



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
612 EAST LAMAR BLVD, SUITE 400
ARLINGTON, TEXAS 76011-4125

May 10, 2010

Mr. Edward D. Halpin,
President and Chief Executive Officer
STP Nuclear Operating Company
P.O. Box 289
Wadsworth, TX 77483

Subject: SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION - NRC INTEGRATED
INSPECTION REPORT 05000498/2010002 AND 05000499/2010002

Dear Mr. Halpin:

On March 31, 2010, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your South Texas Project Electric Generating Station, Units 1 and 2, facility. The enclosed integrated inspection report documents the inspection findings, which were discussed on April 5, 2010, with you and other members of your staff.

The inspections 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.

This report documents two self-revealing findings of very low safety significance (Green). Both of these findings were determined to involve violations of NRC requirements. However, because of the very low safety significance and because they were entered into your corrective action program, the NRC is treating these findings as noncited violations, consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest these violations or the significance of the noncited 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, 612 E. Lamar Blvd, Suite 400, Arlington, Texas, 76011-4125; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the South Texas Project Electric Generating Station, Units 1 and 2, facility. In addition, if you disagree with the characterization of any finding 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 South Texas Project Electric Generating Station, Units 1 and 2, facility. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

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In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, and its enclosure, 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 Walker, Chief
Project Branch A
Division of Reactor Projects

Dockets: 50-498
50-499
Licenses: NPF-76
NPF-80

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NRC Inspection Report 05000498/2010002 and 05000499/2010002
w/Attachment: Supplemental Information

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SUNSI Rev Compl.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	ADAMS	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Reviewer Initials	WW
Publicly Avail	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sensitive	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sens. Type Initials	WW
RIV:RI:DRP/A	SRI:DRP/A	SPE:DRP/PBA	C:DRS/PSB2	C:DRS/OB	
BKTharakan	JLDixon	DLProulx	GEWerner	MShaire	
/RA/E-Walker	/RA/E-Walker	/RA/	/RA/	/RA/	
4/28/10	4/28/10	4/23/10	4/23/10	4/22/10	
C:DRS/PSB1	C:DRS/EB1	C:DRS/EB2	C:DRP/PBA		
MPShannon	TRFarnholtz	NFO'Keefe	WCWalker		
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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 05000498, 05000499

License: NPF-76, NPF-80

Report: 05000498/2010002 and 05000499/2010002

Licensee: STP Nuclear Operating Company

Facility: South Texas Project Electric Generating Station, Units 1 and 2

Location: Wadsworth, Texas

Dates: January 1 through March 31, 2010

Inspectors: J. Dixon, Senior Resident Inspector
C. Graves, Health Physicist
L. Ricketson, P.E., Senior Health Physicist
D. Stearns, Health Physicist
B. Tharakan, CHP, Resident Inspector

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

SUMMARY OF FINDINGS

IR 05000498/2010002, 05000499/2010002; 01/01/2010 – 03/31/2010; South Texas Project Electric Generating Station, Units 1 and 2, Integrated Resident and Regional Report; Surveillance Testing; Follow-up of Events.

The report covered a 3-month period of inspection by resident inspectors and an announced baseline inspection by regional based inspectors. Two Green noncited violations of very low safety significance 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 reviewed a self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criterion V, for the failure to follow procedures and enter a malfunction of the Unit 2 smoke purge damper 21B into the corrective action program. Specifically, the licensee failed to write a condition report in accordance with Procedure OPGP03-ZX-0002, "Condition Reporting Process," when the damper failed to stroke open or closed as expected. Maintenance personnel were able to close the damper; however, the licensee missed the opportunity to identify and correct a material deficiency, which resulted in another failure during subsequent testing because the condition was not entered into the corrective action program.

