

ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket Nos.: 50-445
50-446

License Nos.: NPF-87
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Report No.: 50-445/97-10
50-446/97-10

Licensee: TU Electric

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

Location: FM-56
Glen Rose, Texas

Dates: April 21-25, 1997

Inspector: Michael P. Shannon, Radiation Specialist, Plant Support Branch

Approved By: Blaine Murray, Chief, Plant Support Branch
Division of Reactor Safety

ATTACHMENT: Supplemental Information

EXECUTIVE SUMMARY

Comanche Peak Steam Electric Station, Units 1 and 2
NRC Inspection Report 50-445,446/97-10

Plant Support

- Control and posting of radiological areas were properly maintained. Housekeeping was very good (Section R1.1).
- The radiological work planning process was effectively implemented. The ALARA organization was appropriately involved in the early planning of station radiological work. Lessons-learned from similar work were captured and incorporated in radiological work packages (Section R1.2).
- The radioactive source leak testing and inventory programs were good (Section R1.3).
- Overall, an effective ALARA program was in place. However, ALARA committee meetings were not held in accordance with management's expectations. Station senior and department management were appropriately involved in developing the exposure budget. The station's 1997 exposure budget was challenging (Section R1.4).
- A noncited violation was identified for the failure to assign department ALARA representatives. The hot spot reduction program was effectively implemented. A good ALARA suggestion program was in place, however, it was not well advertised throughout the plant (Section R1.4).
- A number of problems were identified with the temporary shielding program. An inspection followup item was identified involving the evaluation of strapping used to secure temporary shielding (Section R1.4).
- Overall, an excellent radiation protection technician training program was maintained. Instructors had a strong operational radiation protection background and routinely spent time in the plant during plant operations. Radiation protection management was appropriately involved with the development and monitoring of the radiation protection training program. Training lesson plans were clearly written, and incorporated lessons-learned from site and industry events (Section R5.1).
- The radiation protection manager met the qualification requirements of Section 13.1.3.1 of Comanche Peaks Final Safety Analysis Report (Section R5.2).

- Overall, an effective radiation protection nuclear overview program was maintained. The nuclear overview auditors were qualified to perform radiation protection evaluations. Nuclear overview evaluations provided a good assessment of the radiation protection program. Nuclear overview evaluation report findings were not classified in accordance with management expectations. Radiation protection department self-assessments provided a good overview of the radiation protection program. No negative trends were identified during the review of radiological ONE form reports (Section R7.1).

REPORT DETAILS

Summary of Plant Status

Both units operated at full power. There were no events during this inspection that adversely affected the inspection results.

IV. Plant Support

R1 Radiological Protection and Chemistry Controls

R1.1 External Exposure Controls

a. Inspection Scope (83750)

The following items were reviewed:

- Control and posting of radiological areas
- Housekeeping within the radiological controlled area
- Personnel dosimetry

b. Observations and Findings

The inspector conducted several tours of the radiological controlled area and performed independent radiation measurements to confirm the appropriateness of radiological postings. All areas observed were found to be appropriately controlled and posted.

Housekeeping within the radiological controlled area was very good. All trash and laundry containers were properly maintained.

All personnel observed by the inspector wore their dosimetry properly and knew to contact radiation protection personnel if their electronic dosimeter alarmed.

c. Conclusions

No problems were identified with the control and posting of radiological areas. Housekeeping was very good. All personnel wore their dosimetry properly.

R1.2 Planning and Preparation

a. Inspection Scope (83750)

Radiation protection department personnel involved in radiation protection planning and preparation were interviewed. The following items were reviewed.

- ALARA job planning
- Job scheduling and sequencing
- ALARA packages
- Lessons-learned from similar work
- Supplies of radiation protection instrumentation, protective clothing, and consumable items

b. Observations and Findings

In discussions with the ALARA coordinator, the inspector determined that for radiological work activities, the ALARA organization was involved in the early planning stages of work. This allowed adequate time to research and provide meaningful input into the work package to ensure that proper ALARA practices were implemented. The inspector reviewed selected radiological work packages and determined that lessons-learned from similar industry and site work were incorporated. A review of ALARA committee meeting minutes confirmed that the committee was appropriately involved in the review and approval of radiological work estimated to exceed 5 person-rem.

