



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 EAST LAMAR BLVD
ARLINGTON, TEXAS 76011-4511

February 9, 2012

Rafael Flores, Senior Vice President
and Chief Nuclear Officer
Luminant Generation Company, LLC
Comanche Peak Nuclear Power Plant
P.O. Box 1002
Glen Rose, TX 76043

Subject: COMANCHE PEAK NUCLEAR POWER PLANT - NRC INTEGRATED INSPECTION
REPORT 05000445/2011005 AND 05000446/2011005

Dear Mr. Flores:

On December 31, 2011, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Comanche Peak Nuclear Power Plant. The enclosed integrated inspection report documents the inspection results which were discussed on January 11, 2012, with Mr. M. Lucas, Site Vice President, and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Four NRC-identified and two self-revealing findings of very low safety significance (Green) were identified during this inspection.

All of these findings were determined to involve violations of NRC requirements. Further, two licensee-identified violations which were determined to be of very low safety significance are listed in this report. The NRC is treating these findings as non-cited violations (NCVs), consistent with Section 2.3.2 of the Enforcement Policy.

If you contest these non-cited violations 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, D.C. 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 1600 East Lamar Boulevard, Arlington, Texas, 76011-4511; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the Comanche Peak Nuclear Power Plant.

Senior Vice President and
Chief Nuclear Officer – Rafael Flores

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If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region IV, and the NRC Resident Inspector at the Comanche Peak Nuclear Power Plant.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, and its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records 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).

Sincerely,

/RA/

Wayne C. Walker, Chief
Project Branch A
Division of Reactor Projects

Docket Nos: 05000445, 05000446
License Nos: NPF-87, NPF-89

Enclosure: 05000445/2011005 and 05000446/2011005
w/Attachments: Supplemental Information
Request for Information for the Occupational Radiation Safety Inspection

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 05000445, 05000446

License: NPF-87, NPF-89

Report: 05000445/2011005 and 05000446/2011005

Licensee: Luminant Generation Company LLC

Facility: Comanche Peak Nuclear Power Plant, Units 1 and 2

Location: FM-56, Glen Rose, Texas

Dates: September 18 through December 31, 2011

Inspectors: J. Kramer, Senior Resident Inspector
B. Tindell, Resident Inspector
I. Anchondo, Reactor Inspector
P. Elkmann, Senior Emergency Preparedness Inspector
A. Fairbanks, Reactor Inspector
S. Graves, Senior Reactor Inspector
N. Greene, PhD., Health Physicist
G. Guerra, Emergency Preparedness Inspector
S. Makor, Reactor Inspector

Approved By: Wayne Walker, Chief, Project Branch A
Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000445/2011005, 05000446/2011005; 9/18/2011 - 12/31/2011; Comanche Peak Nuclear Power Plant, Units 1 and 2; Refueling and Other Outage Activities, Exercise Evaluation, Radiological Hazard Assessment and Exposure Controls, Identification and Resolution of Problems

The report covered a 3-month period of inspection by resident inspectors and announced baseline inspections by region based inspectors. Six Green non-cited 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 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 4, dated December 2006.

A. NRC-Identified Findings and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a non-cited violation of Technical Specification 5.4.1.a for the failure to follow procedure and remove items from containment. As a result, maintenance personnel failed to remove materials that could be transported to the containment emergency core cooling sumps during an accident. The inspectors informed the licensee of the debris inside containment and the licensee corrected the condition. The licensee entered the finding into the corrective action program as Condition Report CR-2011-013343.

The failure of the maintenance personnel to follow procedure and remove materials from containment was a performance deficiency which resulted in debris remaining in containment. The finding was more than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of the emergency core cooling sumps. Using NRC Manual Chapter 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," the finding was determined to be of very low safety significance because the finding did not represent an actual loss of safety function of the emergency core cooling sumps. The finding has a human performance crosscutting aspect associated with resources because the licensee failed to ensure that personnel performing the maintenance activity were adequately trained on the procedure requirement to remove the materials when leaving containment [H2.b] (Section 1R20).

- Green. The inspectors identified a non-cited violation of Technical Specification 5.4.1.a for the failure to follow procedure and correctly restore motor operated valves. As a result, the licensee inverted the Unit 1 power operated relief valve block valves' limit switch covers and placed the drain on the top. The licensee entered the finding into the corrective action program as Condition Report CR-2011-011871.

The failure to follow procedure and correctly restore motor operated valves, which resulted in inverted limit switch covers with the drain on the top, was a performance deficiency. The finding was more than minor because if left uncorrected, the performance deficiency had the potential to lead to a more significant safety concern in that other valves may have been incorrectly restored. The inspectors determined that the finding was associated with the mitigating systems cornerstone. Using NRC Manual Chapter 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," the finding was determined to be of very low safety significance because the finding did not represent an actual loss of safety function of the power operated relief valve block valves. The finding has a human performance crosscutting aspect associated with work practices because the licensee failed to use appropriate self and peer checking [H.4a] (Section 1R20).

- Green. The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, for the failure of the licensee to promptly identify and correct improper auxiliary feedwater pump oil levels. As a result, the inspectors identified seven instances where the oil level was outside of the prescribed sight glass indication. The licensee entered the finding into the corrective action program as Condition Report CR-2011-12430.

The licensee's failure to promptly identify and correct the improper auxiliary feedwater pump bearing oil level was a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of the auxiliary feedwater pumps. Using NRC Manual Chapter 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," the finding was determined to be of very low safety significance because the finding did not result in an actual loss of safety function of an auxiliary feedwater pump. The finding has a problem identification and resolution crosscutting aspect associated with corrective action program, in that, licensee personnel failed to trend and assess the abnormal oil level condition reports in the aggregate to identify common cause problems [P.1b] (Section 4OA2).

Cornerstone: Emergency Preparedness

- Green. The inspectors identified a non-cited violation of 10 CFR 50.47(b)(10) for failure of the licensee to have guidelines developed and in place for the choice of protective actions during an emergency. Specifically, Procedure EPP-304, "Protective Action Recommendations," Revision 20, did not provide direction for the development of protective action recommendations outside the emergency planning zone. The licensee entered the finding into the corrective action program as Condition Report CR-2011-009218.

The failure to develop and implement guidelines for the choice of protective actions during an emergency is a performance deficiency. This finding is more than minor because it has the potential to affect safety, and affects the emergency preparedness cornerstone attributes of emergency response organization performance and procedure quality. The finding is of very low safety significance because it was a failure to comply with NRC requirements, was

associated with a risk-significant planning standard, and was not a functional failure of the planning standard or degraded planning standard function. The finding has a problem identification and resolution crosscutting aspect associated operating experience because the licensee did not use operating experience to maintain and update the protective action procedure [P2.b] (Section 1EP1).

Cornerstone: Occupational Radiation Safety

- Green. The inspectors reviewed a self-revealing non-cited violation of 10 CFR 20.1501(a) because radiation protection staff failed to perform an adequate survey to evaluate and determine the radiological hazards in the floor drain tank room. The licensee entered the finding into the corrective action program as Condition Report CR-2011-010174 and immediately posted the room as a locked high radiation area.

The failure to perform a radiation survey to determine radiological hazards was a performance deficiency. The finding was greater than minor because it was associated with the occupational radiation safety cornerstone attribute of program and process and affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation during routine operations. Using NRC Manual Chapter 0609, "Significance Determination Process," Appendix C, "Occupational Radiation Safety Significance Determination Process," the finding was determined to be of very low safety significance because: (1) it was not associated with as low as is reasonably achievable (ALARA) planning (2) there was no overexposure, (3) there was no substantial potential for an overexposure, and (4) the ability to assess dose was not compromised. The finding has a human performance crosscutting aspect associated with work control because the licensee failed to ensure interdepartmental communication and coordination prior to commencing work activities and assuring accurate radiation safety information was provided to workers [H.3b] (Section 2RS01).

- Green. The inspectors reviewed a self-revealing non-cited violation of Technical Specification 5.4.1.a for the failure of a worker to follow radiological work permit requirements. Specifically, a chemistry technician received a dose rate alarm that was greater than 120 millirem per hour and failed to immediately exit the area and contact radiation protection. The licensee entered the finding into the corrective action program as Condition Report CR-2011-010774.

The failure to follow the instructions on a radiation work permit by not immediately contacting radiation protection when a dose rate alarm was received was a performance deficiency. The finding was more than minor because it was associated with the occupational radiation safety cornerstone attribute of program and process and affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation during routine operations. Using NRC Manual Chapter 0609, "Significance Determination Process," Appendix C, "Occupational Radiation Safety Significance Determination Process," the finding was determined to be of very low safety significance because: (1) it was not associated with as low as is reasonably achievable (ALARA) planning or work controls, (2) there was no overexposure, (3) there was no substantial potential for an overexposure, and

(4) the ability to assess dose was not compromised. The finding has a human performance crosscutting aspect associated with work practices because the licensee failed to effectively communicate expectations regarding procedural compliance to the worker [H.4b] (Section 2RS01).

B. Licensee-Identified Violations

Two violations of very low safety significance were identified by the licensee and were reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and corrective action condition report numbers are listed in Section 4OA7.

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period at approximately 100 percent power. On October 1, 2011, the operators shut down Unit 1 to begin a scheduled refueling outage. On October 22, 2011, the outage ended when the main generator output breakers were closed and Unit 1 was placed on the grid. On October 25, 2011, the unit returned to approximately 100 percent power and operated at approximately 100 percent power for the remainder of the reporting period.

Unit 2 began the inspection period at approximately 100 percent power. On November 11, 2011, operators reduced power to approximately 54 percent to perform repairs on a main feedwater pump auxiliary condenser. On November 12, 2011, the unit returned to approximately 100 percent power and operated at approximately 100 percent power for the remainder of the reporting period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness

1R04 Equipment Alignments (71111.04)

.1 Partial Equipment Walkdowns

a. Inspection Scope

The inspectors performed partial system walkdowns of the following risk-significant systems:

- October 13, 2011, Unit 2, reactor vessel water level instrumentation in preparation for reduced reactor coolant system inventory
- December 21, 2011, Unit 2, diesel generator 2-01 and train A switchgear during diesel generator 2-02 testing

The inspectors selected these systems based on their risk significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors focused on discrepancies that could affect the function of the system and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, Final Safety Analysis Report, technical specification requirements, outstanding work orders, condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program with the appropriate significance characterization.

