

ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket Nos.: 50-445
50-446

License Nos.: NPF-87
NPF-89

Report No.: 50-445/97-02
50-446/97-02

Licensee: TU Electric

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

Location: FM-56
Glen Rose, Texas

Dates: February 10-14, 1997

Inspector: Gilbert L. Guerra, Jr., Radiation Specialist

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

ATTACHMENTS:

Attachment 1: Supplemental Information

Attachment 2: Summary of Annual Radioactive Effluent Release
Report Data

EXECUTIVE SUMMARY

Comanche Peak Steam Electric Station, Units 1 and 2
NRC Inspection Report 50-445/97-02; 50-446/97-02

Routine, announced inspection of the liquid and gaseous radioactive waste effluent management program including organization and management controls, radioactive effluent monitoring, and safety-related air cleaning systems.

Plant Support

- An excellent radioactive waste effluent management program was implemented. Excellent performance was noted in the reduction of liquid effluent volume, gamma nuclide curies released, offsite gamma nuclide dose, and solid waste volume (Section R1.1).
- An excellent safety-related air cleaning ventilation systems surveillance program was implemented (Section R1.2).
- The post-accident sampling system was operational, properly maintained, and operated periodically (Section R2.2).
- The effluent radiation monitoring instrumentation was operable and properly maintained, tested, and calibrated (Section R2.3).
- Excellent procedures had been established and implemented for conducting the radioactive waste effluent management program (Section R3.1).
- Radiation protection, radwaste operations, and chemistry personnel had an excellent understanding of the radioactive waste effluent management procedures, Offsite Dose Calculation Manual, and regulatory requirements (Section R4).
- The experience, training, and working knowledge of the personnel responsible for implementing the radioactive waste effluent management program met the training and qualification requirements (Section R5.1).
- The radioactive waste effluent management program's organization had experienced little change and low turnover of personnel. The organizational structures and staffing of the radwaste operations, radiation protection, and chemistry departments met Technical Specification requirements (Section R6.1).

- Quality assurance audits and surveillances of the radioactive waste effluent management program activities were technically comprehensive and provided good program evaluation and oversight (Section R7.1).
- Excellent Annual Radioactive Effluent Release Reports for 1994 and 1995 were submitted in a timely manner and contained the required information presented in the required format (Section R8.1).
- The licensee effectively identified, tracked, and implemented corrective actions for any identified problems (Section R8.2).

Report Details

Summary of Plant Status

Units 1 and 2 were at power operations during the inspection. There were no operational occurrences that impacted the results of the inspection.

III. Engineering

E2 Engineering Support of Facilities and Equipment

A recent discovery of a licensee operating their facility in a manner contrary to the Updated Final Safety Analysis Report (UFSAR) description highlighted the need for a special focused review that compares plant practices, procedures, and/or parameters to the UFSAR description. While performing the inspection discussed in this report, the inspector reviewed the applicable portions of the UFSAR that related to the areas inspected. The inspector verified that the UFSAR wording was consistent with the observed plant practices, procedures, and/or parameters.

IV. Plant Support

R1 Radiological Protection and Chemistry Controls

R1.1 Radiological Waste Effluent Management Programs

a. Inspection Scope (84750)

Implementation of the radioactive waste effluent management program, as described in the Offsite Dose Calculation Manual was reviewed. This review included: radioactive effluent waste processing; radioactive effluent waste sampling and analyses; analyses sensitivities and results; offsite dose results; and performance of required surveillance tests. The following activities were observed:

- The collection of a liquid waste sample from plant effluent Tank 2 on February 11, 1997, and performance of radiochemistry analyses (principal gamma emitters) on the sample in preparation for discharge.
- The collection of a continuous release ventilation sample from the primary plant ventilation exhaust system on February 11, 1997, for analyses of particulates, iodine, and noble gases to update the continuous release permit for that effluent release point.
- The collection of a grab sample from a waste gas decay tank for analysis of noble gases on February 14, 1997.

b. Observations and Findings

The inspector noted during these activities that the responsible personnel followed the appropriate sampling procedures while performing the sample collections. The radioactive waste effluent release permit review process, the performance and verification of the discharge valve lineups, and the effluent radiation monitor setpoint calculations were performed appropriately in accordance with approved procedures. The required sampling, testing, approvals, and release controls for these sample collections and analyses were performed in accordance with Offsite Dose Calculation Manual requirements.

