to evaluate the errors to determine if an adverse trend was occurring and whether there is a need for additional corrective actions.

08.2 (Closed) Licensee Event Report 50-445/96-005: Unit 1 entry into TS 3.0.3 due to a cracked weld in the safety injection system piping. This event was previously reviewed as documented in NRC Inspection Report 50-445/96-06; 50-446/96-06. The previous review included inspector reviews of activities associated with the licensee corrective actions. No new issues were revealed by this report.

II. Maintenance

M1 Conduct of Maintenance

M1.1 General Comments

a. Inspection Scope (62707 and 61726)

The inspectors observed all or portions of the following work activities:

- Leak Rate Testing of Penetration MV-14
- Containment Spray 1-01 and 1-03 Bearing Cooler Service Water Flow Element Inspection and Cleaning
- Control Room Emergency Pressurization Surveillance Test
- Auxiliary Feedwater Pump 2-02 Motor Breaker Protective Relay Calibration

b. Observations and Findings

The inspectors found that the work performed under these activities was appropriately conducted. Specific details are listed below.

M1.2 Leak Rate Testing of Penetration MV-14 (Unit 1 Containment Pressure Relief Penetration Line)

The workers conducting the test were knowledgeable of the leak rate testing requirements and used good work practices. During the removal of the leak rate testing gear from the penetration vent valve, one of the workers failed to wear gloves to protect against potential contamination while removing the testing gear from the penetration. Discussions with the worker and a radiation protection (RP) technician indicated that this penetration vent valve has never shown any contamination and that wearing gloves was a precaution. The RP technician stated that he instructed the worker to wear gloves while working on the penetration connection. This is another example of recently identified poor radiological work practices documented in NRC Inspection Report 50-445/97-15; 50-446/97-15. Radiation protection management agreed that this was a poor work practice and counseled the individual.

M1.3 Containment Spray Bearing Cooler Service Water Flow Element Inspection and Cleaning

On August 7 the inspector observed maintenance personnel clean and inspect the Train A containment spray service water flow element. The orifice was being inspected because the control room annunciator for this particular flow element was locked in. A freeze seal was established to isolate the downstream side of the flow orifice from the service water return header. The technicians properly assembled and maintained the freeze seal for the duration of the activity. Overall, the maintenance activity itself was well performed. Two areas for improvement were noted:

- Contrary to a request made by the operations supervisor, a replacement orifice was not fabricated prior to the maintenance task. A communication error in work control allowed the work package to be issued without the replacement orifice being available. A subsequent inspection identified that algae was interfering with the orifice and that the orifice was partially corroded. Although the orifice opening did not meet design specifications, the orifice was reinstalled because no spare was available. Indicated flow increased slightly but was still below the alarm setpoint. The failure to have a spare part available resulted in taking a safety-related system out-of-service without the capability to repair the deficiency.

- Approximately 10 minutes after securing the freeze seal, maintenance personnel began disassembling the freeze seal without using protective equipment (face shield, gloves, etc.). This was an unsafe work practice.

M1.4 Control Room Emergency Pressurization Surveillance Test

a. Inspection Scope (61726)

The inspector witnessed the performance of a major surveillance test on control room emergency pressurization Unit 21. The inspector reviewed the test procedure to determine whether it implemented the requirements of TS Surveillance Requirement 4.7.7.1j. Current work schedules were reviewed to determine whether planned maintenance activities could affect the outcome of the surveillance.

b. Observations and Findings

The inspector reviewed Procedure PPT-SX-7505A, "Control Room Pressurization Test Train A," and verified that the surveillance requirements of TS 4.7.7.1j were properly implemented. The inspector verified that the method for converting pitot tube differential pressures into air flow used accepted standard formulas. The inspector noted that the procedure did not have a space for recording each micro-manometer measured reading. The measured reading had to be doubled to obtain the actual differential pressure and could have led to test result errors.

The inspector walked down temporary tubing installed in the control room to measure differential pressures and found one tube connected to the wrong side of a differential pressure gage. The procedure did not provide detailed explanations or drawings to describe the required connections. The inspector observed the performance and test engineer check connections in a different location using an informal drawing. When questioned, the engineer verified that the connection in the control room was indeed incorrect and then corrected the problem. Some minor weaknesses were noted in the procedure and the licensee informed the inspector that they intended to correct these weaknesses in a future revision. The inspector concluded that this was appropriate.

