APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-445/90-33
50-446/90-33

Operating License: NPF-87
Construction Permit: CPPR-127

Dockets: 50-445; 50-446

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, Glen Rose, Texas

Inspection Conducted: September 24-28, 1990

Inspectors: Dennis L. Kelley 10/4/90
D. L. Kelley, Reactor Inspector, Test Programs Section, Division of Reactor Safety — Date

Amarjit Singh 10/4/90
A. Singh, Reactor Inspector, Test Programs Section, Division of Reactor Safety — Date

Approved: W. C. Seidle 10/4/90
W. C. Seidle, Chief, Test Programs Section Division of Reactor Safety — Date

Inspection Summary

Inspection Conducted September 24-28, 1990 (Report 50-445/90-33)

Areas Inspected: Routine, unannounced inspection of followup of the personnel airlock event of September 19, 1990; surveillance procedures and records; and the surveillance and calibration control program.

Results: Within the areas inspected, one apparent violation (paragraph 2.1) and two unresolved items (paragraphs 2.2 and 2.3) were identified.

The apparent violation involved a failure to satisfy a Unit 1 Technical Specification for maintaining the personnel airlock operable.

Within the remaining two areas, surveillance procedures and records; and surveillance and calibration control, no apparent violations or deviations were identified. The inspectors concluded that the licensee had good programs in place for control of surveillance and calibration activities and the programs were well implemented.

Inspection Conducted September 24-28, 1990 (Report 50-446/90-33)

Areas Inspected: No inspection of CPSES, Unit 2 was conducted.

DETAILS

1. PERSONS CONTACTED

TU Electric

*O. Bhatty, Issue Internal Coordinator
*J. Brau, Supervisor, Operation Support
*M. Blevins, Manager, Nuclear Operations Support
*M. Bryant, Technical Support
*W. Cahill, Executive Vice President
J. Donhue, Operation Support
*J. Droge, Quality Assurance (QA)
*S. Ellis, Supervisor, Performance and Test
*W. Guldemoud, Manager, Site Licensing
*T. Hope, Site Licensing
W. Jones, Instrumentation & Control (I&C)
*G. McGee, Compliance Supervisor, Technical Support
J. McMahan, Manager, Nuclear Training
*J. Muffett, Manager, Project Engineer
*S. Palmer, Stipulation Manager
*W. Porter, Support Engineer
M. Reeves, I&C
*J. Smith, Plant Operations
*A. Scott, Vice President, Nuclear Operations
*C. Terry, Director, QA
*D. Wallace, Maintenance
*G. Riggio, Operations Support Engineer

CASE

E. F. Ottney, Site Project Manager

NRC

*D. Graves, Resident Inspector, Unit 1
*W. D. Johnson, Senior Resident Inspector, Unit 1
*R. M. Latta, Senior Resident Inspector, Unit 2
*L. J. Callan, Director, Division of Reactor Safety

*Denotes those attending the exit meeting on September 28, 1990.

2. FOLLOWUP OF PLANT EVENT (93702)

On September 19, 1990, at 8:38 p.m., the licensee notified the NRC, as required by 10 CFR Part 50.72, that an unanalyzed condition existed with the hydraulic system of the Unit 1 containment personnel airlock. The reactor was operating in Mode 1 at 100 percent power level.

During the onsite followup inspection into the circumstances surrounding this event, the inspectors concluded that there were three separate, but related regulatory and safety concerns. The three concerns were:

- o The mispositioned equalizing valve in the personnel airlock,
- o The failure of the personnel airlock Type B test required by Appendix J to 10 CFR Part 50, and
- o The documentation inadequacies.

These concerns are discussed below. The last two were closely related in that the leak test failure resulted in the actions which identified the third concern.

Refer to Attachment A, "Personnel Airlock Simplified Hydraulic System Diagram," for valve identification and relative location.