The finding was more than minor because, if left uncorrected, it could have led to a more significant safety concern because incomplete and inaccurate corrective actions failed to ensure the damper would have actuated to the correct position when required. Using the Significance Determination Process Phase 1 worksheets from Inspection Manual Chapter 0609, the finding had very low safety significance because it was not a design or qualification deficiency, it did not result in the loss of system safety function, it did not result in the loss of safety function of a single train greater than its technical specification allowed outage time, it did not represent an actual loss of safety function of one or more nontechnical specification trains of equipment designated as risk significant for greater than 24 hours, and it was not risk significant due to a seismic, flooding, or severe weather initiating event. In addition, the finding had Problem Identification and Resolution crosscutting aspects associated with the corrective action program, in that, the licensee failed to accurately identify the smoke purge damper material deficiency in a timely manner because maintenance personnel did not have a low threshold for entering this issue into the corrective action program (P.1(a))(Section 1R22).

- Green. The inspectors reviewed a self-revealing noncited violation of Technical Specification 3.7.14 because the licensee had one independent loop of essential chilled water inoperable for longer than the allowed outage time of 7 days. Specifically, the licensee performed an inadequate engineering evaluation that failed to determine the effects of changing the operation of the essential cooling water system on the essential chillers and in turn the essential chilled water system. On July 9, 2009, essential chiller 22A tripped due to low oil pressure during the start up sequence. As a result, the corresponding essential chilled water train was declared inoperable. The licensee's initial corrective action was to place idle time restrictions on all the essential chillers until corrective maintenance items could be performed. The licensee entered this event into the corrective action program as Condition Report 09-10502.

The finding was more than minor because it was associated with the Mitigating Systems Cornerstone attribute of configuration control and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Significance Determination Process Phase 1 worksheets from Inspection Manual Chapter 0609, the finding screened to a Phase 2 analysis because it resulted in the loss of the safety function of a single train for greater than its technical specification allowed outage time. A Region IV senior reactor analyst performed a Phase 2 significance determination and found that the finding was potentially greater than Green. The analyst performed a bounding Phase 3 significance determination and found the finding to be of very low safety significance. The dominant core damage sequences included: 1) steam line break outside of containment with a common cause failure of the other chillers, and 2) steam generator tube rupture with a common cause failure of the steam generator power operated relief valves. Remaining mitigation equipment that helped to limit the significance included the remaining functional chillers and the turbine driven auxiliary feedwater pump. In addition, this finding had human performance crosscutting aspects associated with resources in that the licensee did not ensure that procedures were adequate to maintain long term plant safety by maintaining design margins [H.2(a)](Section 4OA3).

B. Licensee-Identified Violations

None

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period at 100 percent rated thermal power and remained there until January 6 when the unit reduced power to 73 percent for rod C-5 being misaligned. On January 19, the unit restored rod alignment by changing the full out position of the remaining rods and then restored the unit to 100 percent rated thermal power. On February 3, rod B-12 became misaligned and resulted in the entry into Technical Specification 3.0.3 for two inoperable rods, and as a result the unit was shut-down to Mode 3. On February 9, Unit 1 went critical and closed the main generator output breaker. The unit reached 100 percent rated thermal power on February 10 and remained there until February 16 when the unit reduced power to 88 percent rated thermal power due to a feedwater heater that unexpectedly isolated. The unit returned to 100 percent rated thermal power on February 18 and remained there for the remainder of the inspection period.

Unit 2 began the inspection period at 100 percent rated thermal power and remained there until March 27, when the unit shut-down to commence Refueling Outage 2RE14.

1. REACTOR SAFETY

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

1R01 Adverse Weather Protection (71111.01)

Readiness for Impending Adverse Weather Conditions

a. Inspection Scope

From January 7-11, 2010, the inspectors reviewed the licensee's overall preparations/protection for the expected weather conditions. During the week of January 4, 2010, the inspectors walked down the essential cooling water, standby diesel generators, auxiliary feedwater, and safety injection systems because their safety-related functions could be affected or required as a result of the extreme cold weather or the potential loss-of-offsite power. The inspectors observed insulation, heat trace circuits, space heater operation, and weatherized enclosures to ensure operability of affected systems. The inspectors reviewed licensee procedures and discussed potential compensatory measures with control room personnel. The inspectors focused on plant management's actions for implementing the station's procedures for ensuring adequate personnel for safe plant operation and emergency response would be available. The inspectors evaluated the licensee staff's preparations against the site's procedures and determined that the staff's actions were adequate. During the inspection, the inspectors focused on plant-specific design features and the licensee's procedures used to respond to specified adverse weather conditions. The inspectors evaluated operator staffing and accessibility of controls and indications for those systems required to control the plant. Additionally, the inspectors reviewed the UFSAR and performance requirements for systems selected for inspection, and verified