These activities constitute completion of two partial system walkdown samples as defined in Inspection Procedure 71111.04-05.

b. Findings

No findings were identified.

.2 Complete System Walkdown

a. Inspection Scope

The inspectors performed a complete system walkdown of the Unit 2 auxiliary feedwater system to verify the functional capability of the system. The inspectors selected this system because it was considered both safety-significant and risk-significant in the licensee's probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment line-ups, electrical power availability, system pressure and temperature indications, component labeling, component lubrication, component and equipment cooling, hangers and supports, operability of support systems, and to ensure that ancillary equipment or debris did not interfere with equipment operation. The inspectors reviewed a sample of past and outstanding work orders to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the corrective action program database to ensure that system equipment-alignment problems were being identified and appropriately resolved. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one complete system walkdown sample as defined by Inspection Procedure 71111.04-05.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05AQ)

a. Inspection Scope

The inspectors conducted fire protection walkdowns in the following risk-significant plant areas:

- September 25, 2011, fire zone 1SC7, Unit 1 turbine driven auxiliary feedwater pump room
- September 25, 2011, fire zone 1SB15, Unit 1 832 foot elevation containment personnel airlock area
- October 5, 2011, fire zone 1CA 101, Unit 1 containment
- October 16, 2011, fire zone 1SE16, Unit 1 832 foot switchgear

The inspectors reviewed areas to assess if licensee personnel had implemented a fire protection program that adequately controlled combustibles and ignition sources within

the plant; effectively maintained fire detection and suppression capability; maintained passive fire protection features in good material condition; and had implemented adequate compensatory measures for out of service, degraded or inoperable fire protection equipment, systems, or features, in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's individual plant examination of external events, their potential to affect equipment that could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. The inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use, that fire detectors and sprinklers were unobstructed, that transient material loading was within the analyzed limits, and fire doors, dampers, and penetration seals appeared to be in satisfactory condition.

These activities constitute completion of four quarterly fire protection inspection samples as defined in Inspection Procedure 71111.05-05.

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06)

.1 Internal Flooding

a. Inspection Scope

The inspectors performed flood protection walkdowns of the following plant areas:

- Unit 1 diesel generator rooms
- Turbine-driven auxiliary feedwater pump turbine connection to floor drains

The inspectors verified the adequacy of flood control measures. The inspectors reviewed the Final Safety Analysis Report, the flooding analysis, and plant procedures to assess susceptibilities involving internal flooding. The inspectors reviewed the corrective action program to determine if licensee personnel identified and corrected flooding problems. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of two internal flood protection measures inspection samples as defined by Inspection Procedure 71111.06-05.

b. Findings

No findings were identified.

.2 Underground Cables

a. Inspection Scope

On October 7, 2010, the inspectors observed the condition of Unit 1 service water train A cable vault E1A1. The inspectors observed minimal water in the cable vault and verified the cables were not submerged. In addition, the inspectors observed the material

condition of the cable supports. The inspectors reviewed the licensee's efforts to maintain the cables in a qualified environment. The inspectors reviewed the corrective action program to determine if licensee personnel identified and corrected flooding problems.

These activities constitute completion of one underground cable flood protection measures inspection sample as defined in Inspection Procedure 71111.06-05.

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07)

a. Inspection Scope

The inspectors reviewed licensee programs, verified performance against industry standards, and reviewed critical operating parameters and maintenance records for the component cooling water heat exchangers 1-02 and 2-02, the Unit 2 emergency diesel generator jacket water coolers, and the safe shutdown impoundment. The inspectors verified that performance tests were satisfactorily conducted for heat exchangers/heat sinks and reviewed for problems or errors; the licensee utilized the periodic maintenance method outlined in Electrical Power Research Institute Report NP 7552, "Heat Exchanger Performance Monitoring Guidelines"; the licensee properly utilized biofouling controls; the licensee's heat exchanger inspections adequately assessed the state of cleanliness of their tubes; and the heat exchanger was correctly categorized under 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of three triennial heat sink inspection samples as defined in Inspection Procedure 71111.07-05.

b. Findings

No findings were identified.

1R08 Inservice Inspection Activities (71111.08)

The activities documented below constitute completion of one inservice inspection activities sample as defined in Inspection Procedure 71111.08-05

.1 Inspection Activities Other Than Steam Generator Tube Inspection, Pressurized Water Reactor Vessel Upper Head Penetration Inspections, and Boric Acid Corrosion Control (71111.08-02.01)

a. Inspection Scope

The inspectors observed eight nondestructive examination activities and reviewed 12 nondestructive examination activities that included four types of examinations. The licensee did not identify any relevant indications accepted for continued service during the nondestructive examinations.

The inspectors directly observed the following nondestructive examinations:

<u>SYSTEM</u>	<u>IDENTIFICATION</u>	<u>EXAMINATION TYPE</u>
Steam Generator	TBX-1-3100-ANSG	Ultrasonic
Safety Injection	TXB-2-2566, H10	Liquid Penetrant
Safety Injection	TXB-2-2566, H25	Liquid Penetrant
Reactor Coolant System	TXB-2-2201, H36	Magnetic Particle
Safety Injection	TXB-2-2566, H10	Visual Examination (VT-3)
Pressurizer	TBX-1-4501-12OL	Ultrasonic
Pressurizer	TBX-1-4501-13OL	Ultrasonic
Reactor Vessel Head	Reactor Vessel Head	Bare Metal Visual Examination

The inspectors reviewed records for the following nondestructive examinations:

<u>SYSTEM</u>	<u>IDENTIFICATION</u>	<u>EXAMINATION TYPE</u>
Steam Generator	TBX-1-3100-BNSG	Ultrasonic
Safety Injection	TXB-2-2566, H18	Liquid Penetrant
Safety Injection	TXB-2-2566, H20	Liquid Penetrant
Safety Injection	TXB-2-2566, H19	Liquid Penetrant
Safety Injection	TXB-2-2566, H3	Visual Examination (VT-3)
Safety Injection	TXB-2-2566, H4	Visual Examination (VT-3)
Safety Injection	TXB-2-2566, H19	Visual Examination (VT-3)
Safety Injection	TXB-2-2566, H25	Visual Examination (VT-3)
Safety Injection	TXB-2-2566, H18	Visual Examination (VT-3)
Safety Injection	TXB-2-2566, H20	Visual Examination (VT-3)
Pressurizer Spray	TBX-1-4503-30OL	Ultrasonic
Pressurizer	TBX-1-4503-31OL	Ultrasonic

During the review and observation of each examination, the inspectors verified that activities were performed in accordance with the ASME Code requirements and applicable procedures

The inspectors reviewed four welds on the reactor coolant system pressure boundary.

The inspectors reviewed records for the following welding activities:

<u>SYSTEM</u>	<u>WELD IDENTIFICATION</u>	<u>WELD TYPE</u>
Service Water System	TUX 1	Gas Tungsten Arc Welding

<u>SYSTEM</u>	<u>WELD IDENTIFICATION</u>	<u>WELD TYPE</u>
Service Water System	TUX 2	Gas Tungsten Arc Welding
Service Water System	TUX 19	Gas Tungsten Arc Welding
Service Water System	TUX 7-1	Gas Tungsten Arc Welding

The inspectors verified, by review, that the welding procedure specifications and the welders had been properly qualified in accordance with ASME Code, Section IX, requirements. The inspectors also verified that essential variables for the welding processes were identified, recorded in the procedure qualification record, and formed the bases for qualification of the welding procedure specifications. Specific documents reviewed during this inspection are listed in the attachment.

These actions constitute completion of the requirements for Section 02.01.

b. Findings.

No findings were identified.

.2 Vessel Upper Head Penetration Inspection Activities (71111.08-02.02)

a. Inspection Scope.

The inspectors reviewed the results of the licensee's bare metal visual inspection of the reactor vessel upper head penetrations and verified that there was no evidence of boric acid challenging the structural integrity of the reactor head components and attachments. The inspectors also verified that the required inspection coverage was achieved and limitations were properly recorded. The inspectors verified that the personnel performing the inspection were certified examiners to their respective nondestructive examination method. Specific documents reviewed during this inspection are listed in the attachment.

These actions constitute completion of the requirements for Section 02.02.

b. Findings.

No findings were identified.

.3 Boric Acid Corrosion Control Inspection Activities (71111.08-02.03)

a. Inspection Scope.

The inspectors evaluated the implementation of the licensee's boric acid corrosion control program for monitoring degradation of those systems that could be adversely affected by boric acid corrosion. The inspectors reviewed the documentation associated with the licensee's boric acid corrosion control walkdown as specified in Procedure STA-737, "Boric Acid Corrosion Detection and Evaluation," Revision 5. The inspectors also reviewed the visual records of the components and equipment. The inspectors verified that the visual inspections emphasized locations where boric acid leaks could cause degradation of safety-significant components. The inspectors also verified that the engineering evaluations for those components where boric acid was

identified gave assurance that the ASME Code wall thickness limits were properly maintained. The inspectors confirmed that the corrective actions performed for evidence of boric acid leaks were consistent with requirements of the ASME Code. Specific documents reviewed during this inspection are listed in the attachment.

These actions constitute completion of the requirements for Section 02.03.

b. Findings.

No findings were identified.

.4 Steam Generator Tube Inspection Activities (71111.08-02.04)

a. Inspection scope.

The licensee did not perform steam generator tube inspection activities during Refueling Outage 1R15.

b. Findings.

No findings were identified.

.5 Identification and Resolution of Problems (71111.08-02.05)

a. Inspection scope.

The inspectors reviewed 20 condition reports which dealt with inservice inspection activities and found the corrective actions for inservice inspection issues were appropriate. The specific condition reports reviewed are listed in the documents reviewed section. From this review the inspectors concluded that the licensee has an appropriate threshold for entering issues inservice inspection issues into the corrective action program and has procedures that direct a root cause evaluation when necessary. The licensee also has an effective program for applying industry inservice inspection operating experience. Specific documents reviewed during this inspection are listed in the attachment.