2.1 Mispositioned Equalizing Valve in the Personnel Airlock

When making an entry into the containment on September 26, 1990, at approximately 8 p.m., the licensee found the personnel airlock inner door interior 3/4 inch equalizing valve 1BS-0044 open. With this valve open, the isolation function of the inner door was essentially breached. Through discussions with the licensee, the inspectors determined that the last containment entry, prior to the one on September 26, 1990, occurred on September 24, 1990, at approximately midnight. The personnel airlock is operated using Standard Operation Procedure SOP-907A, Revision 3, dated September 19, 1990, which requires that if the equalizing valves are used to equalize pressure, the valves are required to be shut after use. Failure to shut Valve 1BS-0044 after use, as required by Procedure SOP-907A, resulted in a valve line-up that placed the interior of the airlock in continuous communication with the containment atmosphere regardless of whether containment transit activities were in progress. Furthermore, with the valve open, whenever the outer door or the outer equalizing valve was opened a direct pathway existed between the containment and the safeguards building. A conservative estimate was that the valve was in the open position for approximately 44 hours (from September 24, 1990, 12 p.m. to September 26, 1990, 8 p.m.). This is an apparent violation of Technical Specification 3.6.1.3, which requires the airlock to be operable in Modes 1, 2, 3, and 4. (445/9033-01)

2.2 Failure of the Personnel Airlock Type B Test Required By Appendix J to 10 CFR Part 50

On August 22, 1990, while performing the 6-month Type B leakage surveillance test on the Unit 1 personnel airlock in accordance with Technical Specification 3.6.1.3, the leakage rate exceeded the acceptance criterion of 12,584 standard cubic centimeters per minute (SCCM); the leakage rate was greater than 20,000 SCCM. It should be noted that the previous 6-month surveillance leak rate test conducted on February 26, 1990, was successful.

The leakage path was determined to be the hydraulic fluid return line to the pump reservoir from inside the airlock. The hydraulic pump and reservoir, used to actuate the airlock door locking ring, are located outside the airlock in the safeguards building. Upon discovery of this leakage path the return isolation valve (1BS-0017) in the safeguards building was shut and the leakage was stopped. The licensee determined that a locked closed three-way hydraulic diverter valve (1BS-0041) inside the airlock had failed allowing the air to leak from inside the airlock through the hydraulic system to the safeguards building. Inspection of the valve internals by the licensee revealed that the valve was badly worn.

The three-way diverter valve is fitted with a "quick disconnect" device and is used to attach a hand operated hydraulic pump if the normal pump fails. There are three sets of these diverter valves (one suction and one discharge) for hand pump attachment. One set is located inside containment, one set is located inside the personnel airlock and one set is located in the safeguards building. By procedure, these valves are locked closed (i.e., the hand pump ports are shut and the valves lined up for normal pump operation). This was the lineup during the conduct of the Type B leakage test on August 22, 1990, and is also the normal lineup during power operation.

The inspectors concluded that, as designed, the personnel airlock hydraulic system had the potential to allow a direct pathway from the containment to the safeguards building. The consequences of this are similar to that of the apparent violation described in paragraph 2.1. At the time the inspection was completed, the licensee was continuing its engineering analysis and compiling final documentation. This item is considered an unresolved item pending further NRC review. (445/9033-02)

2.3 Documentation Inadequacies

A temporary modification was made to the personnel airlock hydraulic system to prevent the leakage described above. This was accomplished by adding two manual isolation valves between the "quick disconnect" fitting and the three-way diverter valves (1BS-0041 and 1BS-0042). This temporary modification stopped the air in leakage from the airlock into the hydraulic system and allowed successful completion of the Type B test with the hydraulic system lined up in its normal configuration. The licensee subsequently determined that the temporary modification should be made a permanent plant modification. It was during this process that the licensee discovered that there was inadequate documentation to verify that portions of the hydraulic system and instruments, instrument tubing, and associated valves supplied with the personnel airlock were in accordance with ASME Section III of the Boiler and Pressure Vessel Code, and the seismic Category I Criteria for the CPSES site. The licensee instituted a search within its own records and requested that the supplier of the personnel airlock, Chicago Bridge and Iron (CBI), also search for the supporting documentation. The licensee also started an engineering analysis of the airlock. At the time this inspection was concluded, additional seismic analysis and documentation was being prepared. The inadequate documentation discovery is considered an unresolved item pending NRC review of the licensee's followup actions on this matter. (445/9033-03)

