



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
611 RYAN PLAZA DRIVE, SUITE 400  
ARLINGTON, TEXAS 76011-4005**

November 7, 2005

Mike Blevins, Senior Vice President  
and Chief Nuclear Officer  
TXU Power  
ATTN: Regulatory Affairs  
Comanche Peak Steam Electric Station  
P.O. Box 1002  
Glen Rose, TX 76043

**SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION - NRC INTEGRATED  
INSPECTION REPORT 05000445/2005004 AND 05000446/2005004**

Dear Mr. Blevins:

On September 23, 2005, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Comanche Peak Steam Electric Station, Units 1 and 2, facility. The enclosed integrated inspection report documents the inspection findings which were discussed on October 4, 2005, with Mr. R. Flores and other members of your staff.

This inspection examined activities conducted under your licenses as they related to safety and compliance with the Commission's rules and regulations and with the conditions of your licenses. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel.

This report documents one NRC-identified finding and one self-revealing finding of very low risk significance. One of these findings was determined to involve a violation of NRC requirements. However, because of the very low safety significance and because it is entered into your corrective action program, the NRC is treating this finding as a noncited violation consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest these findings, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region IV; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-001; and the NRC Resident Inspector at the Comanche Peak Steam Electric Station facility.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

TXU Power

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Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,

**/RA/**

Claude Johnson, Chief  
Project Branch A  
Division of Reactor Projects

Dockets: 50-445  
50-446  
Licenses: NPF-87  
NPF-89

Enclosure:  
NRC Inspection Report 05000445/2005004  
and 05000446/2005004  
w/attachment: Supplemental Information

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RIV:RI:DRP/A	SRI:DRP/A	PE:DRP/A	C:DRS/EB	C:DRS/OB	C:DRS/PEB
AASanchez	DBAllen	MABrown	CJPaulk	ATGody	LJSmith
<b>E-CEJohnson</b>	<b>E-CEJohnson</b>	<b>/RA/</b>	<b>/RA/</b>	<b>/RA/</b>	<b>/RA/</b>
11/03/05	11/03/05	11/03/05	10/31/05	11/01/05	11/01/05
C:DRS/PSB	SPE:DRP/A	C:DRP/A			
MPShannon	TRFarnholtz	CEJohnson			
<b>/RA/</b>	<b>/RA/</b>	<b>/RA/</b>			

10/31/05	11/03/05	11/07/05			
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**U.S. NUCLEAR REGULATORY COMMISSION**

REGION IV

Dockets: 50-445, 50-446

Licenses: NPF-87, NPF-89

Report: 05000445/2005004 and 05000446/2005004

Licensee: TXU Generation Company LP

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

Location: FM-56, Glen Rose, Texas

Dates: June 24, 2005 through September 23, 2005

Inspectors: D. Allen, Senior Resident Inspector  
A. Sanchez, Resident Inspector  
B. Baca, Health Physicist  
T. Brown, Project Engineer  
P. Elkmann, Emergency Preparedness Inspector  
T. Farnholtz, Senior Project Engineer  
G. Repogle, Senior Reactor Inspector  
J. Keeton, Consultant

Approved by: Claude Johnson, Chief, Project Branch A  
Division of Reactor Projects

Attachment: Supplemental Information

Enclosure

## SUMMARY OF FINDINGS

IR 05000445/2005004, 05000446/2005004; 06/24/2005-09/23/2005; Comanche Peak Steam Electric Station, Units 1 and 2; ALARA Planning and Controls, Event Followup, and Other Activities

This report covered a 3-month period of inspection by two resident inspectors, one regional senior reactor inspector, one senior project engineer, one health physics inspector, one regional project engineer, and one consultant. Two Green noncited violations were identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609, "Significance Determination Process." Findings for which the significance determination process does not apply may be Green or may be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

### A. NRC-Identified and Self-Revealing Findings

#### Cornerstone: Mitigating Systems

- Green. The inspectors identified a noncited violation of Technical Specification Requirement 3.7.11.1 for failure to provide an adequate surveillance procedure to perform a surveillance test. Specifically, the acceptance criteria did not account for all differences between test conditions and accident conditions. The licensee performed an operability assessment to demonstrate current operability.

The failure to provide an adequate surveillance procedure to demonstrate control room air conditioning system operability was a performance deficiency. The issue was more than minor because, if left uncorrected, it could become a more significant safety concern. Using the Phase 1 significance determination process worksheet, the finding was of very low risk significance because it was a qualification deficiency that did not result in a loss of function per Generic Letter 91-18, "Information to Licensees Regarding NRC Inspection Manual Section on Resolution of Degraded and Nonconforming Conditions," Revision 1. The licensee captured the issue in their corrective action program as Smart Form 2005-000937-00 (Section 4OA5).