These actions constitute completion of the requirements of Section 02.05.

b. Findings.

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

Quarterly Licensed Operator Requalification Program Inspection

a. Inspection Scope

On November 29, 2011, the inspectors observed a crew of licensed operations personnel in the plant's simulator to verify that performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being

conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- Licensed operations personnel performance
- Crew's clarity and formality of communications
- Crew's ability to take timely actions in the conservative direction
- Crew's prioritization, interpretation, and verification of annunciator alarms
- Crew's correct use and implementation of abnormal and emergency procedures
- Control board manipulations
- Oversight and direction from supervisors
- Crew's ability to implement appropriate emergency plan actions and notifications

The inspectors compared the crew's performance in these areas to pre-established operator action expectations and successful critical task completion requirements.

These activities constitute completion of one quarterly licensed operations personnel requalification program sample as defined in Inspection Procedure 71111.11.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors evaluated the following risk significant systems, components, and degraded performance issues:

- Auxiliary feedwater system
- Unit 2 containment spray system
- 2011 maintenance rule program periodic evaluation
- Reactor makeup water system

The inspectors reviewed events where ineffective equipment maintenance had resulted in failures and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- Implementing appropriate work practices
- Identifying and addressing common cause failures
- Scoping of systems in accordance with 10 CFR 50.65(b)
- Characterizing system reliability issues for performance
- Charging unavailability for performance
- Trending key parameters for condition monitoring
- Ensuring proper classification in accordance with 10 CFR 50.65(a)(1) or (a)(2)

The inspectors verified appropriate performance criteria for structures, systems, and components classified as having an adequate demonstration of performance through preventive maintenance, as described in 10 CFR 50.65(a)(2), or as requiring the establishment of appropriate and adequate goals and corrective actions for systems classified as not having adequate performance, as described in 10 CFR 50.65(a)(1).

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified that maintenance effectiveness issues were entered into the corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

These activities constituted completion of four maintenance effectiveness samples as defined in Inspection Procedure 71111.12-05.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed the licensee's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- September 22, 2011, Unit 1 refueling outage
- October 5, 2011, heavy lift over Unit 1 reactor coolant system
- October 13, 2011, switchyard work during Unit 1 refueling outage
- December 5, 2011, Unit 1 service water pump 1-01 breaker maintenance and containment spray chemical additive tank inoperability

The inspectors selected these activities based on potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that licensee personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. When licensee personnel performed emergent work, the inspectors verified that the licensee personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed the technical specification requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

These activities constitute completion of four maintenance risk assessments and emergent work control inspection samples as defined in Inspection Procedure 71111.13-05.

b. Findings

No findings were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- CR-2011-003017, Unit 2, leaking elongated fuel pin
- CR-2011-003291, Units 1 and 2, maintenance of grease on stem of turbine driven auxiliary feedwater pump trip and throttle valve
- CR- 2011-010471, Unit 2, turbine driven auxiliary feedwater high bearing oil level
- CR-2011-011484, Unit 1, component cooling water leakage
- CR-2011-013956, Unit 2, leakage through safety injection hot leg injection valve 2-8802A
- Unit 1, service water train A motor lift on October 7, 2011

The inspectors selected these potential operability issues based on the risk-significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that technical specification operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the technical specifications and Final Safety Analysis Report to the licensee's evaluations, to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of six operability evaluation inspection samples as defined in Inspection Procedure 71111.15-05.

b. Findings

No findings were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed the following postmaintenance activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- September 17, 2011, Unit 1 personnel airlock door seal leakage test following airlock opening

- September 21, 2011, Unit 1 steam generator blowdown isolation valve stroke following diaphragm replacement
- October 5, 2010, Unit 1 diesel generator 1-01 testing following replacement of the jacket water cooling water pump
- October 11, 2011, Unit 1 switchgear 1EB2 time delay relay for 480 volt bus shedding testing following relay replacement
- October 11, 2011, Unit 1 relay calibration and installation following 6.9 kV switchgear 1EA2 relay replacement
- October 14, 2011, Unit 1 emergency core cooling system fill and check valve test following system maintenance
- October 20, 2011, Unit 1 turbine-driven auxiliary feedwater pump testing following turbine maintenance
- October 20, 2011, Unit 1 control rod drop testing following refueling outage
- October 20, 2011, Unit 1 digital rod position indication testing following maintenance

The inspectors selected these activities based upon the structure, system, or component's ability to affect risk. The inspectors evaluated the activities to ensure the testing was adequate for the maintenance performed, the acceptance criteria were clear, and the test ensured equipment operational readiness.

The inspectors evaluated the activities against technical specifications, the Final Safety Analysis Report, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with postmaintenance tests to determine whether the licensee was identifying problems and entering them into the corrective action program and that the problems were being corrected commensurate with their importance to safety. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of nine postmaintenance testing inspection samples as defined in Inspection Procedure 71111.19-05.

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

The inspectors reviewed the outage safety plan and contingency plans for the Unit 1 refueling outage, conducted October 1, 2011 through October 22, 2011, to confirm that licensee personnel had appropriately considered risk, industry experience, and previous

site-specific problems in developing and implementing a plan that assured maintenance of defense-in-depth. During the refueling outage, the inspectors observed portions of the shutdown and cooldown of the reactor and monitored licensee controls over the outage activities listed below:

- Configuration management, including maintenance of defense-in-depth, is commensurate with the outage safety plan for key safety functions and compliance with the applicable technical specifications when taking equipment out of service
- Clearance activities, including confirmation that tags were properly hung and equipment appropriately configured to safely support the work or testing
- Installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication, accounting for instrument error
- Status and configuration of electrical systems to ensure that technical specifications and outage safety plan requirements were met, and controls over switchyard activities
- Monitoring of decay heat removal processes, systems, and components
- Verification that outage work was not impacting the ability of the operators to operate the spent fuel pool cooling system
- Reactor water inventory controls, including flow paths, configurations, and alternative means for inventory addition, and controls to prevent inventory loss
- Controls over activities that could affect reactivity
- Refueling activities including fuel handling
- Startup and ascension to full power operation, tracking of startup prerequisites, walkdown of the containment to verify that debris had not been left which could block emergency core cooling system suction strainers, and reactor physics testing
- Licensee identification and resolution of problems related to refueling outage activities
- Licensee's management of fatigue

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one refueling outage sample as defined in Inspection Procedure 71111.20-05.

b. Findings

1. Failure to Remove Materials and Debris from Containment

Introduction. The inspectors identified a Green non-cited violation of Technical Specification 5.4.1.a for the failure to follow procedure and remove items from containment. As a result, maintenance personnel failed to remove materials that could be transported to the containment emergency core cooling sumps during an accident.

Description. On October 18, 2011, the inspectors performed a walkdown of the Unit 1 containment to look for debris and other materials that could be transported to the emergency sumps during an accident prior to the unit entering Mode 4. The inspectors observed a large amount of plastic, paper, and other debris remaining inside containment near the sumps. Maintenance personnel had initiated an emergent work activity on a component cooling water drain tank pump and had left the job area for the day. The maintenance personnel planned on completing the activity the following day. The shift manager had implemented the requirement for Mode 4 cleanliness which required that materials taken into containment be removed from containment when a person exits containment. The licensee had completed the containment closeout inspection prior to the initiation of the emergent activity. The inspectors informed the licensee of the debris inside containment and the licensee corrected the condition.

The inspectors reviewed Condition Report CR-2011-013343 and discussed the observation with the maintenance personnel. The inspectors determined that the licensee failed to ensure that the personnel performing the maintenance activity were properly trained on the containment entry administrative procedure requirement to remove debris when exiting containment.

Analysis. The failure of the maintenance personnel to follow procedure and remove materials from containment was a performance deficiency which resulted in debris remaining in containment. The finding was more than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of the emergency sumps. Using NRC Manual Chapter 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," the finding was determined to be of very low safety significance because the finding did not represent an actual loss of safety function of the emergency core cooling sumps. The finding has a human performance crosscutting aspect associated with resources because the licensee failed to ensure that personnel performing the maintenance activity were adequately trained on the procedure requirement to remove the materials when leaving containment [H2.b].

Enforcement. Technical Specification 5.4.1.a requires, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A. Regulatory Guide 1.33, Revision 2, Appendix A, Item 1.i, requires, in part, procedures for access to containment. Procedure STA-620, "Containment Entry," Revision 12, in part, delineates responsibilities and provides instructions to safely enter containment. Step 6.1.9 of the procedure requires, in part, that individuals are responsible for ensuring that any equipment, personal items, test equipment, clip boards, note paper, or similar items, inherently required for the activity are still in their possession upon exit of containment. Contrary to the above, on October 18, 2011, maintenance personnel failed to ensure all materials required for the activity were in their possession upon exit of containment. After being informed of the debris, the licensee directed personnel to reenter containment and remove the materials. Since the violation was of very low safety

significance and was documented in the licensee's corrective action program as Condition Report CR-2011-013343, it is being treated as a non-cited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000445/2011005-01, "Failure to Remove Materials and Debris from Containment."

2. Failure to Correctly Reassemble a Motor Operated Valve

Introduction. The inspectors identified a Green non-cited violation of Technical Specification 5.4.1.a for the failure to follow procedure and correctly restore motor operated valves. As a result, the licensee inverted the Unit 1 power operated relief valve block valves' limit switch covers and placed the drain on the top.

Description. On October 18, 2011, the inspectors performed a walkdown of the Unit 1 containment while the unit was in Mode 5. The inspectors identified that the power operated relief valve block valves 1-8000A and 1-8000B had inverted limit switch covers and placed the drain on the top. The inspectors determined that the valves were not in the environmentally qualified configuration. In the required configuration, the drain would be located on the bottom of the limit switch cover in order to drain moisture. However, the valves were not required to be operable in Mode 5. The licensee corrected the condition the same day before entering Mode 4. The inspectors noted that the same procedure is used to perform testing on other environmentally qualified motor operated valves in the plant. The inspectors performed a walkdown of other valves and found no problems.

