

APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Inspection Report: 50-445/94-04
50-446/94-04

Operating Licenses: NPF-87
NPF-89

Licensee: TU Electric
Skyway Tower
400 North Olive Street, L.B. 81
Dallas, Texas 75201

Facility Name: Comanche Peak Steam Electric Station

Inspection At: Glen Rose, Texas

Inspection Conducted: January 31 through February 4, 1994

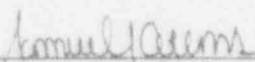
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(Lead Inspector), Facilities Inspection Program Branch

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Wesley L. Holley, Senior Radiation Specialist
Facilities Inspection Program Branch

Arthur McQueen, Emergency Preparedness Analyst, Region V

Approved:


Blaine Murray, Chief, Facilities
Inspection Programs Branch

2/18/94
Date

Inspection Summary

Areas Inspected: Routine, announced inspection of the operational status of the emergency preparedness program, including changes to the emergency plan and implementing procedures; emergency facilities, equipment and supplies; organization and management control; training; and internal reviews and audits

Results:

- Changes to the emergency plan and implementing procedures had been properly reviewed, approved, and submitted to NRC (Section 2.2).

- Within the scope of this inspection, the facilities and equipment were found adequately maintained and continued to meet NRC requirements (Section 3.2).
- No substantive changes, except for the elimination of the plant manager position, had been made in the emergency planning staff or the emergency response organization since the last routine emergency preparedness inspection at the site, and these organizations appeared consistent with NRC regulatory requirements (Section 4.2).
- Two exercise weaknesses were identified in the areas of notification and dose assessment (Section 5.1.2).
- In general, emergency response personnel had been properly trained as required and understood their emergency responsibilities (Section 5.2).
- The annual audit of emergency preparedness performed pursuant to 10 CFR 50.54(t) was of adequate scope and depth and utilized an audit team with good qualifications. The audit program of the licensee's emergency preparedness program was adequate to identify deficiencies and correct them (Section 6.2).

Summary of Inspection Findings:

- Exercise Weakness 445/9325-01; 446/9325-01 was closed (Section 7.1).
- Exercise Weakness 50-445/9404-01; 50-446/9404-01 was opened (Section 5.1.2).
- Exercise Weakness 50-445/9404-02; 50-446/9404-02 was opened (Section 5.1.2).

Attachments:

- Attachment 1 - Persons Contacted and Exit Meeting
- Attachment 2 - Operator Walkthrough Scenario Narrative Summary

DETAILS

1 PLANT STATUS

During this inspection, Unit 1 was at full power until a reactor/turbine trip occurred on February 1, 1994. Unit 2 was held at 80 percent of rated thermal power during the inspection.

2 EMERGENCY PLAN AND IMPLEMENTING PROCEDURES (82701-02.01)

The inspectors reviewed changes in the licensee's emergency plan and implementing procedures to verify that these changes had not decreased the effectiveness of emergency planning and that the changes had been reviewed properly and submitted to NRC.

2.1 Discussion

The inspectors reviewed selected changes in procedures and noted that changes appeared consistent with regulatory requirements and licensee commitments. No instances of emergency preparedness degradation were indicated. Inspectors also reviewed correspondence to verify that plan and procedure changes were in all cases reviewed and forwarded to the NRC within 30 days of the date of the change.

Since the previous inspection, the licensee had developed Position Assistance Documents which were placed in the emergency response facilities. These documents, intended to be used by responders as they conduct their emergency responsibilities, were written to provide specific instructions for each emergency response organization position. The inspectors reviewed several of these documents and found them to be organized and well conceived.

2.2 Conclusion

Changes to the emergency plan and implementing procedures had been properly reviewed, approved, and submitted to the NRC.

3 EMERGENCY FACILITIES, EQUIPMENT, INSTRUMENTATION, AND SUPPLIES (82701-02.02)

The inspectors toured onsite emergency facilities and reviewed the licensee's emergency equipment inventories and maintenance to determine whether facilities and equipment had been maintained in a state of operational readiness.

3.1 Discussion

A tour was made of each emergency response facility which included the inspection of various equipment items, instrumentation, and supplies. The emergency response facilities were observed to be well maintained and ready for emergency use. Random inspections were performed of radiation monitoring and respiratory equipment at each emergency response facility. All selected

Items were verified as being in calibration or had been appropriately inspected on a scheduled basis.

The licensee was in the process of converting the Technical Support Facility into a dedicated emergency response facility. Previously, the space had routinely been used for shift turnover meetings and job briefings. During the inspection, the inspectors observed that an adjacent area was in the process of being furnished for these purposes.