Based on discussions with radiation protection personnel and field observations, the inspector determined that the radiation protection department provided proper staff, equipment, and protective clothing to support radiological work.

c. Conclusions

The radiological work planning process was effectively implemented. The ALARA organization was appropriately involved in the early planning of station radiological work. Lessons-learned from similar work were captured and incorporated into radiological work packages. The radiation protection department provided proper staff, equipment, and protective clothing to support radiological work.

R1.3 Control of Radioactive Materials and Contamination: Surveying and Monitoring

The inspector reviewed the sealed radioactive source-leak testing and inventory records for the last 18 months. Additionally, the inspector reviewed selected sources to ensure labeling and posting controls were proper. No problems were identified with the sealed radioactive source-leak testing and inventory programs.

R1.4 Maintaining Occupational Exposure As Low As is Reasonably Achievable (ALARA)

a. Inspection Scope (83750)

Radiation protection personnel involved with the ALARA program were interviewed. The following areas were reviewed:

- Exposure budget
- ALARA committee support
- ALARA suggestion programs
- Hot spot reduction and temporary shielding programs

b. Observations and Findings

ALARA Activities:

The inspector interviewed the ALARA coordinator and reviewed the process for establishing the station and department exposure budget. The inspector determined that station senior management and department management were appropriately involved in developing the exposure budget.

The total 1996 exposure budget, which included two refueling outages, was 290 person-rem and the licensee's actual exposure for 1996 was 288 person-rem. The 1997 exposure budget, which included one refueling outage, was 136 person-rem. The inspector noted that as of April 24, 1997, the actual station year-to-date exposure was 4.7 person-rem compared to the budgeted year-to-date exposure of 5.2 person-rem. The inspector reviewed the 1996 station exposure budget estimate during plant operations and noted that the budget was 2.6 person-rem per month as compared to 1.6 person-rem per month for 1997. The inspector concluded that the station's 1997 exposure budget was challenging.

The licensee's 3-year person-rem average indicated a slight increase. This increase was contributed to the plant's aging process, however, the licensee's 3-year person-rem average was well below the industry's average.

	1994	1995	1996
Licensee	45*	90*	144*
Licensee 3-year Average	79*	81*	93*
National PWR Average	131*	170*	Not available

* Person-rem per Unit

Section 6.9 of Procedure STA 651, "ALARA Program," Revision 7, states, "The ALARA Committee provides management direction and oversight of the ALARA Program." Section 6.9.5 of this procedure states, in part, "The frequency of formal meetings should be once per quarter." The last ALARA committee meeting was held on December 13, 1996. No ALARA committee meetings were held during the first quarter of 1997 and as of April 24, 1997, no ALARA committee meeting had been scheduled for the second quarter of 1997. The inspector noted that the ALARA committee meetings were not held at the recommended frequency of once per quarter.

When ALARA meeting activities were discussed with station management, the inspector was informed that ALARA items were also discussed at the monthly Station Operating Review Committee meeting. The inspector noted that the majority of Station Operating Review Committee members were also members of the ALARA committee. The inspector reviewed the minutes of the Station Operating Review Committee meeting held on February 20, 1997, and noted that there was only one ALARA item documented. This item discussed the station's collective radiation exposure, stating the reason why January's actual exposure was higher than planned, and that March's exposure budget would be reduced to compensate for it. The inspector commented that normally ALARA committee meetings discuss more than just the station's collective radiation exposure. The licensee acknowledged the inspector's comment.

During discussions with the station ALARA coordinator, the inspector determined that 6 of the 9 station departments had not assigned ALARA representatives since October 1, 1996. On March 12, 1997, the radiation protection manager sent a request to the station departments asking each manager to designate a primary and alternate individual to be their department ALARA representative. A response was requested by March 31, 1997; however, no response had been received from the 6 departments as of April 24, 1997.