The inspectors reviewed the licensee's causal analysis for the inverted drains. The licensee determined that maintenance personnel failed to follow procedure when restoring the valve from testing during the refueling outage. The licensee had performed a pre-job briefing that covered correct drain orientation. However, the maintenance personnel did not adequately self and peer check.

Analysis. The failure to follow procedure and correctly restore motor operated valves, which resulted in inverted limit switch covers with the drain on the top, was a performance deficiency. The finding was more than minor because if left uncorrected, the performance deficiency had the potential to lead to a more significant safety concern in that other valves may have been incorrectly restored. The inspectors determined that the finding was associated with the mitigating systems cornerstone. Using NRC Manual Chapter 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," the finding was determined to be of very low safety significance because the finding did not represent an actual loss of safety function of the power operated relief valve block valves. The finding has a human performance crosscutting aspect associated with work practices because the licensee failed to use appropriate self and peer checking [H.4a].

Enforcement. Technical Specification 5.4.1.a requires, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A. Regulatory Guide 1.33, Revision 2, Appendix A, Item 9.a, requires, in part, that maintenance that can affect the performance of safety-related equipment should be performed in accordance with written procedures. Procedure PPT-S0-6004, "Motor Operated Rising Stem Valve Risk-Informed IST Testing," Revision 5, step 9.3 requires, in part, to restore the motor operated valve. Contrary to the above, from October 7, 2011 to October 18, 2011 the

licensee failed to restore the motor operated valve. Specifically, the limit switch covers were inverted, which caused the drain to be on top of the cover. The licensee corrected the cover orientation on October 18, 2011. Since the violation was of very low safety significance and was documented in the licensee's corrective action program as Condition Report CR-2011-011871, it is being treated as a non-cited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000445/2011005-02, "Failure to Correctly Reassemble a Motor Operated Valve."

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the Final Safety Analysis Report, procedure requirements, technical specifications, and corrective action documents to ensure that the surveillance activities listed below demonstrated that the systems, structures, and components tested were capable of performing their intended safety functions:

Pump or Valve Inservice Test

- October 7, 2011, Unit 1 power operated relief valve block valve 1-8000A test in accordance with PPT-S0-6004, "Motor Operated Rising Stem Valve Risk-Informed IST Testing," Revision 5

Containment Isolation Valve Test

- October 18, 2011, Unit 1, containment equipment hatch seal test in accordance with Procedure OPT-805A, "Appendix J Leak Rate Test of Equipment Hatch Seal," Revision 2

Routine Surveillance Testing

- October 6, 2011, Unit 1, loss of offsite power test in accordance with Procedure OPT-435A, "Train B Integrated Test Sequence," Revision 6
- October 18, 2011, Unit 1, containment cleanliness inspection in accordance with Procedure OPT-305, "Containment Close Out Inspection," Revision 12
- October 21, 2011, Unit 1, low power physics testing in accordance with Procedure NUC-301, "Low Power Physics Testing," Revision 17

The inspectors either witnessed or reviewed test data to verify that the significant surveillance test attributes were adequate to address the following:

- Preconditioning
- Evaluation of testing impact on the plant
- Acceptance criteria
- Test equipment
- Procedures
- Jumper and lifted lead controls
- Test data
- Testing frequency and method demonstrated technical specification operability

- Test equipment removal
- Restoration of plant systems
- Fulfillment of ASME code requirements
- Updating of performance indicator data
- Reference setting data
- Annunciators and alarms setpoints

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of five surveillance testing inspection samples (one pump or valve inservice test sample, one containment isolation valve test sample, and three routine surveillance testing samples) as defined in Inspection Procedure 71111.22-05.

b. Findings

No findings were identified.

1EP1 Exercise Evaluation (71114.01)

a. Inspection Scope

The inspectors reviewed the objectives and scenario for the 2011 biennial emergency plan exercise to determine if the exercise acceptably tested major elements of the emergency plan. The scenario simulated a reactor coolant system leak inside containment escalating into a large-break loss of coolant accident, a failure to completely insert control rods, a loss of containment spray systems, and a radiological release to the environment via the containment emergency escape hatch, to demonstrate the licensee personnel's capability to implement their emergency plan.

The inspectors evaluated exercise performance by focusing on the risk-significant activities of event classification, offsite notification, recognition of offsite dose consequences, and development of protective action recommendations, in the control room simulator and the following dedicated emergency response facilities:

- Technical Support Center
- Operations Support Center
- Emergency Operations Facility

The inspectors also assessed recognition of, and response to, abnormal and emergency plant conditions, the transfer of decision making authority and emergency function responsibilities between facilities, onsite and offsite communications, protection of emergency workers, emergency repair evaluation and capability, and the overall implementation of the emergency plan to protect public health and safety and the environment. The inspectors reviewed the current revision of the facility emergency plan, emergency plan implementing procedures associated with operation of the licensee's emergency response facilities, procedures for the performance of associated emergency functions, and other documents as listed in the attachment to this report.

The inspectors compared the observed exercise performance with the requirements in the facility emergency plan, 10 CFR 50.47(b), 10 CFR Part 50, Appendix E, and with the guidance in the emergency plan implementing procedures and other federal guidance.

The inspectors attended the post-exercise critiques in each emergency response facility to evaluate the initial licensee self-assessment of exercise performance. The inspectors also attended a subsequent formal presentation of critique items to plant management. The specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one exercise evaluation sample as defined in Inspection Procedure 71114.01-05.

b. Findings

Introduction. The inspectors identified a Green non-cited violation of 10 CFR 50.47(b)(10) for failure of the licensee to have guidelines developed and in place for the choice of protective actions during an emergency. Specifically, Procedure EPP-304, "Protective Action Recommendations," Revision 20, did not provide direction for the development of protective action recommendations outside the emergency planning zone.

Description. The inspectors reviewed emergency plan implementing Procedure EPP-304, "Protective Action Recommendations," Revision 20, and identified that step 4.1.5 stated that, "If dose projections exceed EPA Protective Action Guidelines at the outer boundary of the 10-mile EPZ, then TDSHS-RCP will be contacted as soon as possible to formulate PARs for the affected areas."

The inspectors subsequently observed the biennial emergency preparedness exercise conducted August 3, 2011. During the exercise, the offsite radiological assessment coordinator in the emergency operations facility identified the 5 rem thyroid committed dose equivalent protective action guideline was met at 10 miles. The offsite radiological assessment coordinator informed the emergency coordinator of the need to evaluate protective actions outside the emergency planning zone. The inspectors determined that the emergency coordinator and offsite radiological assessment coordinator did not develop independent protective action recommendations for outside the emergency planning zone and the licensee emergency response organization did not transmit protective action recommendations for outside the emergency planning zone to offsite authorities.

The inspectors observed the licensee's management briefing regarding exercise performance conducted August 5, 2011, and determined the exercise evaluation team evaluated the failure to develop protective action recommendations for areas outside the emergency planning zone as satisfactory performance. The inspectors subsequently interviewed the licensee emergency preparedness manager to verify the emergency coordinator and offsite radiological assessment coordinator had performed according to their procedure and training.

The inspectors determined that during the August 3, 2011, biennial exercise, the emergency coordinator and offsite radiological assessment coordinator performed in accordance with their procedures and training. The inspectors concluded that Procedure EPP-304 did not provide guidelines for the choice of protective actions during an emergency for those areas outside the emergency planning zone and did not ensure the licensee would develop protective action recommendations for these areas.

Analysis. The failure to develop and implement guidelines for the choice of protective actions during an emergency is a performance deficiency. This finding is more than minor because it affected the emergency preparedness attributes of emergency response organization performance and procedure quality. The finding had a credible impact on the emergency preparedness cornerstone objective because the lack of guidelines for the choice of protective actions during an emergency may preclude the licensee from implementing measures to protect the health and safety of the public. Using NRC Manual Chapter 0609, "Significance Determination Process," Appendix B, "Emergency Preparedness Significance Determination Process," the finding was determined to be of very low safety significance because it was a failure to comply with NRC requirements, was associated with a risk-significant planning standard, and was not a functional failure of the planning standard or degraded planning standard function. The finding did not represent a degraded planning standard function because appropriate guidelines were developed and in place for choosing protective actions for members of the public within the emergency planning zone. The finding has a problem identification and resolution crosscutting aspect associated operating experience because the licensee did not use operating experience to maintain and update the protective action procedure [P2.b].

Enforcement. Title 10 of the CFR 50.47(b)(10) states, in part, that guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place. Contrary to above, the licensee failed to have complete guidelines for the choice of protective actions during an emergency developed and in place. Specifically, licensee Procedure EPP-304, "Protective Action Recommendations," Revision 20, did not provide direction for the development of protective action recommendations outside the emergency planning zone. Since the violation was of very low safety significance and has been entered into the licensee's corrective action program as Condition Report CR-2011-009218, this violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000445/2011005-03; 05000446/2011005-03, "Failure to Provide Guidelines for Protective Action Recommendations outside the Emergency Planning Zone."

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

a. Inspection Scope

The inspectors performed an in-office review and contacted the licensee to verify the licensee had not submitted changes to the emergency plan or emergency action level scheme to the NRC during 2011.

These activities constitute completion of one emergency action level and emergency plan changes inspection sample as defined in Inspection Procedure 71114.04-05.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Occupational and Public Radiation Safety

2RS01 Radiological Hazard Assessment and Exposure Controls (71124.01)

a. Inspection Scope

This area was inspected to: (1) review and assess licensee's performance in assessing the radiological hazards in the workplace associated with licensed activities and the implementation of appropriate radiation monitoring and exposure control measures for both individual and collective exposures, (2) verify the licensee is properly identifying and reporting occupational radiation safety cornerstone performance indicators, and (3) identify those performance deficiencies that were reportable as a performance indicator and which may have represented a substantial potential for overexposure of the worker.