that operator actions were appropriate as specified by plant-specific procedures. The inspectors also reviewed a sample of corrective action program items to verify that the licensee identified adverse weather issues at an appropriate threshold and dispositioned them through the corrective action program in accordance with station corrective action procedures. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one readiness for impending adverse weather condition sample as defined in Inspection Procedure 71111.01-05.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignments (71111.04)

Partial Walkdown

a. Inspection Scope

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

- January 21, 2010, Unit 1, essential cooling water train C
- March 5, 2010, Unit 1, standby diesel generator 13
- March 16, 2010, Unit 2, auxiliary feedwater train D

The inspectors selected these systems based on their risk significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could affect the function of the system, and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, UFSAR, technical specification requirements, administrative technical specifications, 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. Specific documents reviewed during this inspection are listed in the attachment.

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

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

Quarterly Fire Inspection Tours

a. Inspection Scope

The inspectors conducted fire protection walkdowns that were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- February 23, 2010, Unit 1, component cooling water nonradioactive pipe chase, Fire Zone Z129
- February 23, 2010, Unit 1, electrical auxiliary building cable spreading and power cabling area, train B, Fire Zone Z047
- February 24, 2010, Unit 2, component cooling water nonradioactive pipe chase, Fire Zone Z129
- February 24, 2010, Unit 2, electrical auxiliary building cable spreading and power cabling area, train B, Fire Zone Z047

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 sound 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 with later additional insights, 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. Using the documents listed in the attachment, 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. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's corrective action program. Specific documents reviewed during this inspection are listed in the attachment.

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

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

a. Inspection Scope

On March 4, 2010, the inspectors observed a crew of licensed operations personnel in the plant's simulator to verify that operator 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 operator 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 identify and implement appropriate technical specification actions and 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. Specific documents reviewed during this inspection are listed in the attachment.

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

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the following risk-significant systems:

- March 4, 2010, Units 1 and 2, chemical and volume control system
- March 25, 2010, Units 1 and 2, incore instrumentation system

The inspectors reviewed events such as where ineffective equipment maintenance has resulted in valid or invalid automatic actuations of engineered safeguards systems 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)
- Verifying 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 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 constitute completion of two quarterly maintenance effectiveness samples as defined in Inspection Procedure 71111.12-05.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors reviewed licensee personnel'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:

- January 18-27, 2010, planned maintenance on Unit 1 train B and Unit 2 train A, including Unit 1 essential cooling water pump 1B replacement, standby diesel generator 12 5-year inspection, and implementation of a new core operating limits report that defined the new full out position for Unit 1 as 249 steps out versus 259 steps
- February 3-9, 2010, unexpected plant shutdown on Unit 1 for control rods C-5 and B-12 being inoperable resulting in the entry into Technical Specification 3.0.3 and the subsequent plant start up
- February 4, 2010, and December 9, 2009, Unit 2, risk assessments for maintenance activities using mobile cranes near standby transformer 2 and auxiliary feedwater storage tank
- March 8-12, 2010, planned maintenance on Unit 1 train A and Unit 2 train D, including Unit 1 increased control rod testing due to corrosion/crud concerns as implemented after the unexpected shutdown for two inoperable control rods, and preventative maintenance associated with standby transformer 2
- March 22-31, 2010, pre-outage activities on Unit 2 in preparation for Refueling Outage 2RE14 including staging of material, scaffold construction, preparations for reactor vessel head replacement, and preparations for engineered safeguards feature standby transformer 2B replacement