Technical Specification 6.8.1.a. requires written procedures be established, implemented, and maintained covering the activities recommended in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978. Section 7.e.9, of Appendix A requires procedures to implement the ALARA program. Section 4.2 of Procedure STA 651, Revision 7, "ALARA Program" defines an "ALARA representative" as an individual from each responsible work organization who provides working level interdepartmental support for implementation of the ALARA Program. Section 5.1.1 of Procedure STA 657, Revision 6, "ALARA Job Planning/ Debriefing," states, in part, "the Responsible Work Organization is responsible for providing an ALARA representative who is responsible for participating in the responsible work organization's job planning meetings, pre-job briefings and post job debriefings, as needed to incorporate ALARA concepts into job performance activities."

The inspector identified the failure of the responsible work organization to assign ALARA representatives to support the ALARA program, as a violation of Technical Specification 6.8.1.a. The inspector identified no actual safety consequence associated with this item. This failure constitutes a violation of minor significance and is being treated as a noncited violation, consistent with Section IV of the NRC Enforcement Policy (50-445;446/9710-01).

The ALARA suggestion program was reviewed. The inspector was informed by radiation protection supervision, that the ALARA suggestion program was revamped in August 1996 in an effort to make it easier to use. The inspector determined that, since August 1996, there have been 16 ALARA suggestions submitted, 9 had been closed and 7 remain open. All had been evaluated. Although the ALARA suggestion program was discussed during annual radiation protection training, the inspector noted that there was little information published throughout the station, advertising the ALARA suggestion program. Radiation protection supervision stated that they would review the process of highlighting the ALARA suggestion program.

Hot Spot Reduction:

No problems were noted during the review of the hot spot reduction program. Since the beginning of the year, the licensee had reduced the number of hot spots from 15 to 13. Hot spot surveys were updated monthly by the field radiation protection staff. The licensee properly tracked and trended hot spots, and the operations department was appropriately involved in prioritizing the removal.

Temporary Shielding:

The licensee used temporary shielding as a means to lower personnel exposures. Radiation Protection Procedure RPI-608, Revision 5, "Control of Temporary Shielding," implemented the temporary shielding program. Section 3.1 of this procedure defines "Temporary Shielding" as shielding that is generally intended to be in place for less than 6 months. Section 3.2 defines "Long Term Shielding"

as temporary shielding that is generally intended to be in place for greater than 6 months and utilized where permanent shielding is impractical.

There were eight temporary shielding installations installed throughout the station, all eight were designated as long-term shielding. Three of the eight installations have been in place greater than 2 years.

The inspector asked the ALARA coordinator if an evaluation had been performed to determine if it was impractical to install permanent shielding. The inspector was informed that on April 10, 1996, an ALARA radiation protection technician wrote a design modification request for six of the eight temporary shielding installations. The inspector noted that the request only contained the signature of the individual who initiated the request, although, the request form required a department manager's and system engineer's signature. The ALARA coordinator informed the inspector that on April 9, 1997, the engineering department had assigned a number (164) for this design modification request. The inspector was informed that the engineering department would evaluate the economics to determine if it was practical to install permanent shielding. The licensee was not able to explain why there was a 1-year delay in processing the design modification request. The inspector determined that as of April 24, 1997, no evaluation had been performed to determine why it was impractical to install permanent shielding on the above eight temporary shielding installations.

During tours of the licensee's facility, the inspector noted that temporary shielding was installed using plastic tie-wraps. The inspector reviewed the engineering evaluation dated August 23, 1990, which was used to determine the shielding load tables and guidelines found in Radiation Protection Procedure RPI-608, Revision 5, for installing temporary shielding. The inspector noted that this procedure did not restrict the systems and locations where temporary shielding could be used as long as an individual stayed within the guidelines and shielding load requirements stated in the procedure. During this review and after discussions with members of the licensee's engineering staff, the inspector concluded that the engineering evaluation did not address the type of strapping required during the installation of temporary shielding. This matter will be reviewed during a future inspection by the Engineering Support Branch, Division of Reactor Safety and is identified as an inspection follow up item (50-445;446/9710-02).