The inspectors reviewed documentation of preventive maintenance performed on the emergency ventilation system in the Emergency Operations Facility. The maintenance checks had recently been put on a monthly frequency. The inspectors noted that the preventative maintenance checks verified the testing operation of the system but did not include function testing of the HEPA filters.

3.2 Conclusion

Within the scope of this inspection, the facilities and equipment were found adequately maintained and continued to meet NRC requirements.

4 ORGANIZATION AND MANAGEMENT CONTROL (82701-02.03)

The inspectors reviewed the emergency response organization staffing levels to determine whether sufficient personnel resources were available for emergency response. The emergency planning organization was reviewed to ensure that an effective programmatic management system was in place.

4.1 Discussion

The inspectors reviewed the staffing of the emergency response organization and the selection process for those positions. The emergency response organization consisted of about 600 personnel and 95 response positions. A review of the most recent emergency response organization staffing roster found that a minimum of three individuals were assigned to fill all key emergency response organization positions. Assignments to the emergency response organization had been made by the Emergency Planning Manager in consultation with line management in order to make assignments according to the technical expertise and normal duty responsibilities of the staff.

Overall responsibility for emergency response was assigned to the Vice President of Nuclear Operations. The Emergency Planning group reported through the Vice President of Nuclear Operations through the Manager of Plant Support. Since the previous inspection, one change had been made effecting emergency planning. Specifically, the position of Plant Manager had been eliminated. The result of this change was to remove one level of management between the Emergency Planning group and the Vice President of Nuclear Operations.

The Emergency Planning Manager had been assigned responsibility for emergency preparedness. Reporting to the Emergency Planning Manager was two section supervisors and ten technical staff personnel whose responsibilities were

divided according to onsite or offsite planning areas. No changes had been made since the previous inspection in the staffing levels of the licensee's planning organization below the level of the Emergency Planning Manager. The inspectors found that the emergency planning group was staffed with an excellent number of qualified personnel.

The inspectors reviewed the licensee's emergency planning tracking system which had been used to manage action items relating to the emergency preparedness program. The system indicated the source of the items, their management assigned priority for resolution, and current status. Included in the action item list were a number of NRC-identified improvement items from exercises. Even though NRC inspection reports had not asked for the licensee's response to improvement items, the licensee's effort to evaluate and assign action to NRC-identified improvement items was reflective of a proactive approach to program improvements.

4.2 Conclusions

No substantive changes, except for the elimination of the plant manager position, had been made in the emergency planning staff or the emergency response organization since the last routine emergency preparedness inspection at the site, and these organizations appeared consistent with NRC regulatory requirements.

5 TRAINING (82701-02.04)

The inspectors reviewed the emergency response training program and interviewed selected individuals to determine whether emergency response personnel were receiving the required training to be in compliance with the requirements, 10 CFR 50.47(b)(15), 10 CFR Part 50, Appendix E.IV.F, and the emergency plan.

5.1 Discussion

5.1.1 Training Program

The inspectors reviewed the site emergency training program with licensee managers responsible for this training. Three changes in the emergency preparedness training program were made since the last emergency preparedness inspection.

- An Emergency Response Basics course had been added to the program. This course is a summary overview of the overall emergency response organization, facilities, and functions of the emergency response program.
- A system of team training had been implemented for the annual requalification of emergency response organization personnel.

- Training records formerly maintained in a vendor computer program, PRIME, were converted to the licensee's developed EIS, Employee Information System, computer records maintenance system.

To insure that response organization personnel are aware of changes to the emergency preparedness program as they occur, understand them, and are adequately trained to implement these changes, the licensee uses a two-tier training approach.

- Important or substantive changes are covered in training courses. For example, annual requalification classes have been rescheduled to train personnel sooner than their routine schedule required.
- Bulletins are developed and distributed to emergency response organization members for minor or less substantive changes as the changes are made.

The inspectors reviewed selected documentation of emergency drills and exercises conducted as specified in Section 12.0 of the Emergency Plan. Exercises had been conducted more frequently than the annual frequency specified in the plan and required by 10 CFR Part 50, Appendix E.IV.F(2). Communication drills and radiation monitoring drills had also been conducted more frequently than specified in the plan. Drill packages had been prepared in accordance with Procedure EPP-902, "Emergency Preparedness Drills." Critique findings were properly characterized relative to their significance.

5.1.2 Walkthroughs with Operating Crews

The inspectors conducted a series of emergency response walkthroughs with operating crews to evaluate the adequacy and retention of skills obtained from the emergency response training program. A single walkthrough scenario was developed by the inspectors and administered to the crews to determine whether control room personnel were proficient in their duties and responsibilities during a simulated accident scenario. Attachment 2 to this inspection report contains a narrative summary of the walkthrough scenario.