As an interim measure, the licensee has performed leak tests on six manual isolation valves that are qualified. These six valves then were locked in the closed position, which effectively isolated the airlock hydraulic system from the containment and the safeguards building. The details for this change in hydraulic system line-up and the licensee's basis for considering the personnel airlock to be operable are contained in the licensee's Technical Evaluation TE No. PE-90-2603. This evaluation was provided to the inspectors at the time of the exit meeting and was subsequently reviewed by them in the Region IV office.

3. SURVEILLANCE PROCEDURES AND RECORD (61700)

The purpose of this inspection was to ascertain whether the surveillance of safety-related systems and components was being conducted in accordance with approved procedures, as required by the Technical Specifications. The inspection involved a review of surveillances performed on Unit 1 only. The conclusion reached by the inspectors was that the surveillances were being performed in accordance with technically correct procedures. The procedures and test results reviewed by the inspectors are listed in Attachment B.

The inspection was accomplished by selecting Technical Specifications surveillance tests in the following areas:

- o Reactivity control and power distribution
- o Instrumentation
- o Reactor coolant system
- o Emergency core cooling system
- o Containment systems
- o Plant and electrical power systems
- o Fire protection/prevention systems
- o Inservice testing

The inspectors reviewed a sample of at least two Technical Specifications surveillance tests relating to each of the above areas and verified that they were covered by approved procedures.

The inspectors determined that the required tests were being scheduled and performed in accordance with approved procedures. The acceptance criteria were specified in the procedures reviewed and the records indicated that they were clear and the test results were appropriately referenced to acceptance criteria. Appropriate instructions were provided for returning equipment to service following testing. Also, the inspectors reviewed selected training records for test personnel. The review indicated that the personnel involved had received appropriate training and had received their certification.

The inspectors selected surveillance test procedures and multiple samples of completed tests for Unit 1 for review and evaluation. The sample size for the test reviews for Unit 1 was approximately 40. The results of the review indicated that the tests were well written, easily understood, and technically accurate. The purpose and acceptance criteria accurately addressed the Technical Specifications requirements and the acceptance criteria accurately

described the data required to satisfy the Technical Specifications surveillance requirements. The test data reviewed indicated that the test data sheets had been independently verified, as required by the procedures, and no errors were detected. The references in the surveillance procedures to the Technical Specifications were clearly stated. The use of "N/A" [not applicable] was not prevalent in the data packages, and in several instances, a clear explanation was given in those cases where "N/A" was used.

Within the scope of this area of the inspection, no violations or deviations were identified.

4. SURVEILLANCE AND CALIBRATION PROGRAMS (61725)

The purpose of this inspection was to ensure that the licensee had developed and implemented the surveillance and calibration control programs at CPSES as required by the Technical Specifications. The assessment of the surveillance testing and calibration control programs was accomplished by reviewing procedures and discussing the aspects of the program with licensee personnel. These programs were established and implemented by Station Administration Manual and Prevention Maintenance Program Procedures STA-702, Revision 8, and STA 677, Revision 1, dated December 8, and June 30, 1989, respectively.

The surveillance test program uses the Master Surveillance Test List (MSTL), which is a controlled document containing the procedures that satisfy the requirements of the Technical Specifications, the Technical Requirements Manual (TRM) and the In-Service Testing (IST) Program Plan. The Managed Maintenance Computer Program (MMCP) is used to aid in the scheduling of surveillance and calibration testing.