The inspectors used the requirements in 10 CFR Part 20, technical specifications, and the licensee's procedures required by technical specifications as criteria for determining compliance. The inspectors interviewed the radiation protection manager, radiation protection supervisors, and radiation workers. The inspectors performed walkdowns of various portions of the plant, performed independent radiation dose rate measurements, and reviewed the following items:

- Performance indicator events and associated documentation reported by the licensee in the occupational radiation safety cornerstone
- The hazard assessment program, including a review of the license's evaluations of changes in plant operations and radiological surveys to detect dose rates, airborne radioactivity, and surface contamination levels
- Instructions and notices to workers, including labeling or marking containers of radioactive material, radiation work permits, actions for electronic dosimeter alarms, and changes to radiological conditions
- Programs and processes for control of sealed sources and release of potentially contaminated material from the radiological controlled area, including survey performance, instrument sensitivity, release criteria, procedural guidance, and sealed source accountability
- Radiological hazards control and work coverage, including the adequacy of surveys, radiation protection job coverage, and contamination controls; the use of electronic dosimeters in high noise areas; dosimetry placement; airborne radioactivity monitoring; controls for highly activated or contaminated materials (non-fuel) stored within spent fuel and other storage pools; and posting and physical controls for high radiation areas and very high radiation areas
- Radiation worker and radiation protection technician performance with respect to radiation protection work requirements
- Audits, self-assessments, and corrective action documents related to radiological hazard assessment and exposure controls since the last inspection

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one radiological hazard assessment and exposure controls sample as defined in Inspection Procedure 71124.01-05.

b. Findings

1. Failure to Perform Adequate Radiation Surveys

Introduction. The inspectors reviewed a self-revealing Green non-cited violation of 10 CFR 20.1501(a) because radiation protection staff failed to perform an adequate survey to evaluate and determine the radiological hazards in floor drain tank room 1-061.

Description. On September 15, 2011, operations personnel entered floor drain tank room 1-061 to remove a clearance just inside the entrance. Room 1-061 was posted as a high radiation area, and the worker was on General Access Permit 20110011, which allowed entry to a high radiation area. However, the survey measurements used to brief operations prior to entry showed a maximum dose rate of 260 millirem per hour at 30 centimeters and 25 millirem per hour just inside the entrance. This survey was performed earlier that day, prior to the floor drain tank being drained, and before personnel entered room 1-061. Once drained, the general area dose rates increased significantly in room 1-061. Survey 11-09-0362, performed on September 16, 2011, showed a maximum dose rate of 450 millirem per hour at 30 centimeters. When operations entered room 1-061, a dose rate alarm of 218 millirem per hour was received. General Access Permit 2011-0011 had a dose rate alarm setpoint of 80 millirem per hour. Thus, operations entered room 1-061 under unknown radiological conditions that potentially could have resulted in a significant amount of unintended dose. The licensee failed to properly survey the room post drain down of the floor drain tank and communicate accurate radiological hazards to individuals entering the room as necessary. When questioned, it was determined that personnel assumed that the survey used to communicate radiological conditions for room 1-061 was post drain down of the floor drain tank.

Analysis. The failure to perform a radiation survey to determine radiological hazards was a performance deficiency. The finding was more than minor because it was associated with the occupational radiation safety cornerstone attribute of program and process and affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation during routine operations. Using NRC Manual Chapter 0609, "Significance Determination Process," Appendix C, "Occupational Radiation Safety Significance Determination Process," the finding was determined to be of very low safety significance because: (1) it was not associated with as low as is reasonably achievable (ALARA) planning (2) there was no overexposure, (3) there was no substantial potential for an overexposure, and (4) the ability to assess dose was not compromised. The finding has a human performance crosscutting aspect associated with work control because the licensee failed to ensure interdepartmental communication and coordination prior to commencing work activities and assuring accurate radiation safety information was provided to workers [H.3b].

Enforcement. Title 10 CFR 20.1501(a) requires, in part, that each licensee make or cause to be made surveys that may be necessary for the licensee to comply with the regulations in 10 CFR Part 20 and that are reasonable under the circumstances to evaluate the magnitude and extent of radiation levels, concentrations or quantities of

radioactive materials, and the potential radiological hazards that could be present. Contrary to the above, on September 15, 2011, the licensee failed to take reasonable surveys of floor drain tank room 1-061 to evaluate the radiation levels and potential radiological hazards. Consequently, an individual received unintended and unexpected radiation exposure because the magnitude and extent of radiation levels and potential radiological hazards were not evaluated post drain down of the floor drain tank. Since the violation was of very low safety significance and has been documented in the licensee's corrective action program as Condition Report CR-2011-010174, it is being treated as a non-cited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000445/2011005-04, "Failure to Perform Adequate Radiation Surveys."

2. Failure to Follow Radiological Work Permit Requirements

Introduction. The inspectors reviewed a self-revealing Green non-cited violation of Technical Specification 5.4.1.a for the failure of a worker to follow radiological work permit requirements. Specifically, a chemistry technician received a dose rate alarm greater than 120 millirem per hour and failed to immediately exit the area and contact radiation protection.

Description. On October 2, 2011, during Unit 1 Refueling Outage 15, a chemistry technician had been collecting a reactor coolant sample during the crud burst in room 1-078 when he received a dose rate alarm. The maximum dose rate received could not be determined because the electronic alarming dosimeter information was not retrieved before the dosimeter was returned and used for another entry. However, the dosimeter alarmed due to high dose rate, and therefore, exceeded the setpoint of 120 millirem per hour.

The reactor coolant sample was placed into a bucket that contained an electronic alarming dosimeter with a dose rate alarm setpoint of 80 millirem per hour. As part of the review of this event, it was determined that both dosimeters alarmed almost simultaneously. The technician incorrectly assumed that the alarm he heard was only due to the bucket's electronic alarming dosimeter and he did not look at his dosimeter.

This event, as discussed by the plant event review committee meeting minutes, dated April 14, 2011, revealed that there were two opportunities missed by the technician to identify the dose rate alarms. The first occurred when the electronic alarming dosimeter on the sample bucket alarmed at the same time as the personal electronic alarming dosimeter. The second occurred when the technician exited the radiologically controlled area and the dose rate alarm was indicated on the access computer screen. The technician assumed the computer was incorrect because the alarm was not identified when the technician was working. The plant event review committee discussed that the technician may not have understood instructions for when a dose or dose rate alarm because chemistry procedures did not include detailed guidance for using an electronic alarming dosimeter to monitor radioactive samples and to respond to dosimeter alarms. The committee acknowledged that supervisory oversight could be enhanced by clarifying guidance provided by chemistry procedures. The licensee placed the finding into the corrective action program as Condition Report CR-2011-010774.

Analysis. The failure to follow the instructions on a radiation work permit by not immediately contacting radiation protection when a dose rate alarm was received was a performance deficiency. The finding was more than minor because it was associated with the occupational radiation safety cornerstone attribute of program and process and

affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation during routine operations. Using NRC Manual Chapter 0609, "Significance Determination Process," Appendix C, "Occupational Radiation Safety Significance Determination Process," the finding was determined to be of very low safety significance because: (1) it was not associated with as low as is reasonably achievable (ALARA) planning or work controls, (2) there was no overexposure, (3) there was no substantial potential for an overexposure, and (4) the ability to assess dose was not compromised. The finding has a human performance crosscutting aspect associated with work practices because the licensee failed to effectively communicate expectations regarding procedural compliance to the worker [H.4b].

Enforcement. Technical Specification Section 5.4.1.a requires, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Appendix A to Regulatory Guide 1.33, February 1978. Regulatory Guide 1.33, Appendix A, Section 7(e) requires, in part, that radiation protection procedures for access control to radiation areas be established, including a radiation work permit system. Radiological Work Permit 2011-1103 stated that, "If an unanticipated electronic dosimeter dose rate alarm is received then immediately exit the area and contact RP (radiation protection)." Contrary to the above, on October 2, 2011, a chemistry technician failed to immediately exit the area and contact radiation protection when receiving an unanticipated dose rate alarm. Since this violation was of very low safety significance and was documented in the licensee's corrective action program as Condition Report CR-2011-010774, it is being treated as a non-cited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000445/2011005-05, "Failure to Follow Radiological Work Permit Requirements."

2RS02 Occupational ALARA Planning and Controls (71124.02)

a. Inspection Scope

This area was inspected to assess performance with respect to maintaining occupational individual and collective radiation exposures as low as is reasonably achievable (ALARA). The inspectors used the requirements in 10 CFR Part 20, the technical specifications, and the licensee's procedures required by technical specifications as criteria for determining compliance. During the inspection, the inspectors interviewed licensee personnel and reviewed the following items:

- Site-specific ALARA procedures and collective exposure history, including the current 3 year rolling average, site-specific trends in collective exposures, and source-term measurements
- ALARA work activity evaluations and postjob reviews, exposure estimates, and exposure mitigation requirements
- The methodology for estimating work activity exposures, the intended dose outcome, the accuracy of dose rate and man-hour estimates, and intended versus actual work activity doses and the reasons for any inconsistencies

- 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
- Audits, self-assessments, and corrective action documents related to ALARA planning and controls since the last inspection

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of the one required sample as defined in Inspection Procedure 71124.02-05.

b. Findings

No findings were identified.

4. **OTHER ACTIVITIES**

4OA1 Performance Indicator Verification (71151)

.1 Data Submission Issue

a. Inspection Scope

The inspectors performed a review of the data submitted by the licensee for the third quarter 2011 performance indicators for any obvious inconsistencies prior to its public release in accordance with NRC Inspection Manual Chapter 0608, "Performance Indicator Program."

This review was performed as part of the inspectors' normal plant status activities and, as such, did not constitute a separate inspection sample.

b. Findings

No findings were identified.