Through a review of the plan-of-the-day, the inspector identified several maintenance activities on ventilation components which were scheduled to be performed prior to the test. These activities included major inspections and functional strokes of four motor-operated ventilation dampers. The inspector questioned the licensee whether any of the maintenance activities could present a preconditioning situation. For example, on dampers which must reposition for proper pressurization operation, whether adding lubricant to the gear box during the inspection or stroking of the dampers prior to the surveillance would precondition the dampers and invalidate the surveillance. The licensee did not have time to fully address these questions prior to the scheduled maintenance activities so they made a conservative decision to cancel the maintenance until after the surveillance test. Following the surveillance test, the licensee concluded that the planned maintenance would not have constituted preconditioning. The inspectors reviewed the licensee's conclusion and had no questions.

On August 7 the licensee conducted the surveillance test. During the surveillance test, the engineers measured a flow of 888 cfm. Surveillance Requirement 4.7.7.1j required that each pressurization unit maintain a positive pressure of ≥0.125 inches water gage relative to the adjacent areas at a makeup flow rate of ≤800 cfm. The licensee initiated a Operations Notification and Evaluation (ONE) form, modified the work order (WO) to adjust the inlet damper, and then adjusted the flow to 755 cfm. The engineer informed the inspector that any time flow exceeded 800 cfm that the unit was declared inoperable and then flow adjusted.

During the adjustment of the damper, the engineer noted that the wing nut holding the damper in place was not as tight as expected. The control of the damper position was governed by Procedure STA-601, "Authority for Equipment Operation." Although this adequately controlled the position of the damper, a specific requirement to verify the tightness of the wing nut was not called out in this procedure. The licensee stated that the surveillance procedure would be enhanced to specify that the damper be snug tight and that this would be accomplished by tightening the nut with a wrench.

The inspector observed that the method used to measure air flow did not appear to be easily repeatable which may have led to errors. Previous surveillance tests on emergency pressurization Unit 2 measured flows of 817 cfm, 625 cfm, 788 cfm, and 888 cfm. Because of the variations noted between successive tests and the vent damper adjustment nut being found looser than expected, the inspector will review the maintenance history, and compare the test method to national standards to determine potential causes of these differences during a future inspection as an inspection followup item (50/445(446)/9717-02).

c. Conclusions

The procedure adequately implemented the surveillance requirements of TS 4.7.7.1j.

The control room emergency pressurization surveillance was conducted by knowledgeable and conscientious engineers. Their performance was good, however, some weaknesses were identified in the documentation of the test results.

M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 Reactor Coolant System Filter Transfer

a. Inspection Scope (62707, 71750)

While transferring a contaminated reactor coolant system filter on August 16, the filter became unlatched from the grapple inside the shielded transfer assembly and toppled onto its side on the transfer assembly base when the licensee was in the

process of transferring the filter to a storage vault. The licensee used long-handled tools to right the filter, which allowed the filter to be regrappled inside the shielded assembly.

The inspector reviewed the event to verify that radiation exposures were not excessive and surveyed the transfer assembly to verify that the assembly was properly posted. Additionally, the inspector reviewed the recent failure history and corrective actions of the transfer assembly.

b. Observations and Findings

The inspector found that the licensee had taken appropriate radiological steps to minimize exposure to the technicians while restoring the filter to an upright condition. The technicians received a total of 39 millirem dose during the evolution. The floor surrounding the transfer assembly was decontaminated. No contamination became airborne and none of the technicians were contaminated. The inspector verified that the transfer assembly was appropriately posted as a high radiation area inside the assembly.

The inspector found that the transfer assembly has had several failures over the past two and one-half years. Three events which occurred in early 1996 were documented and dispositioned together in one plant incident resolution (a more detailed review of an event that requires a root cause analysis). In one of those events, a filter dropped approximately 1 foot onto the floor. Corrective actions included purchasing a high resolution camera to help ensure that the grapple properly secured the filter and implementing a regular preventative maintenance program.