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

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

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- January 6, 2010, Unit 1, shutdown bank D rod C-5 misaligned during monthly control rod operability surveillance test
- January 19, 2010, Unit 1, control room emergency heating, ventilation, and air conditioning breach safety system functional failure determination
- February 9, 2010, Unit 1 rod control operability as a result of two rods being declared inoperable and multiple rods failing to withdraw
- February 16, 2010, Units 1 and 2, application specific integrated circuit card lock-up conditions identified in reactor protection sets
- March 10, 2010, Units 1 and 2, co-mingling of two different greases on the auxiliary feedwater system turbine trip and throttle motor operated valve

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 UFSAR 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 also 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 five operability evaluations inspection samples as defined in Inspection Procedure 71111.15-05.

b. Findings

No findings of significance 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:

- January 29, 2010, Unit 1, 5-year inspection of standby diesel generator 12
- February 7, 2010, Unit 1, rod control movement and rod drop time testing
- February 17, 2010, Unit 2, essential chiller 22A filter replacements and lube oil thermostat replacement
- March 5, 2010, Unit 2, centrifugal charging pump 2A replacement of pump seals

The inspectors selected these activities based upon the structure, system, or component's ability to affect risk. The inspectors evaluated these activities for the following (as applicable):

- The effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed
- Acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate

The inspectors evaluated the activities against the technical specifications, the UFSAR, 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 in 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 four postmaintenance testing inspection samples as defined in Inspection Procedure 71111.19-05.

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities (71111.20)

.1 Unexpected Outage on Unit 1 for Two Inoperable Rods

a. Inspection Scope

The inspectors reviewed the outage safety plan and contingency plans for the Unit 1 outage as a result of inoperable rods, conducted February 3-9, 2010, 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 outage, the inspectors observed the shutdown 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.
- 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.
- Maintenance of secondary containment as required by the technical specifications.
- Start up and ascension to full power operation, tracking of start up prerequisites, walkdown of the primary 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 outage activities.

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

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

b. Findings

No findings of significance were identified.

.2 Unit 2 Refueling Outage 2RE14

a. Inspection Scope

The inspectors reviewed the outage safety plan and contingency plans for the Unit 2 Refueling Outage 2RE14, which commenced on March 27, 2010, 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 processes 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 operations personnel 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.
- Maintenance of secondary containment as required by the technical specifications.
- Licensee identification and resolution of problems related to refueling outage activities.

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

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

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the UFSAR, procedure requirements, and technical specifications to ensure that the 15 surveillance activities listed below demonstrated that the systems, structures, and/or components tested were capable of performing their intended safety functions. 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/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
- Engineering evaluations, root causes, and bases for returning tested systems, structures, and components not meeting the test acceptance criteria were correct
- Reference setting data
- Annunciators and alarms setpoints

The inspectors also verified that licensee personnel identified and implemented any needed corrective actions associated with the surveillance testing.

- January 13, 2010, Unit 2, monthly control rod operability testing
- January 22, 2010, Unit 1, essential cooling water pump 1B reference value inservice test

- March 9, 2010, Unit 1, monthly control rod operability testing as a result of increased surveillance frequency due to passivation of the control rod drive mechanisms
- March 23, 2010, Unit 2, main steam safety valve inservice test on all train A safety valves and four train B safety valves
- March 30, 2010, Unit 2, electrical auxiliary building air handling unit 21B smoke purge inlet damper

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

These activities constitute completion of five surveillance testing inspection samples as defined in Inspection Procedure 71111.22-05.

b. Findings

Introduction. The inspectors reviewed a Green self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criterion V, for the failure to follow procedures to enter a malfunction of the Unit 2 electrical auxiliary building air handling unit 21B smoke purge damper into the corrective action program. Specifically, the licensee failed to write a condition report in accordance with station Procedure OPGP03-ZX-0002, "Condition Reporting Process," Revision 37, to evaluate the failure of the damper to stroke open or closed when demanded during testing. Because the condition was not entered into the corrective action program, the licensee missed an opportunity to correct a material deficiency that caused another failure during subsequent testing.