#### Cornerstone: Occupational Radiation Safety

- Green. The inspector reviewed two examples of a self-revealing, noncited violation of Technical Specification 5.4.1(a) resulting from failures to follow radiation work permit requirements. In the first example, workers entered the Unit 2 808-foot Incore Guide Tube Room even though the thimble guide tubes were withdrawn because they were not cognizant of the radiation work permit requirements. A radiation protection technician failed to prevent the entry because the technician was also unfamiliar with the requirements of the applicable radiation work permit. In the second example, an operator failed to follow a general access permit instruction requiring radiation protection representative notification before accessing an area in the Unit 2 Room 077A overhead. Consequently, the operator became contaminated.

Enclosure

This finding is greater than minor because it is associated with the Occupational Radiation Safety Human Performance (Proficiency) Attribute and affected the cornerstone in that the failure to follow a radiation work permit requirement could increase personnel dose. The inspector determined that the finding was of very low safety significance because it did not involve: (1) As low as reasonably achievable planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. In addition, this finding had crosscutting aspects associated with human performance. The radiation workers, the operator, and the radiation protection technician did not review the radiation work permits sufficiently to understand the requirements, which directly contributed to the finding. The examples of this finding were placed into the licensee's corrective action program as Smart Forms 2005-1692 and 2005-1912 (Section 2OS2).

B. Licensee Identified Violations

None.

## REPORT DETAILS

### Summary of Plant Status

Comanche Peak Steam Electric Station (CPSES) Units 1 and 2 both operated at essentially 100 percent power for the entire report period.

#### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

#### 1R01 Adverse Weather Protection (71111.01)

##### a. Inspection Scope

The inspectors reviewed Abnormal Conditions Procedure (ABN) ABN-907, "Acts of Nature," Revision 9, Section 5, "Severe Weather," while preparing for severe weather from Hurricane Rita's expected landfall on the Texas coast on September 22-24, 2005. The inspectors also attended licensee meetings where plans for site preparedness were discussed, performed an extensive walkdown of the protected area and surrounding owner controlled area, and interviewed the shift manager concerning operations readiness for the expected weather.

The inspectors completed one sample.

##### b. Findings

No findings of significance were identified.

#### 1R04 Equipment Alignment (71111.04)

##### a. Inspection Scope

The inspectors: (1) walked down portions of the below listed risk important systems and reviewed plant procedures and documents to verify that critical portions of the selected systems were correctly aligned; and (2) compared deficiencies identified during the walkdown to the licensee's corrective action program to ensure problems were being identified and corrected.

- August 3, 2005, Unit 1 Train A diesel generator system in accordance with System Operating Procedure (SOP) SOP-609A, "Diesel Generator System," Revision 16 while the Train B diesel generator system was inoperable for scheduled surveillance
- August 10, 2005, Unit 2 turbine driven auxiliary feedwater pump in accordance with SOP-304B, "Auxiliary Feedwater System," Revision 10, while the Train B emergency diesel generator was inoperable for scheduled surveillance

- August 11, 2005, Unit 1 Train A and B diesel generator systems in accordance with SOP-609A, "Diesel Generator System," Revision 16, while the Unit 1 turbine driven auxiliary feedwater pump was inoperable for scheduled surveillance
- C August 18, 2005, Unit 2 Train B residual heat removal system in accordance with SOP-102B, "Residual Heat Removal System," Revision 10, while the Train A residual heat removal system was inoperable for scheduled surveillance

The inspectors completed four samples.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05Q)

Fire Area Tours

a. Inspection Scope

The inspectors walked down the listed plant areas to assess the material condition of active and passive fire protection features and their operational lineup and readiness. The inspectors: (1) verified that transient combustibles and hot work activities were controlled in accordance with plant procedures; (2) observed the condition of fire detection devices to verify they remained functional; (3) observed fire suppression systems to verify they remained functional; (4) verified that fire extinguishers and hose stations were provided at their designated locations and that they were in a satisfactory condition; (5) verified that passive fire protection features (electrical raceway barriers, fire doors, fire dampers, steel fire proofing, penetration seals, and oil collection systems) were in a satisfactory material condition; (6) verified that adequate compensatory measures were established for degraded or inoperable fire protection features; and (7) reviewed the corrective action program to determine if the licensee identified and corrected fire protection problems.