.2 Mitigating Systems Performance Index – Residual Heat Removal System (MS09)

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index residual heat removal system performance indicator for Units 1 and 2 for the period from the fourth quarter 2010 through the third quarter 2011. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, and NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73," definitions and guidance were used. The inspectors reviewed the licensee's operator narrative logs, operability assessments, maintenance rule records, maintenance work orders,

condition reports, and NRC Integrated Inspection reports to validate the accuracy of the submittals. The inspectors also reviewed the licensee's condition report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of two mitigating systems performance index residual heat removal system samples as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index – Cooling Water Systems (MS10)

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index cooling water systems performance indicator for Units 1 and 2 for the period from the fourth quarter 2010 through the third quarter 2011. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed the licensee's operator narrative logs, mitigating systems performance index derivation reports, condition reports, and NRC integrated inspection reports to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable Nuclear Energy Institute guidance. The inspectors also reviewed the licensee's condition report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of two mitigating systems performance index cooling water systems samples as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.4 Drill/Exercise Performance (EP01)

a. Inspection Scope

The inspectors sampled licensee submittals for the drill and exercise performance indicator for Units 1 and 2 for the period from the first quarter 2010 through the second quarter 2011. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revisions 5 and 6, were used. The inspectors reviewed the

licensee's records associated with the performance indicator to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the Nuclear Energy Institute guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the performance indicator; assessments of performance indicator opportunities during predesignated control room simulator training sessions, performance during the 2011 biennial exercise, and performance during other drills. The specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one drill/exercise performance sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.5 Emergency Response Organization Drill Participation (EP02)

a. Inspection Scope

The inspectors sampled licensee submittals for the emergency response organization drill participation performance indicator for the period from the first quarter 2010 through the second quarter 2011. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revisions 5 and 6, were used. The inspectors reviewed the licensee's records associated with the performance indicator to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the Nuclear Energy Institute guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the performance indicator, rosters of personnel assigned to key emergency response organization positions, and exercise participation records. The specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one emergency response organization drill participation sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.6 Alert and Notification System (EP03)

a. Inspection Scope

The inspectors sampled licensee submittals for the Alert and Notification System performance indicator for the period January 2010 through June 2011. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revisions 5 and 6, were used. The inspectors reviewed the licensee's records associated with the performance indicator to verify that the licensee accurately reported

the indicator in accordance with relevant procedures and the Nuclear Energy Institute guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the performance indicator and the results of periodic alert notification system operability tests. The specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one alert and notification system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.7 Occupational Exposure Control Effectiveness (OR01)

a. Inspection Scope

The inspectors reviewed performance indicator data for the third quarter of 2010 through the second quarter of 2011. The objective of the inspection was to determine the accuracy and completeness of the performance indicator data reported during these periods. The inspector used the definitions and clarifying notes contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, as criteria for determining whether the licensee was in compliance.

The inspectors reviewed corrective action program records associated with high radiation area (greater than 1 rem per hour) and very high radiation area non-conformances. The inspectors reviewed radiologically controlled area exit transactions greater than 100 millirem. The inspectors also conducted walkdowns of high radiation areas (greater than 1 rem per hour) and very high radiation area entrances to determine the adequacy of the controls of these areas.

These activities constitute completion of one occupational exposure control effectiveness sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.8 Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual Radiological Effluent Occurrences (PR01)

a. Inspection Scope

The inspectors reviewed performance indicator data for the third quarter of 2010 through the second quarter of 2011. The objective of the inspection was to determine the accuracy and completeness of the performance indicator data reported during these periods. The inspectors used the definitions and clarifying notes contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, as criteria for determining whether the licensee was in compliance.

The inspectors reviewed the licensee's corrective action program records and selected individual annual or special reports to identify potential occurrences such as unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose.

These activities constitute completion of one radiological effluent technical specifications/offsite dose calculation manual radiological effluent occurrences sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

As part of the various baseline inspection procedures discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's corrective action program at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. The inspectors reviewed attributes that included: the complete and accurate identification of the problem; the timely correction, commensurate with the safety significance; the evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent of condition reviews, and previous occurrences reviews; and the classification, prioritization, focus, and timeliness of corrective actions. Minor issues entered into the licensee's corrective action program because of the inspectors' observations are included in the attached list of documents reviewed.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure, they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

b. Findings

No findings were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's corrective action program. The inspectors accomplished this through review of the station's daily corrective action documents.

The inspectors performed these daily reviews as part of their daily plant status monitoring activities, so these reviews did not constitute any separate inspection samples.

b. Findings

No findings were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors focused the review on the condition reports actions associated with the refueling outage defense-in-depth program and equipment hatch closure. The licensee initiated Condition Report CR-2011-010973 to address the cause of negative trend in the defense-in-depth program. The inspectors reviewed documents and interviewed personnel to determine if the licensee completely and accurately identified problems in a timely manner commensurate with its significance, evaluated and dispositioned operability issues, considered the extent of condition, prioritized the problem commensurate with its safety significance, identified appropriate corrective actions, and completed corrective actions in a timely manner commensurate with the safety significance of the issue.

These activities constitute completion of one semi-annual trend inspection sample as defined in Inspection Procedure 71152-05.

b. Findings

No findings were identified.

.4 Selected Issue Follow-up Inspection

a. Inspection Scope

During a review of items entered in the licensee's corrective action program, the inspectors recognized corrective action items associated with the auxiliary feedwater pump oil levels. The inspectors reviewed documents and interviewed personnel to determine if the licensee completely and accurately identified problems in a timely manner commensurate with its significance, evaluated and dispositioned operability issues, considered the extent of condition, prioritized the problem commensurate with its safety significance, and completed corrective actions in a timely manner commensurate with the safety significance of the issue.

These activities constitute completion of one in-depth problem identification and resolution sample as defined in Inspection Procedure 71152-05.

b. Findings

Introduction. The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, for the failure of the licensee to promptly identify and correct

improper auxiliary feedwater pump oil levels. As a result, the inspectors identified seven instances where the oil level was outside of the prescribed sight glass indication.

Description. Between July 12, 2011, and November 2, 2011, the inspectors identified seven instances where the auxiliary feedwater pumps' oil level was outside of the prescribed sight glass indication. In five instances the oil level was high and in two instances the oil level was low. The licensee initiated condition reports to document the inspectors' observation. In addition, the licensee identified several instances where the oil level was outside the prescribed band and documented these occurrences as condition reports in the corrective action program. The licensee initiated work instructions and had the oil levels returned to the correct level.

The inspectors reviewed the condition reports that documented the level discrepancies and discussed the issue with engineering. The higher oil level would result in a slight increase in bearing oil temperature. The lower oil level remained above the previous operating band for the pumps prior to a design change that raised the operating band level. The inspectors determined that the pumps were always operable.

The inspectors determined that, although the licensee identified some instances where the oil level was outside the prescribed range and corrected the level, there were several instances that the licensee failed to identify the abnormal level. In addition, the licensee failed to adequately trend and assess the condition reports to identify an overall auxiliary feedwater pump oil level issue.

Analysis. The licensee's failure to promptly identify and correct the improper auxiliary feedwater pump bearing oil level was a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of the auxiliary feedwater pumps. Using NRC Manual Chapter 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," the finding was determined to be of very low safety significance because the finding did not result in an actual loss of safety function of an auxiliary feedwater pump. The finding has a problem identification and resolution crosscutting aspect associated with corrective action program, in that, licensee personnel failed to trend and assess the abnormal oil level condition reports in the aggregate to identify common cause problems [P.1b].

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion XVI, requires, in part, that measures shall be established to assure that conditions adverse to quality, such as deficiencies, are promptly identified and corrected. Contrary to the above, between July 12, 2011, and November 2, 2011, in seven instances, the licensee failed to promptly identify and correct a condition adverse to quality where the auxiliary feedwater pump bearing oil levels were outside the normal operating range. The licensee returned the pump oil levels to the proper level when notified by the inspectors. Since the violation was of very low safety significance and was documented in the licensee's corrective action program as Condition Report CR-2011-012430, it is being treated as a non-cited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000445/2011005-06; 05000446/2011005-06, "Failure to Identify Inadequate Auxiliary Feedwater Pump Bearing Oil Levels."

.5 Operator Workarounds

a. Inspection Scope

The inspectors reviewed the cumulative effects of the operator workarounds and burdens to determine the reliability, availability, and potential for incorrect operation of systems or components. The inspectors verified the ability of operators to respond in a correct and timely manner to plant transients and accidents, and if the licensee has identified and implemented appropriate corrective actions associated with operator workarounds.

These activities constitute completion of one operator workarounds sample as defined in Inspection Procedure 71152-05.

b. Findings

No findings were identified.

4OA5 Other

By letter dated June 16, 2011, Comanche Peak Nuclear Power Plant requested that the NRC review the cross-cutting aspect documented with non-cited violation NCV 05000445/2011007-02; 00500446/2011007-02. The violation was issued for a failure to implement and maintain in effect all provisions of the approved fire protection program and was assigned a cross-cutting aspect in the area of problem identification and resolution associated with the corrective action component [P1.a]. The NRC responded by letter dated July 8, 2011 (ADAMS Accession No. ML11192A046). After review of the additional information provided by licensee, the NRC determined that no cross-cutting aspect applied for NCV 05000445/2011007-02; 00500446/2011007-02.

4OA6 Meetings

Exit Meeting Summary

On August 5, 2011, the inspectors presented results of the onsite inspection of the licensee's biennial emergency preparedness exercise to Mr. M. Lucas, Site Vice President, and other members of the licensee's staff. The licensee acknowledged the issues presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On October 7, 2011, the inspector presented the results of the radiation safety inspections to Mr. M. Lucas, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On October 14, 2011, the inspectors presented the inservice inspection activities inspection results to Mr. M. Lucas, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On October 25, 2011, the inspectors conducted a telephonic exit meeting to present the results of the in-office and onsite inspection of an emergency response organization staffing issue to Mr. D. Wilder, Director, Plant Support, and other members of the licensee's staff. The licensee acknowledged the issues presented.

On November 17, 2011, the inspectors presented the inspection results of the heat sink performance inspection to Mr. S. Smith, Plant Manager, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On January 3, 2012, the inspectors contacted a telephonic exit meeting to present the results of the in-office inspection of emergency action level and emergency plan changes to Mr. R. Kidwell, Supervisor, Emergency Preparedness. The licensee acknowledged the issues presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On January 11, 2012, the inspectors presented the resident inspection results to Mr. M. Lucas, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors acknowledged review of proprietary material during the inspection. No proprietary information has been included in the report.