Description. On January 27, 2009, while performing testing on the Unit 2 electrical auxiliary building air handling unit 21B smoke purge inlet damper, it was discovered that the damper would not stroke open when demanded. A condition report identifying the problem was not written until later in the day, which prevented the licensee from identifying the cause for the stuck damper. Maintenance personnel had freed the stuck damper and applied lubrication to ensure the damper would continue to move. When the issue was entered into the licensee's corrective action process, the actual cause (discussed below) of the failure was masked by the repairs that were performed by the maintenance personnel. Therefore, the apparent cause evaluation concluded that the cause of the stuck damper was infrequent cycling of these dampers with oil impregnated bushings in a high humidity operating environment renders them susceptible to sticking. A contributing cause was the failure to write condition reports for failures of the damper to stroke in 2007. In the 2007 case, maintenance personnel repaired the condition, but no condition report was written. The licensee's corrective action was to increase the frequency of inspection and lubrication.

On August 11, 2009, electrical auxiliary building air handling unit 21B smoke purge damper failed to fully open. The damper stuck in mid-position and would not open or close when demanded. This time, maintenance personnel contacted the control room and initiated a condition report immediately. The licensee performed an apparent cause evaluation of the repetitive failures of the smoke purge damper and determined that a

design change in 2002, where the licensee changed the damper blades from carbon steel to stainless steel to prevent excessive corrosion from degrading the damper performance resulted in mechanical interference between the damper blade linkage arm and a bearing housing stud. The bearing housing stud was too long, creating an interference preventing the blades from cycling open and closed freely. The licensee's corrective action was to reduce the size of the bolt and perform reviews on the extent of condition on the other electrical auxiliary building air handling train units. The licensee also performed an apparent cause evaluation and root cause investigation of this issue.

On March 10, 2010, the inspectors were presented with a timeline that described the repetitive damper failures, the results of the licensee's apparent cause evaluation and root cause investigation, and the associated maintenance work orders. The inspectors reviewed these materials and interviewed licensee personnel. The inspectors determined that, on multiple occasions, licensee personnel failed to follow condition reporting procedures that contributed to the repetitive damper failures.

Analysis. The licensee's failure to enter the damper malfunction into the corrective action program as required by procedures was a performance deficiency. The finding was more than minor because, if left uncorrected, it could have led to a more significant safety concern because incomplete and inaccurate corrective actions would have failed to ensure the damper would have actuated to the correct position when required. Using the Significance Determination Process Phase 1 worksheets from Inspection Manual Chapter 0609, the finding had very low safety significance (Green) because it was not a design or qualification deficiency, it did not result in the loss of system safety function, it did not result in the loss of safety function of a single train greater than its technical specification allowed outage time, it did not represent an actual loss of safety function of one or more nontechnical specification trains of equipment designated as risk significant for greater than 24 hours, and it was not risk significant due to a seismic, flooding, or severe weather initiating event. In addition, the finding had Problem Identification and Resolution crosscutting aspects associated with the corrective action program, in that, the licensee failed to accurately identify the smoke purge damper material deficiency in a timely manner because maintenance personnel did not have a low threshold for entering this issue into the corrective action program [P.1(a)].

Enforcement. The inspectors determined that 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Procedure, 0PGP03-ZX-0002, "Condition Reporting Process," Revision 37, Section 4.2, "Condition Identification," required, in part, documentation of an unexpected condition identified during maintenance and the initiation of a condition report. Contrary to the above, on February 3 and June 20, 2007, the licensee failed to initiate a condition report for the unexpected failure of the Unit 2 electrical auxiliary building air handling unit 21B smoke purge inlet damper, and on January 27, 2009, the licensee's delayed initiation of a condition report resulted in the failure to identify the actual cause of the damper malfunction until another failed test on August 11, 2009. Since the violation was of very low safety significance and was

documented in the licensee's corrective action program as Condition Report 09-12241, the finding is being treated as a noncited violation, consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000499/2010002-01, "Failure to Follow Procedures Results in Repetitive Malfunction of Electrical Auxiliary Building Air Handling Unit 21B Smoke Purge Inlet Damper."