- July 26, 2005, Unit 1, Fire Zone EC053 - Train A inverter Room 121
- July 26, 2005, Unit 1, Fire Zone EH051 - Train B inverter Room 119
- July 26, 2005, Unit 2, Fire Zone EH052 - Train A inverter Room 120
- July 26, 2005, Unit 2, Fire Zone EH050 - Train B inverter Room 128
- August 12, 2005, Unit 2, Fire Zone 2SD009 - Train A switchgear Rooms 2-083 and 2-085A

- August 12, 2005, Unit 2, Fire Zone 2SG10A - Train A emergency diesel generator room 2-084

The inspectors completed six samples.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

The inspector observed a licensed operator requalification training scenario in the control room simulator on August 10, 2005. The training session began with a short lesson on immediate operator actions for a loss of one main feedwater pump and associated runback from 100 percent power. The simulator scenario consisted of a loss of one source of offsite power resulting in a loss of one reactor coolant pump followed by a failure to automatically trip the reactor. The reactor was manually tripped with two stuck control rods. A steam generator tube leak was identified requiring a manual safety injection and subsequent cooldown.

Simulator observations included formality and clarity of communications, group dynamics, the conduct of operations, procedure usage, command and control, and activities associated with the emergency plan.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation (71111.12)

a. Inspection Scope

The inspectors independently verified that site personnel properly implemented 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," for the following equipment performance problems:

- C The Unit 1 atmospheric relief valves were placed in a(1) status due to exceeding the performance criteria for unavailability because of various booster relay and valve positioner air leaks that have caused inoperability declarations. These issues were entered into the corrective action program as Smart Form (SMF)

SMF-2005-0085-00, SMF-2005-2399-00, SMF-2005-3087-00, and SMF-2005-3350-00.

- C The Unit 2 main steam isolation valves were placed in a(1) status due to exceeding the functional failure performance criteria because the nitrogen pressure switch failed to alarm, thus allowing nitrogen pressure to drop below the operable setpoint of 1839 psig. This issue was entered into the corrective action program as SMF-2005-2633-00.

The inspectors reviewed whether the structures, systems, or components (SSCs) that experienced problems were properly characterized in the scope of the Maintenance Rule Program and whether the SSC failure or performance problem was properly characterized. The inspectors assessed the appropriateness of the performance criteria established for the SSCs where applicable. The inspectors also independently verified that the corrective actions and responses were appropriate and adequate.

The inspectors completed two samples.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation (71111.13)

a. Inspection Scope

The inspectors reviewed selected activities regarding risk evaluations and overall plant configuration control. The inspectors discussed emergent work issues with work control personnel and reviewed the potential risk impact of these activities to verify that the work was adequately planned, controlled, and executed. The activities reviewed were associated with:

- C August 17-18, 2005, Unit 1, emergent work to determine extent of damage and repair of Station Service Water Pump (SSWP) 1-01 following ingestion of a plastic vacuum hose, and the scheduled EDG 1-01 and Motor Driven Auxiliary Feedwater Pump 1-01 surveillances
- C August 23, 2005, emergent work on Comanche Switch Substation Feeder Breaker 8090 after a pressure indicator on the air compressor filter failed causing the breaker to open
- C August 29, 2005, emergent work on Unit 1 Steam Generator 1-01 atmospheric relief valve due to a leaking booster relay and the subsequent failure of Unit 1 Train B blackout solid state sequencer due to a driver card failure

- C September 7, 2005, emergent work due to the complete loss of the Unit 1 Train B solid state sequencer, due to a loss of a 15Vac power supply, and regularly scheduled maintenance and surveillance

The inspectors completed four samples.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors: (1) reviewed plant status documents such as operator shift logs, emergent work documentation, deferred modifications, and standing orders to determine if an operability evaluation was warranted for degraded components; (2) referred to the Updated Safety Analysis Report and design basis documents to review the technical adequacy of licensee operability evaluations; (3) evaluated compensatory measures associated with operability evaluations; (4) determined degraded component impact on any Technical Specifications; (5) used the SDP to evaluate the risk significance of degraded or inoperable equipment; and (6) verified that the licensee has identified and implemented appropriate corrective actions associated with degraded components. Specific operability evaluations reviewed are listed below:

- C Evaluation (EVAL) EVAL-2005-2757-01-00, to determine the operability of the spare MG Set Motor TSN-368814 due to abnormal clicking noises when rotated by hand, caused by excess insulation resin on the stator core windings, reviewed on August 17, 2005
- C Evaluation EVAL-2005-3235-01, to determine the operability of Unit 1 SSWP 1-01 due to a vacuum hose, used to vacuum the floor of the service water intake structure, that was ingested by the pump, reviewed August 18-22, 2005
- C Smart Form SMF-2005-3334-00 and Compensatory Action 1-05-064, to determine the operability of the Unit 1 Emergency Diesel Generator (EDG) EDG 1-01 following the failure of several relay cards at the local annunciator panels and control room indications of EDG 1 trouble, reviewed on August 26, 2005
- C Quick Technical Evaluation, QTE-2005-3342-01 to determine the operability of the Unit 1 SSWP 1-01 following the performance of an operability surveillance run, in which the flow Transmitter 1-FT-4258 being used was discovered to be unreliable, reviewed on September 23, 2005

The inspectors completed four samples.

