

APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-445/92-29
50-446/92-29

Operating Licenses: NPF-87

Construction Permit: CPPR-127

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

Facility Name: Comanche Peak Steam Electric Station (CPSES)

Inspection At: CPSES Site, Glen Rose, Somervell County, Texas

Inspection Conducted: July 27-31, 1992

Inspector: L. T. Ricketson, P.E., Senior Radiation Specialist
Facilities Inspection Programs Section

Approved:

Blaine Murray
B. Murray, Chief, Facilities Inspection
Programs Section

8/24/92
Date

Inspection Summary

Inspection Conducted July 27-31, 1992 (Report 50-445/92-29; 50-446/92-29)

Areas Inspected: Routine, announced inspection of portions of the radiation protection program including: organization and management controls, training and qualifications, external exposure controls, internal exposure controls, controls of radioactive materials and contamination, surveying and monitoring, facilities, and maintenance of radiation exposures as low as reasonably achievable (ALARA).

Results: Within the areas inspected, no deviations were identified. One noncited violation was identified (paragraph 3.1.5). The following is a summary of the inspection findings:

Unit 1

- ° A good external exposure control program was implemented. The dosimetry program used state-of-the art equipment and was properly accredited.
- ° Areas were properly posted.

- ° An excellent internal exposure control program has been maintained. Proper inspection, maintenance, and issue procedures were implemented for respiratory protection equipment. Engineering controls were used where possible to enhance the respiratory protection program. A second whole-body counting system had been installed.
- ° A violation was identified involving the control of radioactive material stored outside of the radiological controlled area. Controls implemented within the radiological controlled area were excellent.

Unit 2

- ° Staffing levels for Unit 2 startup were still under consideration.
- ° Good management controls were in place and will not be significantly effected by the startup of Unit 2.
- ° Other than staffing considerations, the startup of Unit 2 will not cause substantial changes to the programs already in effect at Unit 1 for control of external and internal radiation exposure, the control of radioactive contamination and radioactive materials, or ALAPA.
- ° Area radiation monitors have not been tested or calibrated.

1. PERSONS CONTACTED

TU Electric

*W. J. Cahill, Jr., Group Vice President
*R. P. Baker, Licensing Compliance Manager
*O. Bhatti, Site Licensing
*S. Bradley, Radiation Protection Supervisor
J. Curtis, Radiation Protection Supervisor
R. Fishencord, Radiation Protection Supervisor
D. A. Ischar, System Test Engineer
D. Kay, Radiation Protection Supervisor
*J. J. Kelley, Jr., Plant Manager
W. Knowles, Radiation Protection Supervisor
J. F. McMahon, Manager, Nuclear Training
*R. J. Prince, Manager, Radiation Protection
L. Wojcik, Mechanical Analysis Supervisor

CASE

*O. L. Thero, Consultant

NRC

*W. B. Jones, Senior Resident Inspector, Unit 1
D. Graves, Senior Resident Inspector, Unit 2

In addition, the inspector contacted other members of the radiation protection staff during the course of the inspection.

*Indicates those present at the exit on July 31, 1992.

2. FOLLOWUP ON PREVIOUS INSPECTION FINDINGS

(Closed) Open Item (445/9018-01): Beta Aerosol Beacon Survey Documentation. This item was discussed in NRC Inspection Report 50-445/90-18; 50-446/90-18 and involved the lack of procedural guidance for producing survey documentation, in compliance with 10 CFR 20. 401(b), using the Beta Aerosol Beacon air monitors. The inspector reviewed Procedure RPI-869, "Operation of the Novelec Beta Aerosols Beacon," and Procedure RPI 872, "Operation of the TEC Model 191 BAB Data Logging System," and determined that they provided adequate guidance.

(Closed) Open Item (445/9028-03): Final Safety Analysis 11.4 Update. This item was discussed in NRC Inspection Report 50-445/90-28; 50-446/90-28 and involved the need for the licensee to update the Final Safety Analysis Report regarding the placement of a portable demineralizer in an area depicted as a waste drum storage area. The item was not identified as a deviation because 10 CFR 50.71(e)(3)(i) allows a licensee 24 months after the issuance of an operating license to update the Final Safety Analysis Report. The licensee received its operating license in February 1990. The inspector confirmed that

Amendment 83, Figure 1.2-38 updated the Final Safety Analysis Report with the proper information.

(Closed) Unresolved Item (445/9116-01): Radiation Work Permits Instructions and Procedures. This item was discussed in NRC Inspection Report 50-445/91-16; 50-446/91-16 and involved an incident in which some radiation workers were allowed to enter the radiological, controlled area without receiving a pre-job briefing required by the applicable radiation work permit. The item was unresolved pending a review of the radiation work permit standard formats and other radiation work permits containing similar conditions. The inspector reviewed these items and identified no problems. In addition, the licensee took additional actions to ensure workers received the necessary briefings. Radiation workers were not authorized on a radiation work permit unless their names appeared on a single list of individuals attending pre-job briefings. This meant that workers would be refused entry into the radiological, controlled area when access control personnel attempted to enter the workers name in the access control computer. No violations were identified.