The inspectors observed three crews during the walkthroughs using the control room simulator in the dynamic mode. The scenario consisted of a sequence of events requiring an escalation of emergency classifications, culminating in a General Emergency. Each walkthrough lasted approximately 90 minutes. During the walkthroughs, the inspectors were able to observe the interaction of the response crews to verify that duties and responsibilities were clearly defined and understood. The walkthroughs also allowed the evaluation of the crews' abilities to assess and classify accident conditions, perform dose assessments, develop protective action recommendations, and make timely and complete notifications to offsite authorities.

The crews were generally effective in responding to abnormal events and implementing the appropriate procedural driven corrective actions. The Control Room Supervisor and Shift Supervisor consistently provided adequate crew guidance and command and control. Communications were generally

effective although informal in some instances. On one crew, the Shift Supervisor was slow to inform the crew of his emergency declarations. The observed communication informalities did not result in any miscommunication between crew members.

The crews displayed an unfamiliarity with reconfiguring the PC-11 Computer System from a loss of communications link with the Plant Computer following a loss of one train of vital AC power. Only one of the three crews was able to re-establish the communication link prior to the end of the scenario. This inability to reconfigure the PC-11 directly affected one crew's ability to perform timely assessment of the radiological plant conditions. This resulted in a slow escalation from a Site Area Emergency to a General Emergency. In the actual plant control room, the radiological plant conditions could have been assessed alternately from the RM-23 radiation monitor panel; however, this instrumentation is not modeled in the control room simulator. The training of operators to reconfigure the PC-11 was identified as an area of potential improvement.

During the walkthroughs, one Emergency Coordinator was slow to declare an Alert in accordance with Procedure EPP-201, Attachment 1, Chart 11, "Fire," Box 11.C. The Alert condition was met with a fire inside the protected area lasting greater than 10 minutes which potentially affected a safety system. In the scenario, the No. 2 station service water pump was rendered inoperable by a fire lasting greater than 10 minutes in the station service water intake structure. The Shift Supervisor declared the Alert 6 minutes after reports were received which confirmed that conditions for the classification were met. During the same event with a different crew, the Emergency Coordinator also declared an Alert based on a fire affecting safety systems; however, the required 10 minutes had not yet elapsed to make the classification valid. In this scenario, the Alert was declared 5 minutes after initial receipt of the fire alarms. The Emergency Coordinator is authorized to make a classification based on his professional judgement when the current plant conditions do not meet a specific EPP-201, Attachment 1 guideline; however, in this instance, the Emergency Coordinator utilized a specific guideline which the plant conditions did not yet support. The timing of Alert classification of fire conditions was identified as an area of potential improvement.

During the walkthroughs, a weakness was observed in the notification of offsite authorities. Specifically, one crew failed to notify offsite authorities of a Site Area Emergency. At 11:08 p.m., the Emergency Coordinator escalated the emergency from an Alert to a Site Area Emergency when the size of the loss of coolant accident increased significantly. Shortly after this time, a communicator completed the notification message form for the Site Area Emergency and submitted it to the Emergency Coordinator for review and approval. Prior to approving the message, however, plant conditions degraded further and, at 11:19 p.m., the Emergency Coordinator escalated to a General Emergency. Instead of proceeding with the issuance of the prepared Site Area Emergency notification, the Emergency Coordinator decided to dismiss this notification and to initiate the General Emergency notification process. The General Emergency notification to offsite authorities was completed at 11:32 p.m. or 24 minutes after the declaration of the Site Area Emergency. Procedure EPP-203, Step 4.1.5, and 10 CFR,

Appendix C.IV.D.3, requires that notification of state and local agencies be made within 15 minutes after declaring an emergency.

In addition to the above notification failure, the following examples were noted of errors, omissions, or inconsistencies in the content of notification messages communicated to offsite authorities as contained in the licensee's Notification Message Form EPP-203-8:

- Inconsistent use of Item 6, "Recommended Protective Actions," was noted. One crew indicated that the protective action recommendations were "new" in the Alert notification message when, in fact, they were unchanged. Inconsistency was noted between crews in their completion of Item 6.C indicating that the Bureau of Radiation Control had not been contacted.
- Crews were inconsistent in the information that was conveyed in Item 7, "Event Description." For example, inconsistent use was made of the checkoff box "Technical Specification Requirement" as an initiating event for the Unusual Event. Also, some crews accurately indicated the occurrence of events such as "fire/explosion," "electrical event," "Reactor coolant system breach," or "Radiological event," while others did not.