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds (71111.16)

Selected Operator Workarounds

a. Inspection Scope

On August 26, 2005, the inspectors reviewed the compensatory action implemented for Unit 1 EDG 1-01 due to a failure of the annunciator power supply to determine the impact on operations and the ability to implement abnormal or emergency operating procedures. A control room supervisor was interviewed, alarm procedures, Technical Specifications, and SMF-2005-1943-00 were reviewed.

On September 6, 2005, the inspectors reviewed the welding activities that took place on the Unit 1 Residual Heat Removal Pump 1-02, in which the pump control switch was taken to the pull-to-lock position. The inspectors reviewed this circumstance to assess the impact on control room operations and the ability of the operators to implement abnormal or emergency operating procedures. Smart Form (SMF) 2005-3336-00, and Emergency Operating Procedure 0.0A, "Reactor Trip or Safety Injection," Revision 7 were reviewed.

In addition, compensatory actions for equipment problems, shift orders, and caution tags were reviewed to determine that CPSES personnel were identifying operator workarounds at an appropriate threshold and that equipment problems were identified in the corrective action program.

The inspector completed two samples.

b. Findings

No findings of significance were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors witnessed or reviewed the results of the post maintenance tests for the following maintenance activities:

- C July 14, 2005, Unit 1, Train B Residual Heat Removal (RHR) motor breaker service per Work Order (WO) WO-3-04-308889-01, tested in accordance with Operability Test Procedure (OPT) OPT-203A, "Residual Heat Removal System," Revision 15

- C August 3, 2005, X-02 Spent Fuel Cooling Pump mechanical seal replacement per WO-4-05-162112-00, tested in accordance with OPT-223, "Spent Fuel Pool Cooling System," Revision 8
- C August 4, 2005, Unit 1 condensate storage tank discharge Valve 1-HV-2485 inspection and power terminal block replacement per WO-3-04-311753-01, tested in accordance with OPT-474A, "Train B Safeguards Slave Relay K641 Actuation Test," Revision 7
- C August 18, 2005, Unit 1 Train A SSWP recovery from vacuum hose ingestion, tested in accordance with EVAL-2005-3235-01, and WO-5-05-505395-AC
- C August 18, 2005, Unit 2, Train B RHR motor oil and lubricant change out and inspection of the refueling water storage tank to RHR pump suction Valve 2-HV-8812A, tested in accordance with WO-3-03-311507-01 and OPT-203B, "Residual Heat Removal system," Revision 11
- C August 30, 2005, Unit 1 Train B solid state sequencer driver card replacement per WO-4-05-163369-00, and test in accordance with Instrument and Control Manual Procedure INC-7918A, "Channel Calibration Solid State Safeguards Sequencer Train B," Revision 6
- C September 7, 2005, Unit 1 Train B solid state sequencer 15 volt DC power supply replacement per WO-4-05-163506-00, and tested in accordance with the auto test feature of the sequencer for 15 minutes and OPT-414A, "SI/Blackout Sequencers," Revision 5

In each case, the associated work orders and test procedures were reviewed in accordance with the inspection procedure to determine the scope of the maintenance activity and to determine if the testing was adequate to verify equipment operability.

The inspectors completed seven samples.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors evaluated the adequacy of periodic testing of important nuclear plant equipment, including aspects such as preconditioning, the impact of testing during plant operations, and the adequacy of acceptance criteria. Other aspects evaluated included test frequency and test equipment accuracy, range, and calibration; procedure

adherence; record keeping; the restoration of standby equipment; test failure evaluations; system alarm and annunciator functionality; and the effectiveness of the licensee's problem identification and correction program. The following surveillance test activities were observed and/or reviewed by the inspectors:

- Units 1 and 2 monthly Class 1E 125 VDC Station Batteries BT1ED3 and BT2ED3 in accordance with Maintenance Section-Electrical Manual procedure MSE-S0-5000, "Class 1E Station Batteries Weekly-Monthly-Quarterly Surveillance Tests," Revision 4, observed on July 26, 2005
- Unit 1 Containment Spray Pumps 1-01 and 1-03, in accordance with OPT-205A, "Containment Spray System," Revision 14, observed on July 26, 2005
- Unit 1 Control Rod Motion verification in accordance with OPT-106A, "Control Rod Exercise Test," Revision 10, observed on July 28, 2005
- Unit 1 Train B EDG operability test in accordance with OPT-214A, "Diesel Generator Operability Test," Revision 18, observed on August 3, 2005
- Unit 1 Train A motor driven auxiliary feedwater pump, in accordance with OPT-206A, "AFW System," Revision 24, observed on August 18, 2005
- Unit 1 Train A SSWP, in accordance with OPT-207A, "Service Water System," Revision 12, observed on September 20, 2005

The inspectors completed six samples.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

a. Inspection Scope

The inspector performed an in-office review of Revision 32 to the Comanche Peak Steam Electric Station Emergency Plan, submitted June 15, 2005. This revision:

1. Updated company titles
2. Added additional sirens to the offsite emergency notification system
3. Relocated and renamed the Onsite News Center to Joint Information Center
4. Updates descriptions of Squaw Creek Park

Enclosure

The revision was compared to its previous revision, to the criteria of NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, and to the requirements of 10 CFR 50.47(b) and 50.54(q) to determine if the licensee adequately implemented 10 CFR 50.54(q).