Section 3.3 of the above procedure states that temporary shielding packages consist of the request form, associated copies of surveys, sketches and instructions resulting from temporary shielding evaluation and review processes. The inspector identified that the temporary shielding packages only contained the temporary shielding request form and that, in all cases, the form was not completed in accordance with management's expectations. When this was discussed with radiation protection management, the inspector was informed that the temporary shielding packages would be updated and completed in accordance with management's expectations.

c. Conclusions

Station senior management and department management were appropriately involved in developing the exposure budget. The 1997 exposure budget was challenging. ALARA committee meetings were not held in accordance with management's expectations. A noncited violation was identified for the failure to assign department ALARA representatives. The hot spot reduction program was effectively implemented. An ALARA suggestion program was in place, however, it was not well advertised throughout the station. Several problems were identified with the temporary shielding program. An inspection followup item was identified involving the evaluation of strapping used to secure temporary shielding.

R5 Staff Training and Qualification in Radiological Protection and Chemistry

R5.1 Radiation Protection Staff Training

a. Inspection Scope (83750)

Personnel involved with radiation protection technician training were interviewed. The following items were reviewed:

- Radiation protection instructor qualifications
- Radiation protection technician training lesson plans
- On the job training and evaluation programs
- Radiation protection management over sight of the training program

b. Observations and Findings

The inspector reviewed the qualifications of the four instructors assigned to provide training to the radiation protection staff. All the instructors had extensive operational radiation protection backgrounds and several years of applied radiological experience. Additionally, one of the instructors was a qualified National Registry of Radiation Protection Technologist.

The 1996 and 1997 radiation protection technician training schedules were reviewed. The inspector determined that the schedule addressed topics to help ensure that the practical and technical competence of the radiation protection technician staff was maintained. The inspector noted that radiation protection supervision attended and monitored selected portions of the technician's training courses.

Lesson plans were well organized, developed, and site and industry lessons-learned were incorporated. The inspector noted good use of course feedback forms to improve the course content, and that radiation protection management was appropriately involved in developing the training topics.

The inspector determined from interviews with the plant staff, that radiation protection training instructors routinely spent time in the plant during plant operations working with the radiation protection staff to assess the quality of the training provided. Additionally, during outages, the instructors were used to supplement the radiation protection staff.

The on-the-job training and evaluation qualification programs were reviewed. Tasks listed were appropriate, and the on-the-job training and evaluation guidelines were clearly stated. The inspector concluded from interviews of the training staff that radiation protection management was adequately involved in the development and monitoring of the on-the-job training and evaluation programs.

c. Conclusions

An excellent radiation protection technician training program was maintained. Instructors had a strong operational radiation protection background and routinely spent time in the plant working with the radiation protection department. Radiation protection management was appropriately involved with the development and monitoring of the radiation protection training program. Training lesson plans were clearly written, and incorporated lessons-learned from site and industry events.

R5.2 Radiation Protection Staff Qualifications

a. Inspection Scope (83750)

The inspector reviewed the qualifications of the radiation protection manager.

b. Observations and Findings

During a review of the Final Safety Analysis Report (FSAR), the inspector noted that the radiation protection manager did not have a Bachelor Degree in a science or engineering subject. Section 13.1.3.1 of Comanche Peak's Final Safety Analysis Report states that the minimum qualification for plant personnel are in accordance with Regulatory Guide 1.8, Revision 2. Regulatory Guide 1.8, Revision 2, states that Section 4.4.4 of ANSI/ANS 3.1 1981, contains an approach that is acceptable for the position of radiation protection manager.

Section 4.4.4 of the above standard requires that the radiation protection manager have a Bachelor Degree in a science or engineering subject including formal training in radiation protection. However, Section 4.1 of ANSI/ANS 3.1 1981, states, in part, that individuals who do not possess the formal educational requirements specified in this section shall not be automatically eliminated where other factors provide sufficient demonstration of their abilities. These other factors shall be evaluated on a case-by-case basis and approved and documented by the plant manager.