40A7 Licensee-Identified Violations

The following violations of very low safety significance (Green) were identified by the licensee and are a violation of NRC requirements which meets the criteria of Section 2.3.2 of the NRC Enforcement Policy for being dispositioned as non-cited violations.

- .1 Title 10 CFR 50.54(q) requires, in part, that a licensee follow emergency plans which meet the standards of 50.47(b). Comanche Peak Nuclear Power Plant, Revision 38, Section 13, "Radiological Emergency Response Training," requires emergency response organization training as described in Procedure TRA-105, "Emergency Preparedness Training." Contrary to the above, from August 24, 2009 to July 13, 2011, the licensee did not follow Section 13 of the station Emergency Plan, Revision 38. Specifically, four on-shift chemistry technicians filled on-shift emergency response organization watch positions without having received initial emergency response organization training required by TRA-105, "Emergency Preparedness Training," Revisions 21 to 23. The technicians received emergency response organization continuing training during continuing chemistry department training that allowed them to respond to emergencies. This finding is of very low safety significance because it is not a risk significant planning standard functional failure or degraded function. The affected chemistry technicians were able to adequately perform emergency response organization duties despite not having completed required initial response training. This issue is documented in the licensee's corrective action program as Condition Report CR-2011-007964.
- .2 Technical Specification Section 5.4.1.a requires, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures

recommended in Appendix A to Regulatory Guide 1.33, February 1978. Regulatory Guide 1.33, Appendix A, Section 7(e) requires, in part, that radiation protection procedures for access control to radiation areas be established, including a radiation work permit system. Radiological Work Permit 2011-0404 implemented this requirement and Task 1 of this permit allowed access to high radiation areas, but required that workers receive authorization to access beneath the grating. Contrary to the above, on September 28, 2011 a radiation worker failed to implement Radiological Work Permit 2011-0404 by failing to receive authorization from radiation protection prior to entry below the grating. The violation is considered to be of very low safety significance because: (1) it is not an ALARA planning issue, (2) there was no overexposure, (3) there was no substantial potential for overexposure, and (4) the licensee's ability to assess dose was not compromised. The licensee placed the finding into the corrective action program as Condition Report CR-2011-010601.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

S. Bradley, Manager, Radiation Protection
A. Caves, Supervisor, Radiation Protection
E. Dalasta, Engineer, Station Welding
R. Flores, Senior Vice President and Chief Nuclear Officer
T. Gilder, Director, Performance Improvement
D. Goodwin, Director, Engineering Support
D. Green, Project Engineer, Alloy 600
T. Hope, Manager, Nuclear Licensing
J. Howard, Program Engineer
B. Kidwell, Manager, Emergency Preparedness
C. LaSoya, Project Engineer
M. Lucas, Site Vice President
F. Madden, Director, Oversight and Regulatory Affairs
M. Marler, Director, Organizational Effectiveness
B. Mays, Vice President, Engineering and Support
C. Miller, Manager, Plant Reliability
B. Moore, Manager, Chemistry
K. Nickerson, Director, Site Engineering
P. Passalune, Program Manager, Engineering
B. Patrick, Director, Maintenance
J. Patton, Manager, Quality Assurance
V. Polizzi, Manager, Westinghouse
W. Reppa, Manager, System Engineering
S. Sewell, Director, Operations
J. Skelton, Manager, Electrical/Diesel Generator System Engineering
M. Smith, Manager, Maintenance Team 2
S. Smith, Plant Manager
K. Tate, Manager, Security
J. Taylor, Manager, Technical Support
G. Techentine, Manager, Mechanical/Programs Reliability
C. Tran, Manager Nuclear Program
D. Wilder, Director, Plant Support
L. Windham, Manager, Design Engineering Analysis
L. Zimmerman, Manager, Procurement Engineering and Programs

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000445/2011005-01	NCV	Failure to Remove Materials and Debris from Containment (Section 1R20)
05000445/2011005-02	NCV	Failure to Correctly Reassemble a Motor Operated Valve (Section 1R20)
05000445/2011005-03 05000446/2011005-03	NCV	Failure to Provide Guidelines for Protective Action Recommendations Outside the Emergency Planning Zone (Section 1EP1)
05000445/2011005-04	NCV	Failure to Perform Adequate Radiation Surveys (Section 2RS01)
05000445/2011005-05	NCV	Failure to Follow Radiological Work Permit Requirements (Section 2RS01)
05000445/2011005-06 05000446/2011005-06	NCV	Failure to Identify Inadequate Auxiliary Feedwater Pump Bearing Oil Levels (Section 4OA2)

LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignments

CONDITION REPORTS

2004-000986 2010-005192 2011-003291

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OPT-206A	AFW System Surveillance Test	28
IPO-005A	Plant Cooledown from Hot Standby to Cold Shutdown	24
MSM-C0-8722	Auxiliary Feedwater Turbine Trip Throttle Valve Maintenance	1

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
M1-0206	AFW, Sheet 01	CP-15
M1-0206	AFW, Sheet 02	CP-20
M1-0202	Main Steam, Sheet 3	CP-2

Section 1RO5: Fire Protection

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
FPI-106A	Unit 1 Safeguards Building Elevation 831'-6" Main Corridor, RB Access, & Electrical Equipment Area	4
FPI-202A	Unit 1 Containment Building 832'-6"	4

Section 1RO6: Flood Protection Measures

CONDITION REPORTS

2011-007036 2011-008438

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
MSM-C0-8858	Grinnell Alarm Valve Maintenance (Models A & F200)	0

WORK ORDERS

4172399 4209930 4109314 4186109

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
M1-0202	Flow Diagram, Main Steam Reheat and Steam Dump, Sheet 03	CP-2
M1-0236	Flow Diagram, Vents and Drains System Safeguards Building, Sheet A	CP-20

Section 1RO7: Heat Sink Performance

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
STA-734	Service Water System Fouling Monitoring Program	3
STA-682	Control of Station Diving Operations	4
CHM-140	Water Treatment	3
PPT-SX-7517	Safe Shutdown Impoundment Inspection	2
MSM-P0-3357	Emergency Diesel Engine Jacket Water Cooler Cleaning	1
SOP-501A	Station Service Water System	17
STA-202	Nuclear Generation Procedure Change Process	35
COP-501	Station Service Water	8
ECA-0.0A	Loss of All AC Power	8

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
ABN-305	Auxiliary Feedwater System Malfunction	7

CALCULATIONS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
IC-CA-1101-5101	Unit 1 and 2 CCW Heat Exchanger Temperature Loop Accuracy	3
ME-CA-0000-3264	Safe Shutdown Impoundment Hydrothermal Analysis	3
ME-CA-0229-2188	Component Cooling Water Heat Exchanger Fouling Factor Analysis	6

MISCELLANEOUS DOCUMENTS

<u>TITLE</u>	<u>REVISION</u>
Units 1 and 2 Heat Exchanger Health Report for the 3 rd Quarter of Fiscal Year 2011	
Unit 1 Maintenance Rule Notebook for Service Water System	October 16, 2011
Unit 2 Maintenance Rule Notebook for Service Water System	October 16, 2011

CONDITION REPORTS

2011-009305	2011-009029	2010-000915	2008-003321
2004-000492	2011-012928	2011-011206	2009-005677
2011-013006			

WORK ORDERS

412094	4039951	3959868	3739607
3935001	3922046	3902014	3908773
3905362	3889402	3952909	3731665
3609769	3934921	4036886	3695687
3475796			

Section 1RO8: Inservice Inspection Activities

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
STA-737	Boric Acid Corrosion Detection and Evaluation	5
TX-ISI-70	Magnetic Particle Examination for Comanche Peak Nuclear Power Plant	11
TX-ISI-212	Ultrasonic Examination Procedure of Nozzle Inner Radius	8

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
	Sections for Comanche Peak Nuclear Power Plant	
TX-ISI-210	Ultrasonic Examination Procedure for Welds in Ferritic Steel Vessels	7
WLD-105	Welding Material Storage and Control	6
WDI-STD-1007	Generic Procedure for the Ultrasonic Examination of Weld Overlaid Similar and Dissimilar Metal Welds using PDI-UT-8	2

MISCELLANEOUS DOCUMENTS

<u>TITLE</u>	<u>REVISION</u>
RCS Pressure Boundary Dissimilar Metal Weld Visual Examination Plan	4
Reactor Vessel Closure Head Visual Examination Plan	4
Reactor Vessel Lower Head Visual Examination Plan	3

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
SK-0001-09-001570-040-02	Flow Diagram Station Service Water System	2
SK-0006-09-001570-04-00	Service Water	0
SK-0007-09-001570-04-02	Service Water	2
SK-0014-09-001570-04-02	Station Service Water	0
SK-00145-09-001570-04-02	Station Service Water	2

CONDITION REPORTS

2011-011480	2011-011140	2011-010613	2011-010335
2011-007844	2011-006356	2011-003220	2011-002922
2011-002150	2011-011056	2011-011607	2010-003836
2010-003773	2010-003670	2010-003577	2010-003525
2010-003449	2010-003413	2010-003375	2010-003209
2008-003194			

WORK ORDERS

3956828	3956717	4880279	4075318
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Section 1R12: Maintenance Effectiveness

CONDITION REPORTS

2010-006380	2010-011154
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Section 1R15: Operability Evaluations

CONDITION REPORTS

2005-002685	2011-008729	2011-009273	2011-011484
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PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
MDA-304	Control of Heavy Loads and Critical Lifts	6

Section 1R19: Postmaintenance Testing

CONDITION REPORTS

2011-010210	2011-011312
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WORK ORDERS

3534664	409105	4235583
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PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
NUC-206	Control Rod Drop Timing (Plant Computer Method)	16

Section 1R22: Surveillance Testing

WORK ORDERS

4150433	3924282
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PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OWI-801	Operations Department Local Leak Rate Testing	6
TSP-743	10CFR50 Appendix J Option B Test Intervals and Administrative Limits	0
NUC-301	Low Power Physics Testing	17

Section 2RS01: Radiological Hazard Assessment and Exposure Controls

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
RPI-110	Radiation Protection Shift Activities	19
RPI-212	Radioactive Source Control	11
RPI-602	Radiological Surveillance and Posting	47
RPI-606	Radiation Work and General Access Permits	22