The inspector completed one sample.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety (OS)

2OS2 ALARA Planning and Controls (71121.02)

a. Inspection Scope

The inspector assessed licensee performance with respect to maintaining individual and collective radiation exposures as low as is reasonably achievable (ALARA). The inspector used the requirements in 10 CFR Part 20 and the licensee's procedures required by Technical Specifications as criteria for determining compliance. The inspector interviewed licensee personnel and reviewed:

- Current 3-year rolling average collective exposure
- One on-line maintenance work activity and its associated exposure estimates with the potential of having the highest personnel collective exposures that occurred during the inspection and ten work activities from the previous highest exposure significance work history data and the previous two refueling outages which resulted in the highest personnel collective exposures
- Site specific trends in collective exposures, plant historical data, and source-term measurements
- Site specific ALARA procedures
- As low as is reasonably achievable work activity evaluations, exposure estimates, and exposure mitigation requirements
- Intended versus actual work activity doses and the reasons for any inconsistencies

- Person-hour estimates provided by maintenance planning and other groups to the radiation protection group with the actual work activity time requirements
- Shielding requests and dose/benefit analyses
- Dose rate reduction activities in work planning
- Post-job (work activity) reviews and briefings
- Assumptions and basis for the current annual collective exposure estimate, the methodology for estimating work activity exposures, the intended dose outcome, and the accuracy of dose rate and man-hour estimates
- Method for adjusting exposure estimates, or re-planning work, when unexpected changes in scope or emergent work were encountered
- Exposure tracking system
- Use of engineering controls to achieve dose reductions and dose reduction benefits afforded by shielding
- Records detailing the historical trends and current status of tracked plant source terms and contingency plans for expected changes in the source term due to changes in plant fuel performance issues or changes in plant primary chemistry
- Radiation worker and radiation protection technician performance during work activities in radiation areas, airborne radioactivity areas, or high radiation areas
- Declared pregnant workers during the current assessment period, monitoring controls, and the exposure results
- Self-assessments, audits, and special reports related to the ALARA program since the last inspection
- Resolution through the corrective action process of problems identified through post-job reviews and post-outage ALARA report critiques
- Corrective action documents related to the ALARA program and followup activities such as initial problem identification, characterization, and tracking for effectiveness and timely commensurate with their safety and risk importance
- Effectiveness of self-assessment activities with respect to identifying and addressing repetitive deficiencies or significant individual deficiencies

The inspector completed 15 of the required 15 samples and 7 of the optional samples.

b. Findings

Introduction. The inspector reviewed two examples of a self-revealing, noncited violation of Technical Specification 5.4.1(a) resulting from failures to follow radiation work permit requirements. The violation had very low safety significance.

Description. The first example occurred on April 18, 2005, when a work group entered the Unit 2 808-foot Incore Guide Tube Room (2-156A) to perform outage work activities. The expected dose rates for the work activity ranged from 4 to 10 millirem per hour. Although it was unknown by the workers, the incore thimble guide tubes were withdrawn and dose rates ranged from 8 to 50 millirem per hour. The workers received a dose rate alarm and exited the area. The radiation protection lead technician at containment raised the dose rate setpoint from 20 millirem per hour to 200 millirem per hour and the dose setpoint from 15 millirem to 100 millirem and allowed the workers to continue their work. During a review of the radiation protection logs on the night shift, the containment radiation protection supervisor identified that the workers had violated the requirements of the radiation work permit. The dose rate alarm had been caused by higher than expected dose rates. The higher dose rates were caused by the thimble guide tubes being withdrawn. Working in the area with the thimble guide tubes withdrawn was a violation of one of the radiation work permit special instructions.

The licensee's review of the occurrence concluded that the work group had not sufficiently reviewed the radiation work permit instructions to understand the requirements. Consequently, the workers did not ask about the location of the thimble guide tubes. Also, the radiation protection lead technician had not reviewed the radiation work permit, but assumed the work group had read and understood the associated requirements.