The most recent failure was documented on ONE Form 97-881 and will be resolved as a plant incident resolution. The inspector discussed the proposed corrective actions with the system engineer. The engineer believed that debris in the collector could have been the cause of the difficulty experienced releasing the filter and could have caused the unlatching. Several potential problems were identified and corrected during troubleshooting. These included electrical connection problems with the controller pendent, debris in the takeup reel collector and deficiencies in the design of the grapple. The licensee plans to replace the grapple at a future date. The engineer identified that several weeks prior to the failure, technicians had trouble releasing the grapple from a filter and pried the grapple open. The technicians did not initiate a work request or a ONE form to investigate the cause of the jammed grapple at that time. No physical damage to the grapple was identified during subsequent troubleshooting.

c. Conclusions

The inspector concluded that the corrective actions taken for the prior failures of the transfer cask grapple had been ineffective in resolving the grapple problems.

The licensee was currently taking appropriate steps to resolve the problems with the transfer assembly. Finally, the inspector concluded that the technicians actions to pry open the grapple and not document this action was inapnropriate.

M2.2 Reactor Coolant Pump Seal Injection Filter Vent Valve Leal

a. Inspection Scope

On August 17 Unit 1 reactor operators noted a lowering level in the volume control tank and a drop in seal injection flow while an auxiliary operator was flushing the in-service seal injection filter vent valve. The valve was being flushed in an attempt to reduce leakage. The licensee estimated that the leak was approximately 15 gpm and entered the action statement for TS 3.4.5, "Reactor Coolant System Leakage." The other seal injection filter was placed in service and the filter with the leaking vent valve was isolated, securing the leak.

The inspector reviewed the circumstances surrounding the leakage, the licensee's actions to isolate the leak and portions of the corrective maintenance activities.

b. Observations and Findings

The following day, the licensee's regulatory affairs organization concluded that since the leakage was from the chemical and volume control system, easily identified and isolated, and not from the reactor coolant system, entry into the TS 3.4.5 action statement had not been required. The inspectors agreed with the this position.

The inspectors reviewed the licensee's procedure for placing the filters in service and found that the procedure required that the vent valve be cracked open to remove any air prior to placing the filter in service. This places a pressure of over 2,000 psi across the valve seat. After reviewing the vendor manual, the inspector concluded that the operation of the filter assembly was appropriate.

The inspector attended a prejob briefing prior to conducting troubleshooting on the leaking vent valve. The briefing was attended by all individuals involved with the activity including the auxiliary operator, reactor operator, unit supervisor, and system engineer. The plan was detailed and organized.

The inspector observed portions of the corrective maintenance activity to repair the vent valve. The mechanics were knowledgeable and followed the WO and procedure. Excellent verification techniques were used to establish the correct torque during valve operator reassembly.

M7 Quality Assurance in Maintenance Activities (62707 and 92902)

a. Scope

The inspectors reviewed: ONE forms associated with the performance of maintenance, completed maintenance WOs, vendor information, the Final Safety Analysis Report (FSAR) and portions of other licensee documents related to work conducted on Valve 1-HV-4175, Unit 1 containment isolation accumulator sample valve.

b. Observations and Findings

On August 22 the inspector noted that, although ONE Form 97-900 was initiated on August 20, the adverse condition had been discovered on July 24. The ONE form was written by a quality control (QC) technician to document a modification to the valve actuator bushing without any documentation or evaluation. The inspectors reviewed WO 4-97-109682 and noted that there were no work instructions or drawings for modifying the actuator bushing in either the WO or in the referenced procedures. In addition, the inspectors noted that post-maintenance testing was not performed.

During the review of the completed WO, a QC technician determined that maintenance personnel drilled holes in the accumulator sampling valve actuator bushing to facilitate its removal. An evaluation was not performed nor was the modification documented in the WO. The QC technician returned the WO package to the responsible WO supervisor and attached a QC WO review sheet which stated that a ONE form should have been initiated on this modification. The responsible WO supervisor responded that a ONE form was not required since this activity was not a modification. The supervisor provided a telefaxed memo from the vendor dated August 20, 1997, stating that this type of modification to actuator bushings was acceptable. The QC technician then initiated the ONE form himself, documenting this issue three weeks after its discovery. The inspectors determined that the delay in writing the ONE form was a poor practice and could contribute to unnecessary equipment inoperability.