(Closed) Unresolved Item (445/9160-01): Use of Integrated Nuclear Data Exchange (INDEX) Fit Testing Information. This item was discussed in NRC Inspection Report 50-445/91-60; 50-446/91-60 and involved the use of fit testing information from other facilities rather than fit testing all workers for respiratory protection equipment on site. The inspected expressed concerns that the practice was not addressed in the respiratory protection equipment issue procedure and that there was no assurance that the acceptance criteria of the facility actually performing the fit testing was the same as that of the licensee. The licensee amended its procedures to address this issue and required that the fit factor obtained from other sources be equal to its own (500). The inspector reviewed fit testing records received from INDEX and noted that examples were within the licensee acceptance criteria. No violations were identified.

3. UNIT 1

The inspector reviewed radiation protection activities associated with Unit 1 operations. This review also included some activities that impact on the startup of Unit 2. Specific comments concerning Unit 2 are discussed in paragraph 4.

3.1 Occupational Exposure (IP 83750)

The licensee's program was inspected to determine compliance with Technical Specification 6.11 and the requirements of 10 CFR Part 20, and agreement with the commitments of Chapter 12.5 of the Final Safety Analysis Report

3.1.1 Audits and Appraisals

Nuclear Overview had just completed a quality assurance audit of the radiation protection program. The results had not been finalized, therefore, a review of the audit findings will be conducted during the next inspection of this area.

3.1.2 Changes

There were no major changes to the radiation protection organization. Approximately 9 positions previously filled by contract radiation protection technicians were converted to permanent licensee plant staff positions, bringing the total number of staff for the radiation protection program to 54.

The Unit 1 radiological controlled area access point was taken out of routine service and radiation workers were routed through what was formerly designated as the Unit 2 access point. This change was not yet reflected in Chapter 12.5 of the Final Safety Analysis Report. A safety analysis had been performed, and it was determined that the change did not result in decreased safety.

The licensee had established a committee to review operational procedures to identify those procedures needing revision to be appropriate for use in Unit 2. Radiation protection procedures identified as needing revision were:

- RPI-604, "Bioshield Survey"
- RPI-612, "Steam Generator Work"
- RPI-704, "Pre-release Processing for Radioactive Effluent Releases"
- RPI-711, "DRMS Check Source Surveillance"
- STA-603, "Control of Station Radioactive Effluents"

All procedures were scheduled to be revised by November 1, 1992.

Conclusion

The final evaluation of this program area will be completed after NRC review of the revised procedures.

3.1.3 External Exposure Control

The licensee uses four-element thermoluminescent dosimeters to monitor personnel radiation exposure. Filters over the elements were 28, 300, 300, and 1000 milligrams per centimeter squared. The licensee's personnel dosimetry program was certified in all eight American National Standard Institute (ANSI) N13.11 test categories by the National Voluntary Laboratory Accreditation Program (NVLAP). The accreditation is valid until July 1, 1993. As part of the dosimetry quality assurance program, the licensee has participated successfully in an interlaboratory comparison of irradiated dosimeters with other utilities, on a quarterly basis.

Approximately 2900 radiation workers were issued personnel monitoring devices. Ample supplies of thermoluminescent dosimeters were available for routine or emergency conditions.

The inspector toured the radiological controlled area, observed radiological postings, made confirmatory radiation measurements, and checked the control of locked high radiation areas. No problem areas were identified. The inspector reviewed the temporary storage of dry activated waste in an area outside the protected area. The radiation level at one spot, 18 inches from the surface of a seavan (shipping container) was approximately 2 millirems per hour.

General area radiation levels around the seavans were below 0.5 millirems per hour. The inspector noted that the seavans, although prepared for shipment, were posted as being radioactive materials storage areas. A violation involving control of the seavan container is discussed in paragraph 3.1.5.

Conclusion

A good external exposure control program was implemented. The dosimetry program used state-of-the-art equipment and was properly accredited. Areas were properly posted.

3.1.4 Internal Exposure Control

The inspector reviewed respirator issue records and determined that workers were qualified and were issued the proper size respiratory protection equipment. Radiation protection technicians verified user qualifications prior to issuing respirators via a computer database reference program. The inspector also reviewed the supply of respirators and determined that those ready for use had been inspected during the previous 30 days, as required.