The above problems associated with demonstrating timely and accurate notification of offsite authorities was identified as a weakness (445/9404-01; 446/9404-01).

Following the General Emergency classifications, the inspectors observed the performance of the crews as they performed dose projections using the licensee's ORCAS program in order to evaluate the release and to develop dose projection based protective action recommendations. The following problems were observed:

- One crew was unable to calculate dose projections for a period of 34 minutes following the declaration of the General Emergency. The inspectors observed the dose assessor's inability to properly enter input data into the ORCAS program, the inability to alter previously input data, and the inability to move to other menu screens without rebooting the entire program. These problems slowed the issuance of dose projection based protective action recommendations by over 30 minutes.
- The ORCAS dose projection program reports of Protective Action Recommendations incorrectly issued protective action recommendations to affected zones that were upwind of the plant and failed to reference the correct affected zones downwind of the plant. This finding was initially identified by the licensee following the first walkthrough and necessary precautions to prevent use of the erred program were issued.
- One crew failed to issue correct protective action recommendations because an incorrect assumption was entered into the ORCAS program regarding reactor coolant system activity. The assumption entered was

"normal reactor coolant system activity" instead of activity resulting from the previously recognized fuel damage.

The above problems associated with dose assessments were identified as a weakness (445/9404-02; 446/9404-02).

5.2 Conclusion

The licensee's emergency response personnel had been properly trained as required and understood their emergency responsibilities, except for the exercise weaknesses identified in the areas of notification and dose assessment.

6 INDEPENDENT AND INTERNAL REVIEWS AND AUDITS (82701-02.05)

The inspectors met with quality assurance personnel and reviewed independent and internal audits of the emergency preparedness program performed since the last inspection to determine compliance with the requirements of 10 CFR 50.54(t).

6.1 Discussion

The inspectors reviewed and discussed with quality assurance personnel, the most recent annual audit, QAA-93-108, of the emergency preparedness program which had been performed on February 15-19, 1993. The audit team members appeared to be well qualified, and the team leader was an ANSI certified auditor with current Lead Auditor Annual Recertification. The inspectors reviewed the audit plan, scope of the audit, and the audit check list. The audit appeared to be thorough and complete, and 15 offsite organizations were interviewed that had agreements with the licensee for assistance during an emergency. No problems were identified in this annual audit.

The audit report is issued to management through the vice president level, and the licensee had developed a tracking system for items identified in a report that required correction. The close out of a deficiency is not final until the problem is corrected and verified by a subsequent inspection. The audit team leader usually performs the formal close out after this inspection.

6.2 Conclusion

The annual audit of emergency preparedness performed pursuant to 10 CFR 50.54(t) was of adequate scope and depth and utilized an audit team with good qualifications. The audit program of the licensee's emergency preparedness program was adequate to identify deficiencies and correct them.

7 FOLLOWUP ON PREVIOUS INSPECTION FINDINGS (92702)

(Closed) Exercise Weakness 445/9325-01; 446/9325-01: Incorrect classification of a fire inside the protected area lasting greater than 10 minutes for which safety systems were potentially affected.

In the walkthroughs conducted during this inspection, a similar scenario was presented. All three crews evaluated and classified this scenario at the proper classification level.

ATTACHMENT 1

1 PERSONS CONTACTED

1.1 Licensee Personnel

- *W. J. Cahill, Jr., Group Vice President, Nuclear engineering and Operations
- *C. L. Terry, Vice President, Nuclear Operations
- J. Ayres, Quality Assurance Manager, Operations
- D. W. Barham, Emergency Planning Specialist
- *J. Barker, ISEG Manager
- *G. L. Bell, Emergency Planning Supervisor
- *M. Blevins, Nuclear Overview Manager
- *D. Buschbaum, Technical Compliance
- *D. Davis, Plant Analysis Manager
- *J. Douglas, Operations Manager
- J. Ellard, Emergency Planning Senior Nuclear Specialist
- D. W. Fuller, Emergency Planning Staff Training
- *N. Harris, Senior Licensing Specialist
- *D. N. Hood, Emergency Planning Manager
- T. Hope, Regulatory Compliance Manager
- T. Jenk, Licensed Operator Training Supervisor
- S. E. Johnson, Emergency Planning Supervisor
- *B. T. Lancaster, Plant Support Manager
- *T. Marsh, Operations Supervisor
- *D. McAfee, Quality Assurance Manager
- M. Menrose, Emergency Planning Specialist
- W. K. Nix, Emergency Planning Dose Assessment
- C. Rice, Senior Nuclear Specialist
- T. P. Robinson, Emergency Planning Planner
- J. Stavely, Simulator Supervisor
- *C. Welch, Quality Assurance Senior Nuclear Specialist

1.2 NRC Personnel

- *T. Bergman, Project Manager, NRC Headquarters

*Denotes those present at the exit meeting.