The modified bushing was part of a Fisher-Type 667 actuator that is air-to-open and spring-to-close. Fisher-Type 667 actuators are used in numerous systems throughout plant. Maintenance workers drilled and tapped the top of the bushing to facilitate its removal for elastomer change-out, instead of removing the bushing by dismantling the actuator as described in a maintenance procedure. In discussions with the valve team supervisor, the inspectors were told that maintenance workers had been modifying Fischer-Type 667 actuator bushings in this manner since 1994 in accordance with a vendor letter. The craft were trained in this technique, therefore, the valve team supervisor considered this process to be within the skill of the craft and not an alteration or modification. Licensee personnel were unable to retrieve the 1994 Fischer letter describing this change. Procedure STA-206,

"Review of Vendor Documents and Vendor Technical Manuals," Revision 19, states that vendor documents or correspondence that will be used for design, testing, or other input for licensee activities, shall receive review and approval on a vendor document review traveler, or be incorporated into an applicable vendor technical manual prior to final acceptance and approval of the activity.

The inspectors requested a list of all valves with Fisher-Type 667 actuators where the bushings had been modified in the above-described manner. The licensee compiled a list of 79 valves where the elastomers had been replaced. Because modification of the bushings was not documented, the licensee had not yet determined which of those 79 valves have modified bushings. The licensee is continuing to investigate this matter. This issue will remain unresolved until the inspectors review the licensee's identification of which of the 79 valve actuator bushings have been modified without the required review and approval and/or incorporation into an applicable vendor technical manual. In addition, a review for other vendor-recommended maintenance activities that may have been conducted without proper approval will be conducted (50-445(446)9717-03).

The inspectors reviewed the list and found that the steam generator atmospheric relief valves (ARVs) for both units were listed. The inspectors noted that only one of the eight steam generator ARVs were designated as ASME Code Class 2 and ANSI Safety Class 2 valves; the remaining ARVs were designated as "NA" for both ANSI Safety Class and ASME Code Class. The inspectors found that the FSAR designates these valves as ASME Code Class 2. The FSAR states that these ARVs are required to be operable following a safe shutdown earthquake coincident with a loss of offsite power, and that the steam generator ARV actuators are provided with safety-related air accumulators. The inspectors also reviewed the ASME Section XI inservice testing plan and found that steam generator ARVs are listed as ASME Section XI valves. The inspectors questioned whether the steam generator ARVs and other Section XI valves might have had elastomers replaced without post-maintenance testing. The licensee found that there were no elastomer change-outs since the last quarterly surveillances on the steam generator ARVs and therefore, all steam generator ARVs were considered operable. However, the licensee had not determined whether the bushings in the actuators had been modified and whether post-maintenance testing had been performed after the elastomers were replaced. The inspectors will review this information when the licensee has made these determinations. This will be reviewed as part of the above unresolved item (URI).

Upon receipt of ONE Form 97-900, on August 20, 1997, operations personnel immediately verified operability of Valve 1-HV-4175 by performing stroke time testing. The inspectors identified that no post-maintenance testing was completed following maintenance on July 8. Technical Specification 4.6.3.1 states, "The containment isolation valves shall be demonstrated OPERABLE prior to returning the valve to service after maintenance, repair or replacement work is performed on the

valve or its associated actuator, control or power circuit by performance of a cycling test, and verification of isolation time." The failure to stroke time test Valve 1-HV-4175 following maintenance on the valve actuator is a violation of TS 4.6.3.1 (50-445/9717-04).

c. Conclusions

The inspectors identified a violation of TS Surveillance Requirements when operators failed to perform stroke time testing of a containment isolation valve following actuator maintenance. It was concluded that the licensee failed to follow procedures in at least one instance when a containment isolation valve bushing was modified without the proper documentation, review, and approval. As part of this issue, a review of other similar vendor-recommended maintenance activities that may have been conducted without proper approval will be conducted. Moreover, it was discovered that the steam generator ARVs had not been properly classified in maintenance documents. These issues will remain unresolved pending the licensee's investigation.