The licensee had received maintenance instructions, specific to nuclear facilities, from the manufacturer of the self-contained breathing apparatuses. These instructions modified the instructions appearing in the manufacturer's product brochure and stated that since the devices were not used daily or under severe conditions, the flow test of the self-contained breathing apparatuses should be performed every 2 years (rather than annually) and the regulators and audible alarms should be overhauled every 5 years (instead of every 3 years). The inspector noted that the licensee had included these intervals in Section 6.16 of Procedure STA-659, "Respiratory Protection Program."

Other groups having self-contained breathing apparatuses, such as the fire brigade, emergency preparedness group or training were responsible for the maintenance of their own equipment.

The inspector observed licensee representatives performing respirator fit testing using ambient air fit testing units. The inspector noted that proper procedures were used.

The inspector noted that the licensee had installed a second, quick counting whole-body counter. Appropriate implementing procedures were in place.

During tours of the radiological controlled area, the inspector noted that engineering control involving the use of portable ventilation units were available to reduce the use of respiratory protection equipment.

Conclusion

An excellent internal exposure control program had been maintained. Proper respiratory equipment inspection, maintenance, and issue procedures were implemented. Engineering controls were used where possible. A second whole-body counting had been installed.

3.1.5 Controls of Radioactive Materials and Contamination, Surveys, and Monitoring

The inspector reviewed the new access control point and noted gamma sensitive portal monitors were at the entrance and exit. People exiting control access passed first through beta sensitive personnel contamination monitors, and radiation protection technicians checked hand carried items for contamination by using tool monitors or friskers. Additional portal monitors were at the exit points from the protected area. The inspector noted that the monitors at the primary access point were inoperable during certain periods because of high background radiation levels when the calibration source in the nearby calibration laboratory was in the raised position. Licensee representatives pointed out that these monitors were not required by the Final Safety Analysis Report or plant procedures but were enhancements to the radiation protection program. They also stated that a plan to make the alternate access point the primary access point was being evaluated. If the portal monitors were placed at the alternate access point, the monitors would not be affected by the calibration source.

Personnel entering the radiological controlled area were logged in and out of the access control computer by radiation control personnel who verified the radiation workers' training and qualifications. Pocket ion chambers were used to supplement radiation workers' thermoluminescent dosimeters.

The inspector noted that instructions were posted informing workers not to take unauthorized tools into the radiological controlled area. The inspector did not observe individuals failing to follow these instructions.

Radiation survey instrument calibrations were performed by instruments and controls personnel. The inspector noted that the Final Safety Analysis Report stated that instrument calibrations would be performed by radiation protection or chemistry personnel. Licensee representatives stated that a safety analysis had been performed for this change, and it would be reflected in an upcoming amendment. Calibration procedures for portable radiation survey instruments were still part of the radiation protection procedures. Licensee representatives stated that these would be transferred to the instruments and controls group shortly. The inspector verified that an adequate number of portable survey instruments were available for use by radiation protection personnel.

The inspector reviewed waste stream sampling results for dry activated waste and noted that the licensee's most abundant isotope was iron-55. Iron-55 decays by electron capture and emits weak x-rays. The licensee used no special survey procedures to detect iron-55. Licensee representatives evaluated the situation and stated that they believed the identification of gamma emitting isotopes which would likely be present in radioactive contamination would give sufficient warning to prevent the release of radioactive materials from the radiological controlled area.

Because of the lack of storage space, the licensee stored two high integrity containers of low activity resin in concrete storage containers outside the protected area. The storage containers were properly posted and surrounded by

a rope barrier. The waste had been stored in this area since July 23, 1992. Since this area had only recently been used for storage, it was not described in Chapter 11.4 of the Final Safety Analysis Report.

Two seavans containing dry activated waste, discussed previously in paragraph 3.1.3, were stored in the same area. The area around the seavans, while not heavily trafficked, was not restricted for the purposes of radiation protection. The seavans were prepared for shipment to a vendor for compacting and processing for burial and had been in this location since July 20, 1992. The inspector noted that the seavans had security seals attached to the doors but were otherwise unsecured to prevent entrance. The inspector identified the lack of controls for radioactive material as a violation of 10 CFR 20.207 which requires that radioactive material stored in an unrestricted area be secured against unauthorized removal. The licensee's Procedure STA-652, "Radioactive Material Control," also required that radioactive materials be secured. Licensee representatives took prompt action and placed locks on both containers of radioactive waste. Manifests indicated that the seavans contained 9.7 and 3.3 millicuries of activity, respectively. Iron-55, cobalt-58, and cobalt-60 were the primary radionuclides. Because of the low safety significance and the fact the licensee took prompt corrective actions, the NRC has elected to exercise discretion, in accordance with Section VII (B)(1) of 10 CFR Part 2, Appendix C and not to issue a Notice of Violation regarding this matter.

Conclusion

A violation was identified concerning the lack of control for radioactive material stored outside the radiological controlled area. Controls implemented within the radiological controlled area were excellent.