The inspector noted that the licensee had shown excellent performance in reducing the total amounts of liquid volume released, the gamma emitting nuclide curies, offsite dose due to gamma emitting nuclides, and solid waste generation from the effluent processes. These reductions over the last 4 years have been in the order of 60 percent or greater. However, tritium levels have continued to show an increase. Data from the Comanche Peak Annual Radioactive Effluent Release Reports is summarized in Attachment 2 to this report.

c. Conclusions

An excellent liquid and gaseous radioactive waste effluent management program was implemented. The processing, sampling, and analyses of radioactive liquid and gaseous waste effluents and the approval and performance of waste discharges were conducted in accordance with Offsite Dose Calculation Manual requirements. Excellent performance was noted in the reduction of liquid effluent volume, gamma nuclide curies released, offsite gamma nuclide dose, and solid waste volume.

R1.2 Engineered Safety Feature Filtration and Control Room Habitability Systems

a. Inspection Scope (84750)

Surveillance and test results for the safety-related air cleaning ventilation systems testing program were reviewed to determine agreement with the commitments in the Updated Final Safety Analysis Report and compliance with the requirements in the Technical Specifications.

b. Observations and Findings

The inspector performed a visual inspection with the system engineer of the control room filtration system and the primary plant filtration system. These systems contained high efficiency particulate air (HEPA) filters and activated charcoal adsorbers. The visual inspection of the identified filtration systems did not identify any problems. No external damage to the filtration units was identified. All filter housings and ducts were well maintained. The areas surrounding the filtration units

were clean, free of debris, and the filtration units were adequately lighted inside and outside to provide for visual inspection of housings and components.

The licensee's surveillance testing program included the required periodic functional checking of the ventilation systems' components, evaluation of the HEPA filters and activated charcoal adsorbers, and in-place filter testing of the HEPA and charcoal systems. Since some of the surveillance tests were only required to be performed at 18-month frequencies, the inspector verified that the previous two surveillance tests were performed as required at the 18-month frequency. Selected records and results of maintenance and surveillance tests for the period January 1995 through February 1997 for the control room filtration system (Trains A and B) and the primary plant filtration system (Trains A and B) verified that the required tests had been performed. The activated charcoal efficiency tests were performed by an offsite contract laboratory.

The inspector noted that the Technical Specification requirement for testing the various air cleaning ventilation systems' activated charcoal adsorber material after every 720 hours of operation following previous laboratory testing was being tracked by the control room.

c. Conclusions

An excellent safety-related air cleaning ventilation systems surveillance program was implemented.

R2 Status of Radiological Protection and Chemistry Facilities and Equipment

R2.1 Radiochemistry Counting Room

a. Inspection Scope (84750)

The inspector reviewed operations in the radiochemistry counting room.

b. Observations and Findings

The radiochemistry counting room was equipped with state of the art analytical instrumentation to perform the required sample analyses. Instrumentation was operable and well maintained. Records of calibrations and daily operational checks were maintained. Chemistry technicians assigned to the radiochemistry counting room were knowledgeable on the use of the instrumentation.

c. Conclusions

The radiochemistry counting room analytical instrumentation was properly maintained, tested, and calibrated.

R2.2 Post-Accident Sampling System

a. Inspection Scope (84750)

The post-accident sampling system instrumentation was inspected to verify if adequate operation and surveillance programs were in place.

b. Observations and Findings

The inspector noted that the post-accident sampling system was operable and well maintained. The licensee had established a 6-month surveillance for testing all of the sampling capabilities of the post-accident sampling system and determining operability. Most chemistry technicians had completed the training on the use of the post-accident sampling system.

c. Conclusions

The post-accident sampling system was operational, properly maintained, and operated periodically.