The second example occurred on May 2, 2005, when an operator accessed an area in Unit 2 Room 077A (radioactive systems pipe penetration) overhead to verify a valve position and became contaminated. Upon exiting the radiologically controlled area, the operator caused the personnel contamination monitor to alarm, alerting radiation protection personnel to a potential problem. An investigation into the cause of the contamination revealed that the operator did not follow the general access permit requirements in that the operator did not notify radiation protection personnel prior to accessing an area in the overhead.

Analysis. The failure to follow a radiation work permit or a general access permit requirement is a performance deficiency. This finding is greater than minor because it is associated with the Occupational Radiation Safety Human Performance (Proficiency) Attribute and affected the cornerstone. The failure to follow a radiation work permit requirement could increase personnel dose.

This finding involved workers' unplanned, unintended doses, or the potential for such doses resulting from actions contrary to radiation work permit requirements which could have been significantly greater as a result of a single minor, reasonable alteration of the

circumstances. Therefore, this finding was evaluated with the Occupational Radiation Safety Significance Determination Process. The inspector determined that the finding was of very low safety significance because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose.

In addition, this finding had cross-cutting aspects associated with human performance. The radiation workers, the operator, and the radiation protection technician did not review the radiation work permits sufficiently to understand the requirements, which directly contributed to the finding.

Enforcement. Technical Specification 5.4.1(a) requires applicable procedures from Regulatory Guide 1.33, Revision. 2, Appendix A. Section 7(e) of Appendix A requires procedures for access control to radiation areas including a radiation work permit system. Procedure STA-656, "Radiation Work Control," Revision 12, Section 5.4.1 requires radiation workers to read and follow general access permits/radiation work permits. In the first example, Radiation Work Permit 2005-2302, Worker Instruction Number 2, states that entry into the Incore Room while thimble tubes are withdrawn is prohibited. However, personnel entered the room on April 18, 2005, while the thimble tubes were withdrawn. In the second example, General Access Permit 2005-001, Instruction Number 5, states that Radiation Protection is to be notified prior to entering areas in the overhead (areas greater than 8 feet above floor level). However, on May 2, 2005, an operator did not notify radiation protection prior to accessing the overhead in Unit 2 Room 077A.

The examples were documented in the licensee's corrective action program as Smart Forms 2005-1692 and 2005-1912, respectively. Because this violation was of very low safety significance and was entered into the licensee's corrective action program, it is being treated as a noncited violation, consistent with Section VI.A of the NRC Enforcement Policy and is identified as noncited violation (NCV) NCV 05000446/200504-01, Failure to follow radiation work permit requirements.

#### 4. OTHER ACTIVITIES

##### 4OA2 Problem Identification and Resolution (71152)

###### .1 Daily Condition Report Review

###### a. Inspection Scope

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance issues for followup, the inspectors performed a daily screening of items entered into the licensee's corrective action program. This review was accomplished by reviewing the

licensee's computerized corrective action program database SMFs, reviewing hard copies of selected SMFs and attending related meetings such as Plant Event Review Committee meetings.

b. Findings

No findings of significance were identified.

- .2 Section 2OS2 evaluated the effectiveness of the licensee's problem identification and resolution processes regarding exposure tracking, higher than planned exposure levels, and radiation worker practices. The inspector reviewed the corrective action documents listed in the attachment against the licensee's problem identification and resolution program requirements. No findings of significance were identified.

4OA3 Event Followup (71153)

Unit 1 Station Service Water Pump 1-01 Vacuum Hose Ingestion

a. Inspection Scope

The inspectors reviewed a recent operational event in which a vacuum hose that was being used to clean the station service water intake bay floor was drawn into and became lodged in the Unit 1 station service water Pump SSWP 1-01. The inspectors attended meetings (Plant Event Review Committee and corrective actions), interviewed individuals involved, reviewed the subsequent SMFs, corrective actions, evaluations and root cause analysis, and procedures.

b. Findings

Introduction. An unresolved item was identified pending NRC's determination of the regulatory aspects and evaluation of the safety significance of failure to take appropriate corrective action to prevent foreign materials from being sucked into the station service water pump.

Description. On August 17, 2005 contract divers were in the process of cleaning the station service water intake bay in front of the Unit 1 service water pumps, and a vacuum hose that was being used became lodged in the Unit 1 SSWP 1-01 (Train A) pump suction housing. The control room received alarms for the pump and noted fluctuating flow and took immediate action to manually secure the pump. The operations staff entered two 72 hour Technical Specifications (TS): TS 3.7.8(A) for one train of station service water inoperable (Train A), and TS 3.8.1(B) for one emergency diesel generator inoperable (Train A). Comanche Peak Steam Electric Station Unit 1 was in a Train A work week, so the inoperable equipment did not effect the operation of the plant.