M8 Miscellaneous Maintenance Issues (92902)

(Closed) Licensee Event Report 50-445/96-008: two Unit 1 pressurizer safety valves were found with unsatisfactory lift setpoints. This event was previously reviewed as documented in NRC Inspection Report 50-445/96-12; 50-446/96-12. The previous evaluation included reviews of activities associated with the licensee corrective actions. No new issues were revealed by this report.

III. Engineering

E1 Conduct of Engineering

a. Inspection Scope (37551)

The inspectors reviewed the FSAR and design basis document (DBD) on the control room emergency pressurization system. The inspectors discussed the surveillance test results with the licensee.

b. Observations and Findings

The inspectors found that the DBD and the FSAR listed the maximum flow rate of each pressurization unit as 800 cfm. The inspectors noted that Surveillance Requirements 4.7.7.1b(1), 4.7.7.1b(3), 4.7.7.1d(1), 4.7.7.1g, and 4.7.7.1h list pressurization unit flow rate limits of 800 cfm ± 10 percent (between 720 cfm and 880 cfm). The inspectors asked the licensee if the unit would be declared inoperable and the flow reset if the pressurization unit flow rate was measured above 800 cfm during a surveillance. The inspectors also asked if flow had ever

been measured above 800 cfm. The licensee was also asked to provide the basis for the GDC 19 dose calculation.

The licensee identified two occasions when the pressurization unit flow was left greater than 800 cfm. A surveillance test on train A conducted on September 11, 1994, left the flow rate at 817 cfm. The next surveillance measured the flow rate at 625 cfm on January 12, 1996, 16 months later. A surveillance test on train B conducted on July 15, 1996, also left the flow rate at 817 cfm. The next surveillance measured the flow rate at 781 cfm on August 8, 1997, 13 months later. With one control room emergency pressurization system train inoperable, TS 3.7.7.1 requires that the train be restored to an operable status within 7 days or be in at least hot standby within the next 6 hours and in cold shutdown within the following 30 hours. On August 28, 1997, the licensee determined that the design basis for GDC 19 calculation was 800 cfm and not 800 cfm +10 percent, and concluded that, for the two identified time periods, the limiting condition for operation of TS 3.7.7.1 had not been met and that this was reportable to the NRC under 10 CFR 50.73. The licensee determined that while the dose to the operators would have increased, the dose was still below General Design Criterion 19 limits assuming a flow rate as high as 888 cfm.

The inspectors questioned the licensee as to whether one emergency pressurization train had ever been technically inoperable for surveillance or maintenance purposes while the other train was rendered inoperable because it had been left with a flow rate above 800 cfm. At the end of the inspection, the licensee was in the process of determining the answer.

c. Conclusions

Two time periods were identified where the control room emergency pressurization flow was left greater than design assumptions for longer than the outage time allowed by Technical Specifications. This will remain an URI pending review of control room operator dose calculations to determine the significance of leaving the flow above the calculation limit, and pending a determination of whether the other train was inoperable during the time period when the as-left flow was greater than 800 cfm (50-445(446)/9717-05).

E2 Engineering Support of Facilities and Equipment

a. Inspection Scope (37551)

The inspectors reviewed the FSAR, DBD, technical manuals, plant logs, and trending data in order to determine the significance of the Pressurizer Safety Valve 2-8010B seat leakage. Interviews with licensed operators and with an engineer were conducted.

b. Observations and Findings

A concern with reactor coolant leakage into the pressurizer relief tank (PRT) from the pressurizer safeties and/or the power operated relief valves (PORVs) was identified as early as April 14, 1997. At that time, the leak rate was small and no correlation could be made as to the leaking component. Leakage into the PRT continued at a very small rate (0.020 gpm) and no correlation could be made until a containment entry identified that Pressurizer Safety Valve 2-8010B had an elevated tailpipe temperature of 175°F as compared to 111°F for the other two safeties. At that time, it was estimated that at the end of this operating cycle on October 25, 1997, the leakage from the safety would be approximately 0.32 gpm. Within the past month, numerous temperature alarms have been received for the PORVs and for higher tailpipe temperatures on Valve 2-8010B.