Each department is assigned responsibility for those surveillance test that correspond to its area of expertise (e.g., electrical, mechanical, instrument and control). Each department has the responsibility for developing the procedures to meet the assigned surveillance activity.

The surveillance schedule is monitored by the surveillance test coordinator on a day-to-day basis to ensure compliance with the applicable requirements. Several reports and aids are used to track and schedule surveillance tests. One such report is the Surveillance Activity Monitoring Report. This report lists, for example, the test procedure, responsible department, frequency, due date, and the violation date. A 12-week scheduling aid is also used. This aid prevents two safety trains (A and B) from being out-of-service at the same time.

The calibration program is controlled by the preventive maintenance program. The MMCP is also used to assist in the scheduling of required calibrations. The MMCP is used in conjunction with the preventive maintenance data base to schedule and control the performance of calibrations.

The responsibilities for handling completed tests were specifically assigned by the procedures which control the test programs. The procedures required that completed tests be reviewed, the completion dates entered into the tracking

system, and overdue or missed tests flagged. Corrective actions were assigned to the responsible group. Anomalies and deficiencies were reviewed, and the applicable Technical Specifications limiting condition for operations were checked to ensure that they were not exceeded. In addition, the shift supervisor was notified and a maintenance order was written to correct any identified deficiencies.

No overdue surveillance or calibration activities were noted during review of the scheduling and tracking documents.

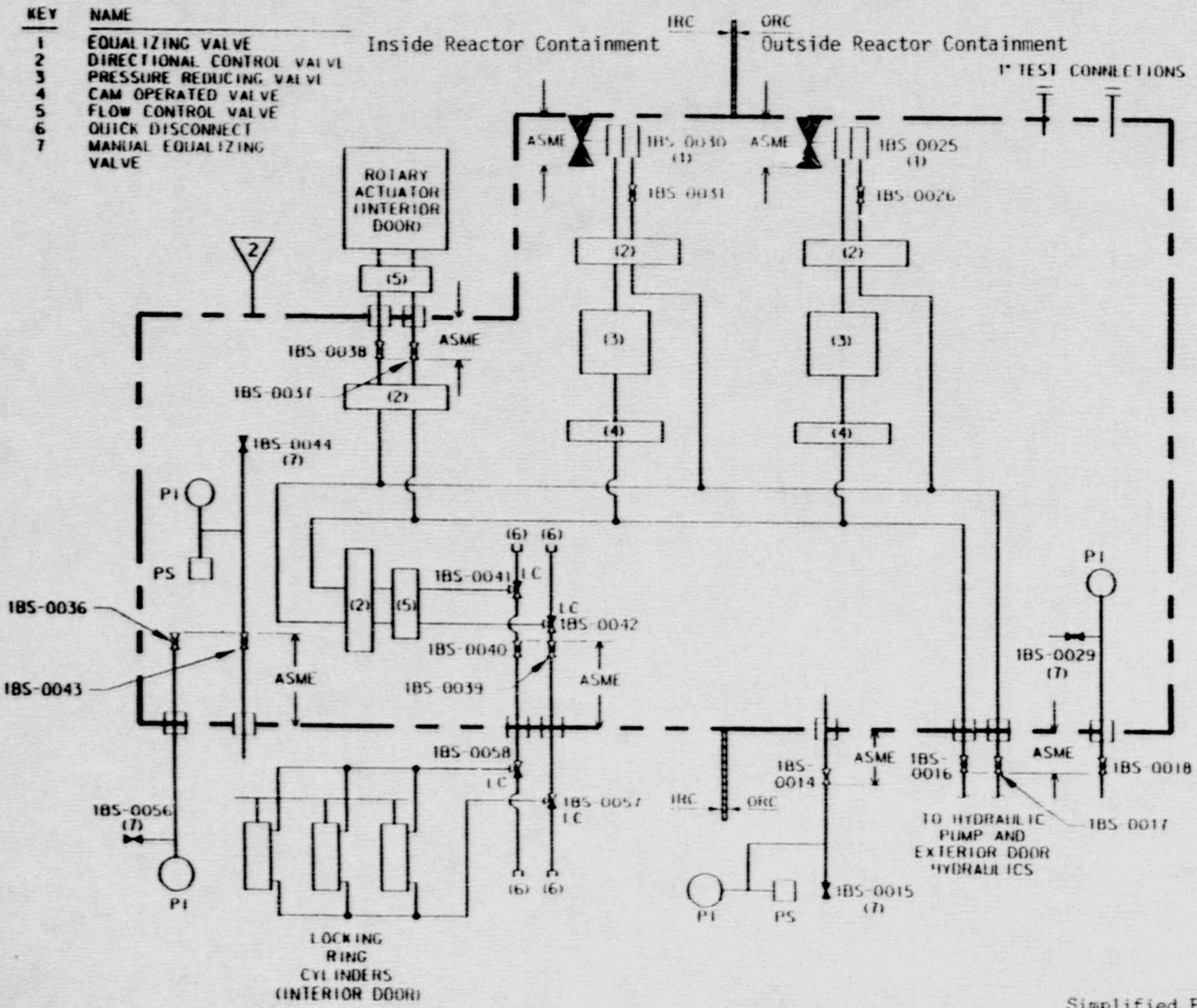
Within the scope of this area of the inspection, no violations or deviations were identified.