R2.3 Liquid and Gaseous Effluent Radiation Monitors

a. Inspection Scope (84750)

The liquid and gaseous effluent radiation monitors were inspected for operation, calibration, and reliability.

b. Observations and Findings

Records of selected liquid and gaseous radioactive waste process and effluent radiation monitor operational tests and calibration records performed in 1995 and 1996 indicated that the instruments and equipment were properly maintained, tested, and calibrated.

The inspector reviewed design changes that had been implemented to the turbine building effluent monitors RE-5251, 1RE-5100, and 2RE-5100. The modifications included replacing off-line monitors with on-line monitors because of problems with maintaining effluent flow in the monitor sample lines. The on-line monitors eliminate this problem. However, electronic noise was noted with the on-line monitors and a smoothing and noise reject firmware was implemented. This resulted in a change to the detector response time. However, the reliability of the monitors was greatly improved. Licensee estimates indicate that between 100 to 200 gallons of effluent would be released prior to diversion to a hold-up tank. Release of the liquid waste is to the licensee's on-site low volume waste ponds under the control of the licensee. Prior to these modifications, the detectors were

out-of-service approximately 128 hours per month; since the modifications, the detectors have been out-of-service approximately 23 hours per month.

c. Conclusions

All liquid and gaseous effluent radiation monitoring instrumentation was operable and properly maintained, tested, and calibrated in compliance with the surveillance requirements specified in the Offsite Dose Calculation Manual.

R3 Radiological Protection and Chemistry Procedures and Documentation

R3.1 Changes to the Offsite Dose Calculation Manual and Procedures

a. Inspection Scope (84750)

Revisions to the Offsite Dose Assessment Manual were reviewed for any changes to the radioactive waste effluents program and the radwaste system design and operation, including the performance of proper 10 CFR 50.59 reviews.

b. Observations and Findings

Changes to the Offsite Dose Calculation Manual were made since the last inspection. These included changes to surveillance requirements for monitor design changes, addition of a new potential release pathway for special plant activities, and clarified sample analysis frequencies.

Radwaste operations, chemistry, and radiation protection procedures governing the release of liquid and gaseous radioactive waste provided excellent guidance to personnel implementing the radioactive waste effluents program. The procedures provided for the sampling of the radioactive liquid and gaseous waste, radionuclide and chemical analyses, calculation of effluent release rates, radiation monitor setpoints, projected offsite radionuclide concentrations, and offsite doses prior to release. Excellent procedures had been established and implemented that included cross checks between departments, reverification of work performed, and/or approval prior to any release being initiated.

c. Conclusions

Revisions to the Offsite Dose Calculation Manual were properly implemented. Excellent procedures had been established and implemented for conducting the radioactive waste effluent management program.

R4 Staff Knowledge and Performance

a. Inspection Scope (84750)

Personnel in the radiation protection, radioactive waste operations, and chemistry department were interviewed to determine their knowledge of regulatory and Offsite Dose Calculation Manual requirements regarding the liquid and gaseous radioactive waste effluent management program.

b. Observations and Findings

The inspector observed radwaste operators, radiation protection personnel, and chemistry technicians perform some of their duties and responsibilities in the implementation of the radioactive waste effluents program and determined that they were familiar with the requirements of the radioactive waste effluents program. Radiation protection, radwaste operations, and chemistry personnel including supervisors and technicians were knowledgeable of the programmatic procedures, Offsite Dose Calculation Manual requirements, and regulatory requirements and maintained a high level of performance.

c. Conclusions

Radiation protection, radwaste operations, and chemistry personnel had an excellent understanding of the radioactive liquid and gaseous waste effluent management procedures, Offsite Dose Calculation Manual, and regulatory requirements.