Discussions with an engineer responsible for trending the leakage disclosed that as of August 25, the leakage into the PRT was only 0.0432 gpm. The engineer also stated that although leakage from Valve 2-8010B was erratic, only a slight increase in leak rate was predicated until the end of the cycle. Based upon the review of trending data, the inspectors determined that the calculated leak rate was appropriate. In addition, the engineer explained that Westinghouse personnel were contacted and they recommended no action other than continuing to monitor leak rate. The inspectors reviewed the FSAR, DBD, and technical manuals and did not identify any concerns associated with long-term minor seat leakage.

c. Conclusions

The inspectors determined that no adverse operational concerns existed with the reactor coolant leakage from Pressurizer Safety Valve 2-8010B.

IV. Plant Support

R1 Radiological Protection and Chemistry (RP&C) Controls (71750)

The inspectors determined that radiological postings were current; plant personnel were aware of radiological work permit requirements; and RP personnel provided good support to work activities. The inspectors reviewed primary and secondary chemistry results on a routine bais and found the results satisfactory.

During a plant tour, the inspectors identified a non-radioactive drain posted with an "information tag" dated October 1994. The tag specified that the floor drain was capped with an inflatable rubber device as a result of internal contamination. Although not a requirement, the inspectors noted that a good practice would be to clearly identify the drain as being potentially contaminated. The RP manager agreed that the drain should be clearly labeled and a radioactive material tag was placed on the drain. The drain was surveyed for activity and no activity was found. The

manager indicated that they would perform a flush to check for activity and determine posting requirements based on the sample. The inspectors determined this to be appropriate action.

R4 Staff Knowledge and Performance in Radiological Protection and Chemistry Controls (71707 and 71750)

The inspectors observed a chemistry technician prepare equipment to support containment atmosphere venting. The technician properly source-checked and reset alarm setpoints for various detectors. The technician used excellent self-verification techniques that ensured that the detector setpoints were adjusted in accordance with the pre-release data.

S1 Conduct of Security and Safeguards Activities

a. Inspection Scope (71750)

On August 27, 1997, the inspectors performed a walkdown of outside spaces within the protected area to verify adequate illumination.

b. Observations and Findings

During the walkdown of outside spaces located within the protected area, the inspectors identified that the undersides of two material storage trailers and a vending truck appeared to have inadequate lighting. Security officers in the secondary alarm station were informed of this concern and officers were stationed at the suspect locations. Subsequent measurements identified that lighting conditions were less than the 0.2 foot-candles required by the Physical Security Plan. The actual readings were 0.121, 0.116, and 0.133 foot-candles.

Security personnel immediately installed temporary lighting and measured illumination to ensure adequate lighting. Security personnel initiated Security Field Report 0720-97 to document the discrepancy. Followup conversations with the security manager indicated that security personnel had two opportunities earlier in the evening to identify these discrepancies.

License Condition 2.H requires the licensee to fully implement and maintain in effect all provisions of the physical security plan. Physical Security Plan, Revision 27, Section 7.1.3, "Illumination," required at least 0.2 foot-candles of light in the protected area as measured on horizontal ground. The inspectors determined that the failure to ensure the protected area is adequately illuminated is a violation of License Condition 2.H (Violation 445(446)/9717-06).

c. Conclusions

The inspectors identified a violation of illumination requirements within the protected area. Security personnel responded immediately and installed temporary lighting.

F2 Status of Fire Protection Facilities and Equipment

a. Inspection Scope (64704)

This inspection included a review of the licensee's fire barrier inspection activities which included a visual inspection of fire barrier installations that was performed to determine the status of the Thermo-lag fire barriers. The inspection also included a review of the corrective actions taken to address a licensee finding described in ONE Form 97-324, dated April 4, 1997, where fire barrier conditions where found to be inconsistent with those described in fire barrier inspection data sheets.

b. Observations and Findings

The inspectors found that Section IV-2.1.g.1.a of the licensee's Fire Protection Report contained the inspection requirements for fire barriers. This document required that fire barriers be inspected at least once every 18 months to confirm operability by visual inspection of the exposed surfaces of each type of fire barrier. The licensee considered this inspection to encompass all of the fire barriers located in designated rooms.