The inspector reviewed a letter dated February 15, 1995, and supporting documentation which listed other factors of the radiation protection manager's qualifications. The inspector noted that this letter was signed by Nuclear Generation Vice President. The inspector determined that the radiation protection manager met the commitments in the FSAR.

c. Conclusions

The radiation protection manager met the qualification requirements of Section 13.1.3.1 of the FSAR.

R6 Radiological Protection and Chemistry Organization and Administration

R6.1 Radiation Protection Organization

a. Inspection Scope (83750)

The inspector reviewed the present organization chart and compared it to an organization chart obtained during the previous inspection.

b. Observations and Findings

The inspector noted that there have been no major changes to the staff since the last radiation protection inspection in November 1996. However, the inspector was informed that a major reorganization of the radiation protection department was planned for May 1, 1997. The inspector reviewed the proposed organization chart and did not identify areas that would reduce the program's radiological safety effectiveness.

c. Conclusions

No major changes had occurred in the radiation protection department since the last inspection in November 1996.

R7 Quality Assurance in Radiological Protection and Chemistry Activities

R7.1 Nuclear Overview Audits and Surveillances, and Radiation Department Self-Assessments and Radiological ONE forms

a. Inspection Scope (83750)

Selected personnel involved with the performance of nuclear overview audits and surveillances, and radiation department self-assessments were interviewed. The following items were reviewed:

- Qualifications of personnel who performed nuclear overview audits and surveillances
- Nuclear overview evaluations performed since April 1, 1996
- Radiation protection department self-assessments performed since November 1, 1996
- Radiological ONE form reports written since November 1, 1996

b. Observations and Findings

The inspector reviewed the qualifications of the two nuclear overview department personnel assigned to evaluate radiation protection department activities. The inspector noted that both individuals had an extensive auditing background, and one had a number of years of applied operational health physics experience. The inspector determined that these individuals were qualified to perform radiation protection evaluations.

Eight nuclear overview radiation protection evaluations were performed since April 1996. The inspector determined that these evaluations covered a broad range of radiation protection activities and provided management with a good assessment of the radiation protection program.

Section 4.6 of Nuclear Overview Department Procedure NQA 3.01, "Evaluation Program," Revision 1, states, that nuclear overview department findings consist of three classifications: deficiencies; unresolved items; or improvement items. However, the inspector determined that evaluation findings identified in the above evaluation reports had been classified as unresolved items, and suggestions and recommendations. When this was discussed with nuclear overview personnel, the inspector was informed that the suggestions and recommendations should have been classified as improvement items. Nuclear overview management stated that they would review future evaluation reports to insure that evaluation findings were classified as described in their procedure.

Four unresolved items and two deficiencies were identified by the licensee during the performance of the above evaluations. The deficiencies were documented on ONE form reports, which was the licensee's corrective action document. The inspector determined that the corrective actions were appropriate to prevent a reoccurrence. However, the inspector noted that three of the four unresolved items response dates exceeded management's expectation of 30 days.

The inspector reviewed the 1997 evaluation schedule and plan involving the radiation protection program, and determined that it covered the appropriate program areas to provide management with a good program assessment. The inspector determined that radiation protection management and nuclear overview management were appropriately involved in identification of areas for improvement.

The inspector reviewed a number of radiation protection department self-assessments documented by radiation protection supervision. Self-assessments were well written and covered a wide range of radiation protection program activities. The inspector determined that reports provided a good assessment of the radiation protection program.

No problems were identified during the review of radiological ONE form reports. The inspector noted that recommendations to prevent a recurrence appeared to be appropriate and, in general, corrective actions were closed out in a timely manner. No negative trends were identified by the inspector during this review.

c. Conclusions

An effective radiation protection nuclear overview program was maintained. The nuclear overview auditors were qualified to perform radiation protection evaluations. The 1997 evaluation schedule covered the appropriate program areas to provide management with a good overview of the radiation protection program. Nuclear overview evaluations provided a good assessment of the radiation protection program. Nuclear overview evaluation report findings were not classified in accordance with management expectations. Radiation protection department self-assessments provided a good overview of the radiation protection program. No negative trends were identified during the review of radiological ONE form reports.