R5 Staff Training and Qualification

R5.1 Training and Qualification of Chemistry and Radwaste Operations Personnel

a. Inspection Scope (84750)

Training and qualification programs for radwaste operators, radiation protection personnel, and chemistry technicians responsible for implementing the radioactive waste effluents management programs were reviewed.

b. Observations and Findings

Training and qualification matrices for the radwaste operations, radiation protection and chemistry departments included required formal training and on-the-job training. A high percentage of the personnel in each department were fully qualified to carry out their assigned duties, and the few who were not, were close to completing their qualifications. The inspector determined that proper training and qualification programs were being implemented for radwaste operators, radiation protection personnel, and chemistry technicians.

A review of the shift staffing for each of the departments indicated that each of the five rotational shifts included technical staff who were fully qualified to perform radioactive waste effluent activities. The radwaste operations, radiation protection, and chemistry departments had appropriate, well qualified staffs to meet shift staffing requirements.

c. Conclusions

The experience, training, and working knowledge of the personnel responsible for implementing the radioactive waste effluent management program met the training and qualification requirements.

R6 Radiological Protection and Chemistry Organization and Administration

R6.1 Organization and Staffing

a. Inspection Scope (84750)

The inspector reviewed the licensee's organization, staffing, and lines of authority of the radiation protection, chemistry, and radwaste operations departments which were responsible for implementing the radioactive waste effluent program.

b. Observations and Findings

The radwaste operations, radiation protection, and chemistry departments were, through a combined effort, responsible for the implementation and control of the radioactive waste effluent program. No major organizational and staffing changes were noted in the three departments since the previous inspection of this area conducted in February 1995. Personnel changes represented a very low turnover and had no negative effect on the performance of the radioactive waste effluent program. The chemistry department was in the transition stage of receiving the duties for producing and reviewing the pre-release dose calculations and permit generation, including calculation and entering the radwaste monitor setpoints which were previously performed by the radiation protection department. No organizational or responsibility changes were identified which would impact the effective implementation of the radioactive waste effluent program. The organizational structures of the radwaste operations, radiation protection, and chemistry departments were appropriate.

c. Conclusions

The licensee's radioactive waste effluent management program organization had experienced little change and low turnover of personnel. The organizational structures and staffing of the radwaste operations, radiation protection, and chemistry departments met Technical Specification requirements.

R7 Quality Assurance in Radiological Protection and Chemistry Activities

R7.1 Radioactive Waste Effluent Quality Assurance Program

a. Inspection Scope (84750)

The quality assurance audit and surveillance programs regarding the radioactive waste effluent management program activities were reviewed for scope, thoroughness of program evaluation, and timely followup of identified deficiencies. The review included the audits and surveillances performed during 1995 and 1996.

b. Observations and Findings

The surveillances included, in part, reviews of the controls and documentation relating to monitoring liquid and gaseous radiological effluents for compliance with the requirements of the Technical Specifications and the Offsite Dose Calculation Manual. Radiological effluent releases were evaluated to determine compliance with established controls and surveillance requirements and whether reporting requirements are being satisfied. Also, the overall program was evaluated for management involvement and direction, corrective actions, personnel knowledge and experience, and the adequacy of the governing procedures.

The audits and surveillances were of good quality, technically comprehensive, and provided good oversight and evaluation of the licensee's performance in implementing the radioactive waste effluent management programs and meeting the Technical Specification and Offsite Dose Calculation Manual requirements.

The licensee used contractors to perform Offsite Dose Calculation Manual required radiochemistry analyses on radioactive waste effluent composite samples and Technical Specification required in-place filter testing and laboratory charcoal adsorber analyses on the plant's safety-related air cleaning systems. Nuclear Procurement Issues Committee audits were used by the licensee to evaluate the ability of the contractors to perform the required testing and to retain active status on the licensee's approved vendor list.

c. Conclusions

Quality assurance audits and surveillances of the radioactive waste effluent management program activities were technically comprehensive and provided good program evaluation and oversight.