5. EXIT MEETING

The inspection scope and findings were summarized in an exit meeting held on September 28, 1990, with the licensee personnel indicated in paragraph 1 of the report. The licensee did not identify as proprietary any of the materials provided to, or reviewed by, the inspectors during the inspection.

ATTACHMENT A

KEY	NAME
1	EQUALIZING VALVE
2	DIRECTIONAL CONTROL VALVE
3	PRESSURE REDUCING VALVE
4	CAM OPERATED VALVE
5	FLOW CONTROL VALVE
6	QUICK DISCONNECT
7	MANUAL EQUALIZING VALVE



Simplified Personnel Airlock

Hydraulic System Diagram

ATTACHMENT B

Procedure No.	Title	Date
OPT-201A Revision 4	Charging System Operability Verification	January 24, 1990
OPT-214A Revision 4	Diesel Generator Operability Test	May 2, 1990
OPT-204A Revision 3	Safety Injection System Operability Verification	January 24, 1990
OPT-205A Revision 2	Containment Spray System Operability Test	January 24, 1990
OPT-220 Revision 4	Fire Suppression Water and Sprinkler System Operability Test	May 31, 1990
EGT-799A Revision 0	Emergency Core Cooling System Check Valve Operability Test	January 13, 1990
EGT-727A Revision 2	Emergency Core Cooling System Throttle Valve Lock Verification Test	April 29, 1988
EGT-785A Revision 2	Reactor Coolant System Vents Operability Test	February 16, 1990
EGT-712A Revision 5	Reactor Coolant System Pressure Boundary Isolation Valve Leakage Testing	February 21, 1990
TRA-312 Revision 0	Performance & Test Qualification	June 19, 1989
STA-677 Revision 1	Preventive Maintenance Program	June 30, 1989
STA-702	Surveillance Test Program	December 8, 1989
SOP-907A Revision 3	Unit 1 Containment Personnel Airlocks	September 19, 1990

Document No.	Title	Date
SWO-S900001413	Personnel Airlock Leak/Intlk Tst (first test and retests 1, 2, 3)	August 22, 1990
ONE Form 90-2197	Unit 1 Personnel Airlock Hydraulic System TE No. SE 90-2548 Technical Evaluation for ONE Form 90-2197	September 19, 1990
Leak Rate Test	6-Month Surveillance Test of Unit 1 of February 26, 1990 Personnel Airlock	February 26, 1990
TE No. PE 90-2603	Review of Containment Personnel Airlock Hydraulic System	Septenber 27, 1990