After the pump was secured, the licensee conducted meetings to understand the sequence of events that transpired and to decide on a course of action for inspection and recovery. It was estimated that approximately eight feet of a 3.75 inch diameter hose was missing. The end of this missing section had a hard plastic nozzle attached via a metal band around the circumference of the hose. The licensee dispatched a diver into the specific SSWP 1-01 pump suction bay to inspect the pump. The diver retrieved a approximately five foot section of hose and a six inch section that still had the metal banding attached. The nozzle, and approximately two feet of hose were not found.

The licensee assessed the risk of the event, communicated and coordinated activities with the load dispatcher to ensure grid availability, and set a course of action to restore the pump back to operable. Some of these actions taken include: evaluating any visible damage, rotating pump by hand to test for free rotation, cleaning water strainers, running the pump and isolate flow to all components except for the component cooling water heat exchanger to flush the system, perform two sections of an operability surveillance (two different sets of conditions), and also monitored bearing temperatures and motor vibrations. The SSWP 1-01 was restored to operable on August 18, 2005.

The inspectors reviewed the past history of SSWP failures and discovered two previous events in which a SSWP tripped or was secured because of hose material being ingested into the suction of the pumps. Specifically, in 1996 a diver was nearly sucked into a pump and was forced to cut his diving line to get free. The diving line was ingested. The corrective action taken was to limit the length of diving line allowed to physically prevent the diver from being sucked into the pump. This corrective action failed to address the extent of condition and the important issue of foreign material exclusion, thereby failing to protect the SSWPs and preventing this condition adverse to quality.

Analysis. The issue associated with the foreign material sucked into SSWP 1-01 and its impact on the system performance is under review by NRC staff. A determination of the safety significance of any performance deficiencies will be addressed in the resolution of the URI.

Enforcement. Pending further review by the NRC staff, this issue will be considered as an unresolved item (URI 05000445/2005004-02).

#### 4OA4 Crosscutting Aspects of Findings

- .1 Section 2OS2 describes two examples of a finding with crosscutting aspects associated with human performance. Both examples involved personnel not following a radiation work permit or general access permit requirement.
- .2 The finding described in Section 4OA3 of this report was related to the problem identification and resolution crosscutting area, in that the licensee's corrective action failed to prevent recurrence of a significant condition adverse to quality.

4OA5 Other Activities

(Closed) URI 05000445;446/2005002-01: Inadequate control room air conditioning surveillance.

Introduction. A Green, inspector-identified, noncited violation of Technical Specification Requirement 3.7.11.1 was identified in that the licensee's surveillance that was performed to demonstrate compliance with the requirement was inadequate. Specifically, the acceptance criteria did not account for all differences between test conditions and accident conditions. The licensee performed an operability assessment to demonstrate current operability.

Description. Technical Specification Surveillance Requirement 3.7.11.1 requires the licensee to test the control room air conditioning system every 18 months to verify that the system can remove the required heat load. The licensee uses Procedure OPT-116, "CR AC System Surveillance Test," Revision 3, to satisfy this requirement. In short, the licensee determines the amount of excess cooling capacity observed during the surveillance and compares that amount to a chart, which was supposed to take into account the differences between test and design basis conditions.

The inspector identified two concerns with the licensee's practices. First, the licensee's surveillance acceptance criteria were based on a maximum component cooling water temperature of 108EF. However, the worst case component cooling water temperature was 135EF. Second, the surveillance method accounted for only one variable (outside air temperature) when at least two variables existed (outside air temperature and component cooling water temperature). Low component cooling water temperatures during the surveillance would increase the apparent capacity of the control room air conditioning chiller when compared to higher temperature water.

The licensee performed an operability assessment and demonstrated proper system performance. The inspectors reviewed the assessment and found it acceptable. Therefore, the inspectors were only concerned with the methods and acceptance criteria used for testing, not the operability of the system.

Analysis. The failure to provide an adequate surveillance procedure to demonstrate the control room air conditioning system operability was a performance deficiency. The issue was more than minor because, if left uncorrected, it could become a more significant safety concern. Using the Phase 1 significance determination process worksheet, the finding was of very low risk significance because it was a qualification deficiency that did not result in a loss of function per Generic Letter 91-18, "Information to Licensees Regarding NRC Inspection Manual Section on Resolution of Degraded and Nonconforming Conditions," Revision 1.

Enforcement. Technical Specification Surveillance Requirement 3.7.11.1 requires the licensee to test the control room air conditioning system every 18 months to verify that the system can remove the required heat load. The licensee uses Procedure OPT-116,

“CR AC System Surveillance Test,” Revision 3 to satisfy this requirement. Contrary to the above, the licensee’s surveillance was inadequate because: 1) the surveillance acceptance criteria did not assure capability under design basis conditions and 2) the surveillance method did not account for all differences between test condition and design basis conditions. Because this issue is of very low safety significance and has been entered into the corrective action program as Smart Form 2005-000937-00, this violation is being treated as a NCV, consistent with Section VI.A of the NRC Enforcement Policy and identified as NCV 05000445;446/2005004-02, Inadequate control room heat exchanger surveillance.