R8 Miscellaneous Radiological Protection and Chemistry Issues

R8.1 Reports

a. Inspection Scope (84750)

Annual reports concerning radioactive waste effluent releases were reviewed for omissions, obvious mistakes, anomalous measurements, observed biases, and trends in the data.

b. Observations and Findings

The inspector reviewed the Annual Radioactive Effluent Release Reports for 1994, 1995, and obtained the data that would be used in the report for 1996¹ due by May 1, 1997. The reports were written in the format described in NRC Regulatory Guide 1.21, Revision 1, June 1974, and contained the required information. Summaries of the quantities of radioactive liquid and gaseous effluents released to the environment, and their associated doses to members of the public were properly documented in the reports. A summary of the radioactive liquid and gaseous effluent releases and associated doses is presented in Attachment 2 to this report.

The annual reports included meteorological data and changes to the Offsite Dose Calculation Manual, as required.

c. Conclusions

Excellent Annual Radioactive Effluent Release Reports for 1994 and 1995 were submitted in a timely manner and contained the required information presented in the required format.

R8.2 Effluent Issues

a. Inspection Scope (84750)

The inspector evaluated the effectiveness of the licensee's controls in identifying, resolving, and preventing problems in the area of radwaste treatment and effluent monitoring, based on issues, events, or problems identified through the licensee's condition reporting system (ONE forms).

b. Observations and Findings

The licensee had implemented a program for tracking abnormal occurrences reported on ONE forms involving Offsite Dose Calculation Manual issues. Any

¹ Information for 1996 is preliminary and not officially reported by the licensee.

Offsite Dose Calculation Manual-related ONE forms were given proper management attention and corrective actions were taken.

The inspector found that the licensee's response, corrective actions, and evaluation of the above ONE form items were appropriate.

c. Conclusions

The licensee effectively identified, tracked, and implemented corrective actions for any identified problems.

V. Management Meetings

X1 Exit Meeting Summary

The inspector presented the results of the inspection to members of licensee management at the conclusion of the inspection on February 14, 1997. The licensee acknowledged the findings presented. No proprietary information was identified.

ATTACHMENT 1

PARTIAL LIST OF PERSONS CONTACTED

Licensee

J. Ayres, Plant Support Overview Manager
S. Bradley, Radiation Protection Supervisor
C. Carella, Chemistry Supervisor
R. Carr, Radiation Protection Supervisor
E. Floyd, Staff Health Physicist
D. Goodwin, Operations Support Manager
M. Hall, Radwaste Operator
N. Harris, Senior Regulatory Compliance Specialist
T. Hope, Manager, Regulatory Compliance
L. Hughes-Edwards, Radwaste Operations Supervisor
D. Kay, Radiation Protection Materials Control Supervisor
B. Knowles, Radiation Protection Technician
M. McVean, Senior Engineer, HVAC Systems
R. Muncy, Radwaste Operator
D. Perkins, Count Reporting, Chemistry
B. Pineda, Radwaste Engineering Technician
R. Ramsour, Radiation Protection Technician
E. Scott, Radwaste Operator
D. Steams, Senior Nuclear Specialist, Nuclear Overview
R. Theimer, Chemistry
C. Welch, Senior Nuclear Specialist, Nuclear Overview

NRC

Vonna Ordaz, Resident Inspector

In addition to the personnel listed above, the inspector contacted other personnel during this inspection.

LIST OF INSPECTION PROCEDURES USED

IP 84750 Radioactive Waste Treatment, and Effluent and Environmental Monitoring

LIST OF DOCUMENTS REVIEWED

PROCEDURES

RPI-707 Radioactive Effluent Reporting, Revision 3, 2/24/95
RPI-706 Radioactive Effluent Tracking, Revision 4, 7/19/94
RPI-705 Post-Release Processing for Radioactive Effluent Releases, Revision 3, 5/10/96
RPI-301 PC-11 Setpoint Modifications, Revision 6, 11/22/93