The licensee conducts fire barrier inspections in accordance with Procedure FIR-311, "Fire-Rated Assembly Visual Inspection." This procedure implemented the inspection requirements of Section IV-2.1.g.1.a of the Fire Protection Report. Section 8.2.3 of Procedure FIR-311 specifically addressed visual inspection of the exposed surfaces of the applied Thermo-lag on each applicable electrical raceway component. Additionally, this section required verification that the Thermo-lag was present, intact and showed no signs of degradation or damage. The procedure considered degradation or damage to be flaking, peeling, gouges, cracks, water damage, erosion and/or deformation of the Thermo-lag.

During a limited quality control walkdown of rooms 1-096 and 1-241 on April 3, 1997, to verify the effectiveness of the FIR-311 Thermo-lag inspection, the licensee found discrepancies between the Thermo-lag cable tray fire barrier assembly locations and the inspection records; this condition was documented on ONE Form 97-0324. The licensee's investigation found that on March 20, 1996, when the Thermo-lag inspections were performed, Revision CP-4 of Drawing M1-1700, "Thermo-lag and RES Schedule," which provided the installation requirements, was in effect. The licensee found that during the upgrade of the Thermo-lag fire barrier enclosures in rooms 1-096 and 1-241 and in some raceways were voided or deleted from the M1-1700 series drawings. Consequently, the technician performing the

inspection was not aware that 8 of 23 fire barrier entries on the FIR-311 data sheets for Room 1-241 and 4 of 21 fire barrier entries on the FIR-311 data sheets for Room 1-096 were still on the Procedure FIR-311 inspection form even though these fire barriers were removed from the rooms. As a result of this finding, quality control expanded their walkdown inspection to include a 100% inspection of the Thermo-lag installation in these rooms. This inspection identified the removed fire barriers. It was noted that the quality control inspections did not identify any deficiencies with the existing Thermo-lag installations which indicated that the integrity of the Thermo-lag installations was acceptable.

The inspectors found that Revision 1 to Procedure FIR-311, dated April 12, 1993, was used to perform the fire barrier inspections in Rooms 1-096 and 1-241 and that the licensee's investigation determined that Procedure FIR-311 did not provide clear instructions regarding inspection documentation. Review of FIR-311 by the inspectors supported these licensee findings. That is, the performance of the inspection of the Thermo-lag in Rooms 1-096 and 1-241 meant that the entire room was satisfactory and not that each cable tray, conduit, etc., was inspected individually. This type of inspection was consistent with the inspection requirements of the Fire Protection Report.

Using the inspection criteria documented in Procedure FIR-311, the inspectors performed a visual inspection of the Thermo-lag fire barrier installations located in Rooms 1-096 and 1-241, which were the rooms that were the subject of ONE Form 97-324. The inspectors did not identify any unsatisfactory Thermo-lag fire barriers during this inspection.

The inspectors noted that another finding identified in ONE Form 97-324 involved advice to the technician performing the inspections by a training instructor. Specifically, it appeared that instructions provided to the technician by the training instructor were contrary to the requirements of Procedure FIR-311. The inspectors found that the training instructor assumed that the cable trays listed on the inspection sheets accurately reflected the as-built drawings and that a 100% inspection of the Thermo-lag meant that all cable trays were inspected individually. However, the design changes to M1-1700 combined with the lack of awareness of these design changes by the fire protection supervisor, who developed the list, contributed to the erroneous inspection results. The inspectors also noted that there was no formal training provided to the technician who performed the Thermo-lag inspections in Rooms 1-096 and 1-241, that is, only verbal instructions were provided.

The licensee determined that the root cause of the discrepancies in the inspection records was due to inadequate training of inspection technicians and the lack of verification of the accuracy of the inspection data sheets provided to the inspecting personnel.

The inspectors found that the following corrective actions addressed in ONE Form 97-324 were accomplished:

- Drawing M1-1700 was revised as Revision CP-5 to incorporate all outstanding design change notices.

- Procedure FIR-311 was revised as Revision 2 on June 20, 1997 to correct the procedure data sheets and clarify the inspection requirements. The notable revisions were to Section 6.1 which required obtaining working copies of M1-1700 including all outstanding design documents, and to Section 8.2.4 which required that each item inspected be initialed and dated on inspection data sheet FIR-311-1.