2. RADIATION SAFETY

Cornerstone: Occupational and Public Radiation Safety

2RS06 Radioactive Gaseous and Liquid Effluent Treatment (71124.06)

a. Inspection Scope

This area was inspected to: (1) ensure the gaseous and liquid effluent processing systems are maintained so radiological discharges are properly mitigated, monitored, and evaluated with respect to public exposure; (2) ensure abnormal radioactive gaseous or liquid discharges and conditions, when effluent radiation monitors are out of service, are controlled in accordance with the applicable regulatory requirements and licensee procedures; (3) verify the licensee's quality control program ensures the radioactive effluent sampling and analysis requirements are satisfied so discharges of radioactive materials are adequately quantified and evaluated; and (4) verify the adequacy of public dose projections resulting from radioactive effluent discharges. The inspectors used the requirements in 10 CFR Part 20; 10 CFR Part 50, Appendices A and I; 40 CFR Part 190; the Offsite Dose Calculation Manual; and licensee procedures required by the technical specifications as criteria for determining compliance. The inspectors interviewed licensee personnel and reviewed and/or observed the following items:

- Radiological effluent release reports since the previous inspection and reports related to the effluent program issued since the previous inspection, if any
- Effluent program implementing procedures, including sampling, monitor setpoint determinations and dose calculations
- Equipment configuration and flow paths of selected gaseous and liquid discharge system components, filtered ventilation system material condition, and significant changes to their effluent release points, if any, and associated 10 CFR 50.59 reviews
- Selected portions of the routine processing and discharge of radioactive gaseous and liquid effluents (including sample collection and analysis)
- Controls used to ensure representative sampling and appropriate compensatory sampling
- Results of the interlaboratory comparison program
- Effluent stack flow rates

- Surveillance test results of technical specification-required ventilation effluent discharge systems since the previous inspection
- Significant changes in reported dose values, if any
- A selection of radioactive liquid and gaseous waste discharge permits
- Part 61 analyses and methods used to determine which isotopes are included in the source term
- Offsite Dose Calculation Manual changes, if any
- Meteorological dispersion and deposition factors
- Latest land use census
- Records of abnormal gaseous or liquid tank discharges, if any
- Groundwater monitoring results
- Changes to the licensee's written program for identifying and controlling contaminated spills/leaks to groundwater, if any
- Identified leakage or spill events and entries made into 10 CFR 50.75(g) records, if any, and associated evaluations of the extent of the contamination and the radiological source term
- Offsite notifications, and reports of events associated with spills, leaks, or groundwater monitoring results, if any
- Audits, self-assessments, reports, and corrective action documents related to radioactive gaseous and liquid effluent treatment 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 71124.06-05.

b. Findings

No findings of significance were identified.

2RS07 Radiological Environmental Monitoring Program (71124.07)

a. Inspection Scope

This area was inspected to: (1) verify that the radiological environmental monitoring program quantifies the impact of radioactive effluent releases to the environment and sufficiently validates the integrity of the radioactive gaseous and liquid effluent release program; (2) verify that the radiological environmental monitoring program is implemented consistent with the licensee's technical specifications and/or Offsite Dose Calculation Manual, and to validate that the radioactive effluent release program meets the design objective contained in Appendix I to 10 CFR Part 50; and (3) ensure that the radiological environmental monitoring program monitors noneffluent exposure pathways, is based on sound principles and assumptions, and validates that doses to members of the public are within the dose limits of 10 CFR Part 20 and 40 CFR Part 190 as applicable. The inspectors reviewed and/or observed the following items:

- Annual environmental monitoring reports and Offsite Dose Calculation Manual
- Selected air sampling and thermoluminescence dosimeter monitoring stations
- Collection and preparation of environmental samples
- Operability, calibration, and maintenance of meteorological instruments
- Selected events documented in the annual environmental monitoring report which involved a missed sample, inoperable sampler, lost thermoluminescence dosimeter, or anomalous measurement
- Selected structures, systems, or components that may contain licensed material and has a credible mechanism for licensed material to reach ground water
- Records required by 10 CFR 50.75(g)
- Significant changes made by the licensee to the Offsite Dose Calculation Manual as the result of changes to the land census or sampler station modifications since the last inspection
- Calibration and maintenance records for selected air samplers, composite water samplers, and environmental sample radiation measurement instrumentation
- Interlaboratory comparison program results
- Audits, self-assessments, reports, and corrective action documents related to the radiological environmental monitoring program 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 71124.07-05.

b. Findings

No findings of significance were identified.