RPI-704 Pre-Release Processing for Radioactive Effluent Releases, Revision 7,
10/24/96
CLI-740 Effluent Pre-Release Processing, Revision 0, 10/9/96
STA-603 Control of Station Radioactive Effluents, Revision 15, 10/1/96
CHM-111 Post Accident Sampling Program, Revision 3, 6/10/92
RWS-103 Drain Channel B, Revision 9, 7/5/96

AUDITS AND SURVEILLANCES

NOE-EVAL-95-000169 Effluent and Environmental Monitoring Program, 8/16/95
NOE-EVAL-95-000181 Radioactive Waste Treatment and Effluent and Environmental
Monitoring, 7/17/95
NOE-EVAL-95-000226 Radioactive Waste, 11/1/95
NOE-EVAL-96-000102 Control of Radioactive Material, 4/29/96
NOE-EVAL-96-000106 Radwaste Observations for 2RF02, 4/26/96
NOE-EVAL-96-000141 Radwaste and Effluent/Environmental Monitoring Program,
9/12/96
NOE-EVAL-96-000143 CVCS Demineralizer Status, 7/8/96
NOE-EVAL-96-000155 Radiation Protection Program, 9/20/96

Vendor Audits

NUPIC audits of Vendors

REPORTS

Annual Radioactive Effluent Release Reports - 1994, 1995, 1996(draft)

OTHER

Offsite Dose Calculation Manual, Revision 14
Radwaste Operations, Radiation Protection, and Chemistry department training records
Organizational Charts
One Form 96-860
One Form 95-1020
Air cleaning systems surveillance test records

ATTACHMENT 2

SUMMATION OF ALL LIQUID EFFLUENT RELEASES

	1991	1992	1993	1994	1995	1996
Number of Batch Releases	729	604	407	254	104	83
Fission & Activation Products (Curies)	0.1570	0.3990	0.4180	0.2490	0.1250	0.1500
Tritium (Curies)	460	608	504	888	824	986
Dissolved & Entrained Noble Gases (Curies)	1.82	4.66	1.14	0.0054	0.0031	0.0497
Gross Alpha (Curies)	2.33 E-5	0	0	0	0	0
Waste Volume Released (liters)	1.03 E+8	4.52 E+8	2.07 E+7	1.56 E+7	8.38 E+6	5.94 E+6

ATTACHMENT 2 (cont.)

SUMMATION OF ALL AIRBORNE EFFLUENT RELEASES

	1991	1992	1993	1994	1995	1996
Number of Batch Releases	48	63	134	161	159	146
Fission & Activation Products (Curies)	5900	1760	245	2.20	28.3	25.2
Total Iodine-131 (Curies)	1.85 E-5	0.0008	0.0001	0	0	1.47 E-6
Particulates with Half-Lives > 8 days (Curies)	0	0	3.68 E-6	0	0	2.28 E-6
Gross Alpha (Curies)	4.60 E-5	0	0	0	0	0
Tritium (Curies)	2.33	3.02	6.00	8.60	23.2	43.9

ATTACHMENT 2 (cont.)

MAXIMUM ANNUAL DOSES FROM GASEOUS AND LIQUID EFFLUENT RELEASES

	1991 Dose	1992 Dose	1993 Dose	1994 Dose	1995 Dose	1996 Dose
Liquid Effluents						
Whole Body	0.1410	0.3180	0.0822	0.0590	0.0765	0.0798
Organ (GI-LLI)	0.1590	0.3360	0.0979	0.0628	0.0864	0.0910
(mrem)						
Gaseous Effluents						
Noble Gas						
Gamma (Air Dose)	0.2160	0.1080	0.0079	0.0008	0.0015	0.0040
Beta (Air Dose)	0.6490	0.2310	0.0217	0.0005	0.0034	0.0044
(mrad)						
Iodine-131, Iodine-133, Tritium, and Particulates with Half-Lives > 8 days (mrem)	0.0023	0.0011	0.0142	0.0073	0.0197	0.0374