4. Unit 2

The inspector reviewed the radiation protection program that will be implemented for the startup and operation of Unit 2. The inspector determined that features and procedures already in use at Unit 1 will be adopted for Unit 2 operation.

4.1 Organization and Management Controls (IP 83522)

The licensee had made no decision concerning changes in the staffing levels for the radiation protection group as a result of startup of Unit 2. The inspector reviewed proposed staffing changes submitted for management's evaluation.

A representative from the Nuclear Overview stated that the annual quality assurance audit of the radiation protection organization would be larger but no different because of the operation of Unit 2. The representative also stated that Nuclear Overview would conduct an operational readiness assessment prior to Unit 2 operation.

Many of the licensee's policy statements were listed in Policy No. 118, "Radiological Controls and Radioactive Waste Management." Among these were

policy statements regarding ALARA, compliance with regulations, personnel monitoring, waste processing, respiratory protection, training with respect to radiological hazards, and independent assessment.

The radiation protection manager spent 8 hours per week observing workers and touring the facilities. Supervisors performed weekly tours of the radiological control area and identify areas needing attention. These programs will include Unit 2 facilities when it is operational.

Conclusion

Good management controls were in place and should not be significantly affected by the startup of Unit 2.

4.2 Training and Qualifications (IP 83523)

Training representatives stated that Unit 2 operation would bring about no substantive changes in the general employee, radiation worker, or radiation protection technician training. They did predict a somewhat lessened demand on the training staff due to the reduction in the number of construction workers.

4.3 External Exposure Controls (IP 83524)

The inspector discussed the area radiation monitoring system in Unit 2 with licensee personnel who stated that the components were in place and were awaiting testing and calibration. These tasks were listed on the Startup Master Schedule. Procedures were available for the calibration of these monitors.

Licensee representatives stated that the radiation work permit program would not be changed because of the operation of a second unit, although additional radiation work permits would be processed.

The fuel transfer tube in Unit 2 has been shielded in the same manner as Unit 1. See NRC Inspection Report 50-445/91-60; 50-446/91-60 (paragraph 2) for a discussion of the design modification used in Unit 1.

Conclusion:

Good external exposure controls were in place and will not be significantly affected by the operation of Unit 2.

4.4 Internal Exposure Controls

Licensee representatives stated that this portion of the radiation protection program would not be significantly effected by the operation of a second unit. They stated that additional instant air monitors had been purchased. Sufficient respiratory protection equipment and air samplers were available.

4.5 Controls of Radioactive Materials and Contamination, Surveys, and Monitoring

Lockdown of the Unit 2 radiological controlled area is scheduled for November 1, 1992.

The number of frisking stations will be increased by approximately 50 percent.

As discussed in paragraph 3.1.2, the licensee has a procedure for bioshield surveys (RPI-604); however, it needs minor revisions to be applicable to Unit 2. The surveys appear on the licensee's Startup Master Schedule.

Licensee representatives stated that neutron spectrum analysis measurements would also be performed in Unit 2, but only at the 100 percent power levels.

4.6 Maintaining Occupational Exposures ALARA

Licensee representatives stated that the number of work orders the ALARA group will have to review will increase significantly. As discussed earlier, final staffing levels concerning ALARA activities have not been established.

5. Low-Level Waste Storage (iP 65051)

The inspector accompanied licensee representatives to Warehouse C, the site of the future low-level waste storage building. The building was constructed in the early 1970's according to the licensee's representatives and part of the concrete slab foundation was built on an area which was backfilled with various materials. In the following years, the soil or the fill slumped, resulting in differential settlement and foundation cracking in part of the warehouse. A topographical map furnished to the inspector showed that the lowest area was approximately 1.5 feet lower than the highest. Licensee representatives stated that this area would not be used and, therefore, would not present a problem. The low-level waste storage facility will be built within the warehouse structure, but it will not encompass the entire space. The inspector noted that the site offered relative isolation and ample room for maneuvering vehicles. Although the final configuration had not been established, licensee representatives stated that the design would be completed in 1992, and construction would probably begin during the first part of 1993. The design will provide a minimum of 5 years of storage capacity for radioactive waste.

6. EXIT MEETING

The inspector met with the resident inspector and the licensee's representatives denoted in paragraph 1 at the conclusion of the inspection on July 31, 1992, and summarized the scope and findings of the inspection as presented in this report. The licensee did not identify as proprietary any of the material provided to, or reviewed, by the inspector during the inspection. The licensee discussed actions taken as a result of the violation identified by the inspector and stated that they believed that the radioactive material was secured from unauthorized removal because: (1) Security seals were used

on the seavans, (2) the material was not in a populated area, and (3) a guard was stationed at the entrance to the owner controlled property.