2RS08 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation (71124.08)

a. Inspection Scope

This area was inspected to verify the effectiveness of the licensee's programs for processing, handling, storage, and transportation of radioactive material. The inspectors used the requirements of 10 CFR Parts 20, 61, and 71 and Department of Transportation regulations contained in 49 CFR Parts 171-180 for determining compliance. The inspectors interviewed licensee personnel and reviewed the following items:

- The solid radioactive waste system description, process control program, and the scope of the licensee's audit program
- Control of radioactive waste storage areas including container labeling/markings and monitoring containers for deformation or signs of waste decomposition
- Changes to the liquid and solid waste processing system configuration including a review of waste processing equipment that is not operational or abandoned in place
- Radio-chemical sample analysis results for radioactive waste streams and use of scaling factors and calculations to account for difficult-to-measure radionuclides
- Processes for waste classification including use of scaling factors and 10 CFR Part 61 analysis
- Shipment packaging, surveying, labeling, marking, placarding, vehicle checking, worker training, observation of radiation workers, and preparation of the disposal manifest
- Shipping records for nonexcepted package shipments
- Audits, self-assessments, reports, and corrective action reports, radioactive solid waste processing, and radioactive material handling, storage, and transportation performed 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 71124.08-05.

b. Findings

No findings of significance were identified

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

Data Submission Issue

a. Inspection Scope

The inspectors performed a review of the data submitted by the licensee for the fourth quarter 2009 performance indicators for any obvious inconsistencies prior to its public release in accordance with 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 of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Physical Protection

.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 of significance 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 and, as such, did not constitute any separate inspection samples.

b. Findings

No findings of significance were identified.

.3 In-depth Review of Operator Workarounds

a. Inspection Scope

During the weeks of February 1-5 and February 8-12, 2010, the inspectors reviewed the Units 1 and 2 operator workarounds, as well as the cumulative effects of the workarounds to: (1) determine if the functional capability of the system is affected; (2) determine if multiple mitigating systems could be affected; (3) evaluate the effect of the operator workaround on the operator's ability to implement, respond correctly and timely to abnormal or emergency operating procedures; and (4) verify that the licensee has identified and implemented appropriate corrective actions associated with operator workarounds. Specific documents reviewed during this inspection are listed in the attachment.

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

b. Findings

No findings of significance were identified.

40A3 Follow-up of Events and Notices of Enforcement Discretion (71153)

.1 Unit 1 Misaligned Rod Resulted in Power Reduction

On January 6, 2010, during the monthly control rod operability test per surveillance test requirement 4.1.3.1.2, shutdown bank rod C-5 became misaligned. The rod moved in 10 steps but did not move out 10 steps. As a result, rod C-5 indicated 246 steps per digital rod position indication with the remaining three rods on shutdown bank D indicating 258 steps per digital rod position indication and 259 steps per group demand indication. The licensee verified the position of rod C-5 using the incore flux map system and determined that the rod was at 249.6 steps. The licensee declared rod C-5 inoperable and entered Technical Specification 3.1.3.1 action b since the rod was misaligned by more than 12 steps. To comply with action b, the licensee reduced power to 73 percent rated thermal power, reduced the reactor trip setpoints to 84 percent rated thermal power, commenced verifying the shutdown margin every 8 hours, verified that the core power distribution measurements were within operating limits, and verified that previously analyzed accidents remained valid. Troubleshooting with vendor support indicated that the rod remained trippable and had always been trippable. On January 19, 2010, the licensee implemented Revision 2 of the core operating limits report and established a new full out position to be either 249 or 259 steps, allowing the licensee to restore compliance with technical specifications and return the unit to 100 percent rated thermal power.