V. Management Meetings

X1 **Exit Meeting Summary**

The inspector presented the inspection results to members of licensee management at an exit meeting on April 25, 1997. The licensee acknowledged the findings presented. No proprietary information was identified.

ATTACHMENT

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

L. Terry, Vice President Operations
M. Blevins, Plant Manager
J. Ayres, Manager, Plant Support Overview
S. Bradley, Supervisor, Radiation Protection
A. Burnette, Supervisor, Radiation Protection
R. Carr, Supervisor, Radiation Protection
J. Curtis, Manager, Radiation Protection
R. Fishencord, Supervisor, Radiation Protection
A. Hinkley, Lead Technician, Radiation Protection
D. Kay, Supervisor, Radiation Protection
B. Knowles, Technician, Radiation Protection
C. Welch, Senior Nuclear Specialist, Plant Support Overview
C. Wilkerson, Senior Engineer, Regulatory Affairs

NRC

H. Freeman, Resident Inspector
D. Carter, Resident Inspector - Palo Verde
R. Nease, Senior Project Engineer

INSPECTION PROCEDURE USED

83750 Occupational Radiation Exposure

LIST OF ITEMS OPENED AND CLOSED

Opened

445;446/9710-01 NCV Failure to Assign ALARA Representatives
445;446/9710-02 IFI Temporary Shielding Strapping Evaluation

Closed

445;446/9710-01 NCV Failure to Assign ALARA Representatives

LIST OF DOCUMENTS REVIEWED

Procedures

- Station Procedure STA-651, "ALARA Program," Revision 7
- Station Procedure STA-652, "Radioactive Material Control," Revision 7
- Station Procedure STA-657, "ALARA Job Planning/Debriefing," Revision 6
- Radiation Protection Procedure RPI-111, "Survey Trend Analysis and Reporting," Revision 5
- Radiation Protection Procedure RPI-212, "Radioactive Source Control," Revision 7
- Radiation Protection Procedure RPI-608, "Control of Temporary Shielding," Revision 5
- Radiation Protection Procedure RPI-700, "Sealed Source Leak Testing," Revision 8
- Nuclear Overview Procedure NQA-3.01, "Evaluation Program," Revision 1

Request Forms

- Design Modification Request Form, "Installation of Permanent Shielding," April 19, 1996
- Temporary Shielding Request Form TSR 97-01
- Temporary Shielding Request Form TSR 97-02
- Temporary Shielding Request Form TSR 97-03
- Temporary Shielding Request Form TSR 97-04
- Temporary Shielding Request Form TSR 97-05
- Temporary Shielding Request Form TSR 97-06
- Temporary Shielding Request Form TSR 97-07
- Temporary Shielding Request Form TSR 97-08
- Temporary Shielding Request Form TSR 97-09

Nuclear Overview Department Evaluation Reports

- 96-000102, "Control of Radioactive Material"
- 96-000117, "Plant Support Outage Activities"
- 96-000144, "Radiation Protection Dosimetry Program"
- 96-000150, "Radiation Protection ALARA Program"
- 96-000155, "Radiation Protection Program"
- 97-000004, "Radiological Surveys and Postings"
- 97-000029, "Control of Radioactive Material"
- 97-000044, "Radiation Protection dosimetry Program"

Other

ALARA Committee Meeting Minutes, December 13, 1996

Station Operating Review Committee Meeting Minutes, February 20, 1997

Office Memorandum CPSES-9700402, ALARA Representatives, March 12, 1997

Station person-rem budgets for 1996 and 1997

A Summary of Radiological ONE-Forms written since November 1, 1996

1997 Nuclear Overview Annual Evaluation Schedule

Engineering Evaluation CPSES-9018989, "Temporary Lead Shielding Pre-Engineering Loading Tables," August 23, 1990