40A6 Meetings, Including Exit

Exit Meeting Summary

On July 15, 2005, the inspector presented the ALARA inspection results to Mr. P. Polefrone, Plant Manager, and other members of his staff who acknowledged the findings. The inspector confirmed that proprietary information was not provided or examined during the inspection.

On September 13, 2005, the inspector conducted a telephonic exit meeting to present the inspection results to Mr. D. Bozeman, Manager, Emergency Planning, who acknowledged the findings. The inspector confirmed that no proprietary information was provided or examined during the inspection.

The inspector presented the resident inspection results to Mr. R. Flores, Vice President, Operations, and other members of licensee management on October 4, 2005. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee Personnel

O. Bhatti, Inservice Test Engineer  
M. Blevins, Senior Vice President and Chief Nuclear Officer  
D. Bozeman, Manager, Emergency Planning  
S. Bradley, Supervisor, Health Physics, Radiation Protection & Safety Services  
T. Clouser, Manager, Shift Operations  
J. Curtis, Radiation Protection Manager, Radiation and Industrial Safety  
D. Ellis, Level III Qualified Data Analyst  
R. Flores, Vice President, Nuclear Operations  
T. Hope, Manager, Regulatory Performance  
R. Kidwell, Licensing Engineer  
F. Madden, Director, Regulatory Affairs  
P. Polefrone, Plant Manager  
S. Sewell, Nuclear Training Manager  
J. Skelton, System Engineer  
R. Smith, Director, Operations  
S. Smith, Director, System Engineering  
D. Wilder, Radiation and Industrial Safety Manager

### ITEMS OPENED, CLOSED, AND DISCUSSED

#### Opened

05000445/2005004-02      URI      Failure to prevent foreign material from entering the station service water pump suction (Section 4OA3)

#### Opened and Closed

05000446/2005004-01      NCV      Failure to follow radiation work permit requirements (Section 2OS2)

05000445;446/2005004-03      NCV      Inadequate control room heat exchanger surveillance (Section 4OA5)

#### Closed

05000445;446/2005002-01      URI      Non-conservative control room heat exchanger testing (Section 4OA5)

#### Discussed

None

## LIST OF DOCUMENTS REVIEWED

### Section 2OS2: ALARA Planning and Controls (71121.02)

#### ALARA Committee Minutes

March 11, 2004; May 27, 2004; October 28, 2004; March 16, 2005; June 2, 2005

#### Audits and Self-Assessments

EVAL-2004-016

#### Corrective Action Documents (Smart Forms)

2004-1999, 2004-2270, 2004-2370, 2004-2490, 2004-2657, 2004-3194, 2004-3577, 2004-3746, 2004-3824, 2005-0532, 2005-0664, 2005-1087, 2005-1411, 2005-1485, 2005-1538, 2005-1642, 2005-1692, 2005-1749, 2005-1912, 2005-2397, 2005-2688, 2005-2703, 2005-2704

#### Procedures

RPI-608 Control of Shielding, Revision 8  
STA-602 Radiological Surveillance and Posting, Revision 24  
STA-606 Radiation Work and General Access Permits, Revision 12  
STA-650 General Health Physics Plan, Revision 5  
STA-651 ALARA Program, Revision 9  
STA-655 Exposure Monitoring Program, Revision 14  
STA-656 Radiation Work Control, Revision 12  
STA-657 ALARA Job Planning/Debriefing, Revision 9

#### Radiation work permits

2004-1400, 2004-1401, 2004-1600, 2005-0218, 2005-0601, 2005-2209, 2005-2238, 2005-2300, 2005-2304, 2005-2400, 2005-2401, 2005-2600

#### Shielding Requests

04-18, 04-21, 05-09, 05-12, 05-13, 05-15, 05-16

#### Miscellaneous

1RF10 CPSES Radiation Protection ALARA Report  
Declared Pregnant Worker information for four individuals  
SCI-ALARA-2005-1199  
SCI-ALARA-2005-1200  
SCI-OUT-2005-1199  
SCI-OUT-2005-1200

## LIST OF ACRONYMS

ABN	Abnormal Conditions Procedure
CFR	<i>Code of Federal Regulations</i>
CPSES	Comanche Peak Steam Electric Station
EDG	emergency diesel generator
EVAL	evaluation
NCV	noncited violation
NRC	Nuclear Regulatory Commission
OPT	operability test
RHR	residual heat removal
SMF	Smart Form
SOP	system operating procedure
SSC	structures, systems, or components
SSWP	station service water pump
STA	station administrative procedure
WO	work order