- This training consisted of a procedural overview, a discussion of the inspection expectations and field familiarization. The discrepancies identified in ONE Form 97-324 were also included in this training. This three hour training was given June 20 and July 2, 1997.

The discrepancies between the Thermo-lag cable tray fire barrier assembly locations and the completed inspection report were identified as a violation of 10 CFR 50, Appendix B, Criterion V, "Instruction, Procedures, and Drawings." This non-repetitive, licensee-identified and corrected violation is being treated as a Non-Cited Violation, consistent with Section VII.B.1 of the NRC Enforcement Policy (50-445/9723-01).

c. **Conclusions**

The inspectors concluded that the Thermo-lag fire barrier installations located in rooms 1-096 and 1-241 were in accordance with the Fire Protection Report and that the licensee's corrective actions for the findings in ONE Form 97-324 were effective.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the results of the inspection to members of licensee management at the conclusion of the inspection on September 4, 1997. During the exit meeting, the licensee acknowledged that they planned to review the circumstances surrounding the three examples of a failure to follow procedural requirements in order to identify any common root cause and, based on their findings, take additional corrective actions if needed. No proprietary information was identified.

ATTACHMENT

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

Bednar, D., Senior Quality Control Technician
Bhatti, O., Senior Regulatory Compliance Engineer
Blevins, M. R., Plant Manager
Curtis, J. R., Radiation Protection Manager
Guldemond, W. G., Shift Operations Manager
Kelley, J. J., Vice President, Nuclear Engineering and Support
Terry, C. L., Group Vice President, Nuclear Production
Walker, R. D., Regulatory Affairs Manager

INSPECTION PROCEDURES USED

37551	Onsite Engineering
61726	Surveillance Observations
62707	Maintenance Observations
64707	Fire Protection Program
71707	Plant Operations
71750	Plant Support Activities
92901	Followup - Plant Operations
92902	Followup - Maintenance
92904	Followup - Plant Support

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-445(446)/9717-01	VIO	Three examples of operators failing to follow procedures (Section O8.1).
50-445(446)/9717-02	IFI	Compare testing of control room emergency pressurization units to national standards (Section M1.4).
50-445(446)/9717-03	URI	Review scope of accumulator bushing modification and generic aspects of maintenance modifications (Section M7).
50-445/9717-04	VIO	Failure to perform stroke time testing of containment isolation valve following actuator maintenance (Section M7).
50-445(446)/9717-05	URI	Control room dose and dual train inoperability associated with control room emergency pressurization units high flow rate (Section E1).
50-445(446)/9717-06	VIO	Inadequate protected area illumination (Section S1).
50-445/9717-07	NCV	Licensee-Identified Discrepancies with Thermo-Lag Inspection Procedure (Section F2).
50-445/9723-01	NCV	Licensee Identified Discrepancies with Thermo-lag Inspection Procedure (F2).

Closed

50-446/9714-02	IFI	Review human performance enhancement system on missed surveillance step (Section O8.1).
50-445/96-005	LER	Entry into TS 3.0.3 - cracked weld in safety injection system piping (Section O8.2).
50-445/96-008	LER	Two pressurizer safety valves found with unsatisfactory lift setpoints (Section M8).
50-445/9717-07	NCV	Licensee-Identified Discrepancies with Thermo-Lag Inspection Procedure (Section F2).
50-445/9723-01	NCV	Licensee Identified Discrepancies with Thermo-lag Inspection Procedure (F2).

LIST OF ACRONYMS USED

ANSI	American National Standards Institute
ARV	atmospheric relief valve
ASME	American Society of Mechanical Engineers
cfm	cubic feet per minute
DBD	design basis document
EDG	emergency diesel generator
FSAR	Final Safety Analysis Report
gpm	gallons per minute
IFI	inspection followup item
NCV	noncited violation
ONE	Operations Notification and Evaluation
PORV	power operated relief valve
PRT	pressurizer relief tank
psi	pounds per square inch
QC	quality control
RP	radiation protection
TS	Technical Specification
URI	unresolved item
VIO	violation
WO	work order