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
RPI-623	Radiological Briefings	5
RPI-700	Sealed Source Leak Testing	10
STA-656	Radiation Work Control	18
STA-660	Control of High Radiation Areas	15

CONDITION REPORTS

2010-004376	2011-003432	2011-003715	2011-003887
2011-004525	2011-004827	2011-010174	2011-010601
2011-010774	2011-010789	2011-010792	

RADIOLOGICAL SURVEYS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
11-09-0322	U-1 SG 773' Floor Drain Tank #1 1-061	September 15, 2011
11-09-0362	U-1 SG 773' Floor Drain Tank #1 1-061	September 16, 2011
11-09-0600	U-1 SG 790' Valve Isol Tanks Train B 1-063	September 27, 2011
11-09-0362	U-1 SG 790' Valve Isol Tanks Train B 1-063	September 28, 2011

RADIATION WORK PACKAGES

<u>NUMBER</u>	<u>TITLE</u>
20110012	Routine Maintenance Activities including ISI, Refueling and All Support Activities
20110404	1RF15 Pre and Post Outage Activities (SSPS, ISI, QC Inspections)
20111103	1RF15 Chemistry Sampling
20111215	1RF15 Scaffold Activities
20112204	2RF12 Maintenance Activities in U2 Safeguards, Aux, and Fuel Buildings in Elevated/HRAs

MISCELLANEOUS DOCUMENTS

<u>TITLE</u>	<u>REVISION</u>
LHRA and VHRA Key Inventory	October 7, 2011
Sealed Sources Inventory	October 5, 2011
Leak Test Records: HP-60249-XSS; HP-60251-XSS; HP-60265-XSS; HP-60771-XSS; HP-60791-XSS; HP-60921-XSS	June 16, 2011
Leak Test Records: HP-60249-XSS; HP-60251-XSS; HP-60265-XSS; HP-60771-XSS; HP-60791-XSS; HP-60921-XSS	November 16, 2011

2RS02 Occupational ALARA Planning and Controls

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
STA-651	ALARA Program	10
STA-657	ALARA Job Planning/Debriefing	13

RADIATION WORK PACKAGES

<u>NUMBER</u>	<u>TITLE</u>
20112100	2RF12 RP/Decon Activities inside U-2 Containment
20112200	2RF12 Steam Generator Secondary Side Activities
20112205	Seal Weld 2-8956C in Room 2-154K
20112246	2RF12 Mode 3 Walkdowns, Containment Closeout Inspections and Gas Void UTs Prior to Synch to Grid
20112400	2RF12 Primary Side Steam Generator Activities
20112603	2RF12 MSIP Walkdown and Alloy 600 Inspections

MISCELLANEOUS DOCUMENTS

<u>TITLE</u>	<u>REVISION</u>
2RF12 Radiation Protection Outage ALARA Report	September 15, 2011
1RF15 Radiation Work Permit Creation Status	October 3, 2011
CPNPP Five Year Dose Reduction Plan 2010-2015	August 2011

Section 1EP1: Exercise Evaluation

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EPP-109	Duties and Responsibilities of the Emergency Coordinator/ Recovery Manager	14
EPP-116	Emergency Repair and Damage Control and Immediate Entries	7
EPP-201	Assessment of Emergency Action Levels, Emergency Classification and Plan Activation	12
EPP-203	Notifications	16
EPP-204	Activation and Operation of the Technical Support Center	14
EPP-205	Activation and Operation of the Operations Support Center	12
EPP-206	Activation and Operation of the Emergency Operations Facility	15

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EPP-304	Protective Action Recommendations	20
EPP-306	Use of Thyroid Blocking Agents	10
EPP-312	Core Damage Assessment	3
EPP-314	Evacuation and Accountability	8
SG-6	Resolving Player Comments	3
SG-8	Emergency Response Organization Roster Updates	12
SG-13	Action Item Tracking System	4
SG-19	Pre-Exercise and Post-Exercise Activities	20

CONDITION REPORTS

2010-003964	2010-010615	2011-001902	2011-002168
2011-002169	2011-002380	2011-003125	2011-007964
2011-008748	2011-008750	2011-008751	2011-008774
2011-008777	2011-009218		

Section 40A1: Performance Indicator Verification

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
EN-FAP-RP-002	Radiation Protection Performance Indicator Program	0
EN-LI-114	Performance Indicator Process	4
EPP-109	Duties and Responsibilities of the Emergency Coordinator/ Recovery Manager	14
EPP-201	Assessment of Emergency Action Levels, Emergency Classification and Plan Activation	12
EPP-203	Notifications	16
EPP-304	Protective Action Recommendations	20
SG-12	Alert and Notification System Surveillance	17
SG-20	NRC Performance Indicators	14

MISCELLANEOUS DOCUMENTS

<u>TITLE</u>	<u>REVISION</u>
Radiation Safety NRC Performance Indicators	February 14, 2006

Section 4OA7: Licensee-Identified Violations**MISCELLANEOUS DOCUMENTS**

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
TRA-105	Emergency Preparedness Training	23
TRA-202	Nuclear Equipment Operator Training	13
TRA-295	Shift Technical Advisor Training	9
TRA-296	Shift Manager Training	1
TRA-303	Radiation Protection Training	20
TRA-303	Chemistry Training Program	14
TRA-321	Maintenance Department Training and Qualification Program	7
CHM-101	Chemistry Administrative Control	24
CHM-109	Chemistry Action Guidelines for Out-of-Specification Results	8
COP-101A	Reactor Coolant System	10
Chemistry Guide 13	Chemistry Standards and Expectations	8
	Chemistry Department Shift Schedule	2009, 2010, 2011
CH06.OJT.QP1	General Technician Qualification Card	April 6, 2007
CH21.CIT.XL1	Shift and Administrative Duties	December 3, 2007
CH21.CIT.SL1	Technical Specifications	May 28, 2009
CH21.CIT.FC1	Basic Sampling Techniques	October 29, 2007
CH21.CIT.AR1	ALARA Sampling Techniques	October 25, 2007
CH21.CIT.AT1	CPNPP Administrative Organization	October 22, 2007
CH21.CIT.RG1	Core Damage Assessment	March 23, 2009

CONDITION REPORTS

2011-007964	2010-000311	2011-000055	2010-001334
2010-001357	2010-001311	2010-007472	

REQUEST FOR INFORMATION - OCCUPATIONAL RADIATION SAFETY INSPECTION

The items listed below are requested for the support of the Occupational Radiation Safety inspection to be conducted by Natasha Greene (817-200-1154) during the week of October 03, 2011. The primary focus for the inspection will be Inspection Procedures 71124.01 and 71124.02. The inspector will also review information relative to Inspection Procedure 71151.

The information requested for an in-office review may be provided in either electronic or paper media or a combination of these. Information provided in electronic media may be in the form of IMS-CERTREC, e-mail attachments or CD. The agency's text editing software is MS Word; however, we have document viewing capability for Adobe Acrobat (.pdf) text files. Information requested to be reviewed on-site during the inspection week should be paper media.

1. Radiological Hazard Assessment and Exposure Controls (71124.01) and Performance Indicator Verification (71151)

- A. Telephone numbers of contacts
- B. Organization chart of the radiation protection organization
- C. Copies of any Quality Assurance (including corporate, if applicable) audits, appraisals, and field observations and Radiation Protection self-assessments related to Access Control to Radiologically Significant Area, radioactive material control performed since April 16, 2011 (Do not include INPO assessments.)

(Submit the requested items under Section C by September 16, 2011 for an in-office review.)

- D. An index of RP procedures and Administrative procedures
- E. The following specific procedures:
 - RP Program Description
 - Posting of Radiological Areas
 - High Radiation Area controls
 - RCA Access Controls and radworker instructions
 - Survey requirements
 - Identifying and Documenting Performance Indicator Occurrences
 - Radiation work permit preparation
 - Radiation work permit compliance (by workers)
 - Release of material from the radiological controlled area
 - Radioactive Source Inventory and control
- F. A summary of corrective action documents (including corporate and subtiered systems) identified by or assigned to the radiation protection group since April 16, 2010. The lists should indicate the significance level of each issue and the search criteria used.

(Submit the requested items under Section F by September 16, 2011 for an in-office review.)

At the entrance meeting on October 3, 2011, provide lists of any additional corrective action documents written after the original summaries were submitted.

- G. Schedule of work activities to be conducted during the inspection week
- H. List of active radiation work permits and outage jobs with a potential collective dose of 1 person-rem or more
- I. Radioactive Source Inventory
- J. Performance Indicator Verification

2. Occupational ALARA Planning and Controls (71124.02)

- A. Telephone numbers of contacts
- B. Organization chart of the radiation protection organization
- C. Copies of any Quality Assurance (including corporate, if applicable) audits, appraisals, and field observations and Radiation Protection self-assessments related ALARA, since April 16, 2010 (Do not include INPO assessments.)

(Submit the requested items under Section C by September 16, 2011 for an in-office review.)

- D. An index of RP procedures and Administrative procedures
- E. The following specific procedures:
 - ALARA program implementation
 - ALARA committee activities
 - ALARA planning, briefing, and reviews
- F. A summary of corrective action documents (including corporate and subtiered systems) identified by or assigned to the radiation protection group since April 16, 2010, related to the ALARA program including:
 - Radiation Work Permit violations
 - Electronic Dosimeter Alarms
 - RWP Dose Estimates

The lists should indicate the significance level of each issue and the search criteria used.

(Submit the requested items under Section F by September 16, 2011 for an in-office review.)

At the entrance meeting on October 03, 2011, provide lists of any additional corrective action documents written after the original summaries were submitted.

- G. Schedule of work activities to be conducted during the inspection week

- H. Site dose totals and 3 year averages for the last 3 years (based on dose of record)
- I. Most recent outage report (submit by September 16, 2011 for in-office review)
- J. Dose estimates and/or outage goals for current outage (effective 2011) and provide a list of outage jobs with a potential collective dose of 5 person-rem or more.
- K. Outline of source term reduction strategy (i.e., 5-Year ALARA Plan)