2 EXIT MEETING

The inspectors met with the licensee representatives and other personnel indicated in Section 1 of this attachment on February 4, 1994, and summarized the scope and findings of the inspection as presented in this report. The licensee did not identify as proprietary any of the materials provided to, or reviewed by, the inspection team during the inspection.

ATTACHMENT 2

EMERGENCY PREPAREDNESS INSPECTION SCENARIO NARRATIVE SUMMARY

Simulation Facility:

Comanche Peak, Unit 1

Initial Conditions:

55 Percent Power, BOL, just completed testing on B MFW pump, ready to restore power to 100 percent. "B" MFW pump is in parallel with the "A" MFW Pump. Train "B" outage in progress as of 8 a.m. this morning with the "B" CCW pump, CT pumps and No. 2 DG out of service. The CCW pump should be ready for retest in 1 hour. Security has reported that a tornado warning has been issued for north Texas until 11:30 p.m.. It is the evening shift, 10 p.m.. Unit 2 is in an outage, no systems available for usage for Unit 1.

Sequence of Events:

A weld defect in the pressurizer level sensing line variable leg initiates a crack that creates a 20 gpm reactor coolant system leak inside containment. Containment radiation monitors, sump pump runs, sump pump fill rate, containment humidity, pressure, and charging/letdown mismatch all give indications of the leak. After quantifying the leak rate, a NOUE is declared based on unidentified leakage greater than 1 gpm.(2B). This also initiates a plant shutdown per Technical Specification 3.4.5.2, Action b.

- As power is being reduced, the No. 1/2 SSW pump overload/trip alarm initiates. Both SSW pumps continue running, although a fire has started in the 1-02 SSW pump. A fire alarm sounds for the 1-02 SSW pump room with flow initiated. After investigating, recon AO reports smoke coming from the 1-02 SSW pump area, and also reports winds are very high. Low flow alarms are also received as the pump trips off. This requires an ALERT declaration (11C).
- Main condenser vacuum starts lowering. The crew must increase the rate of power reduction to avoid a reactor trip. Five minutes later, a high vibration alarm is received on the No. 4 RCP. Two minutes later, the No. 4 RCP seizes/trips, causing a small fuel element failure, a loose parts monitor alarm, and a reactor trip. If power is reduced to below P-8, (3 loop permissive, 48 percent) before the RCP trips, the reactor does not trip. The reactor coolant system activity increases but not enough to change the ALERT classification.
- Security reports that the National Weather Service has issued a tornado warning for Hood, Somervell, and Johnson counties. A tornado was sited southwest of Granbury.

- A tornado touches down in the switchyard resulting in a loss of offsite power which will result in a reactor trip. Winds start to decrease after the tornado passes with no other plant damage.
- The initial leak increases to a small LOCA (~ 300 gpm) with a massive fuel element failure. At this point the discharge valve of the available CT pumps fails shut but will not be recognized until containment pressure is around 19 psig. A SAE is declared on a LOCA with failed fuel, (2E or 5D).
- The small LOCA becomes a DBA LOCA which causes a containment penetration failure into the safeguards building, causing a release to the plant stack. A GE is declared on a loss of containment integrity (2E).

EMERGENCY PREPAREDNESS INSPECTION SCENARIO EVENTS

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Event	Time	Malf.	Description
Pre	0		B train CCW, CT, and DG outage. 55 percent Power.
1	2	RC10	Small RCS leak (20 gpm) from weld crack in lower PZR level sensing line. NOUE (2B) T/S S/D 3.4.5.2
2	#1+10	CRYWOLF SW01B FPR27	Fire in SSW B pump motor. SSW overload alarm. Fire alarm 5 minutes later. SSW 1-02 trips. ALERT (11C, 8J)
3	#2+5 #2+12	RC03D RC15D CRO1	Slowly dropping vacuum. Adds urgency to S/D. RCP No. 4 trips 2 minutes after high vibration alarm sounds. This transient initiates a small fuel failure. Also ALERT (5H)
4	ALERT +20	ED01 RC10 ENR08/9 CRO1	Tornado strike in switchyard, loss of all offsite power. The fuel failure worsens and the level sensing line shears (300 gpm). Declaration of SAE on LOCA (2D).
5	#4+15	CH04	DBA LOCA , loss of containment integrity. GE (2E).