.2 Unit 1 Technical Specification 3.0.3 Shutdown for Two Inoperable Rods

On February 3, 2010, during the monthly control rod operability test per surveillance test requirement 4.1.3.1.2, shutdown bank A rod B-12 became misaligned. Rod B-12 indicated 234 steps per digital rod position indication while the rest of the shutdown bank A indicated 246 steps per digital rod position indication and 249 steps per group demand. As a result of rod C-5 already having been declared inoperable, this resulted in two control rods being inoperable. The licensee was not able to restore rod B-12 to within the required 12 steps within the 1 hour time frame allowed by Technical Specification 3.1.3.1 action c, and consequently entered Technical Specification 3.0.3. The licensee began to immediately shut-down the plant and achieved Mode 3 within the time frame allowed by the technical specifications. The licensee reported the event as event notification 45675. During the shutdown, control bank C rod H-2 became misaligned from its group as well. The largest difference between rod H-2 and control bank C was 12 steps per digital rod position indication and 15 steps between digital rod position indication and group demand. All three of these rods were driven in by the rod control system with no issues. The licensee has performed various troubleshooting activities to better understand the cause of the rods failing to move in the out direction and has confirmed that the rods always remained trippable. The licensee's root cause lists the most probable cause as corrosion on the control rod drive mechanisms. Cycling of the rods along with rod drop testing is the corrective action to remove the corrosion products from the control rod drive mechanism area and ensure reliable control rod operation. On February 8, 2010, the licensee completed all actions recommended by the vendor and on February 9, 2010, commenced a reactor start up, went critical, and

closed the main generator output breaker. On February 10, 2010, the unit achieved 100 percent rated thermal power.

.3 (Closed) LER 05000499/2009-001-00, "Essential Chiller 22A Trip on Low Oil Pressure"

The inspectors reviewed the licensee's event report, root cause investigation report, interviewed personnel, and walked down the Unit 2 train A essential chiller and the essential chilled water system. The root cause of the event was determined to be a low lube oil pressure trip that resulted from refrigerant saturation in the lube oil due to a long idle period prior to the attempted start, documented in Condition Report 09-10502. The licensee's investigation determined that there were no material conditions or degraded components, but concluded that the essential chillers are sensitive to long idle periods, especially during warmer weather conditions when essential cooling water pond temperatures are elevated. The enforcement aspects of this violation are discussed below. This licensee event report is closed.

Introduction. The inspectors reviewed a self-revealing Green noncited violation of Technical Specification 3.7.14 because the licensee had one independent loop of essential chilled water inoperable for longer than the allowed outage time of 7 days. Specifically, the licensee performed an inadequate engineering evaluation in that it failed to determine the effects of changing the operation of the essential cooling water system on the essential chillers and in turn the essential chilled water system.

Description. On July 9, 2009, Unit 2 essential chiller 22A tripped on low oil pressure during the start up sequence. As a result, the corresponding essential chilled water train was declared inoperable. The licensee's review of the event concluded that there was no evidence to suggest any material deficiency and that the most probable cause of the trip was the same as the previous four Unit 1 essential chiller 12A trips in 2007 and 2008, low lube oil pressure trips as a result of refrigerant saturating into the lube oil during long idle periods.

In late 2006, the licensee changed the essential cooling water system operation to run all three trains simultaneously to minimize essential cooling water pump starts and stops. This change resulted from a compensatory action from essential cooling water pump shaft sleeve damage. As a result of this change, essential cooling water was continuously flowing through the idle essential chiller. The evaluation that the licensee performed to change the operation of the essential cooling water system did not look at anything beyond the operation of the pumps themselves. As a result, the licensee did not recognize that this operating change would reduce the available margin on the essential chillers. One of the factors that affect the amount of refrigerant saturation into the lube oil is the essential chiller shell pressure (refrigerant vapor pressure). During the warmer months with warmer essential cooling pond water temperatures, the essential cooling water flowing through the essential chillers would cause the chiller shell pressure to raise several psig over several days. This increase in pressure would allow more refrigerant to be absorbed into the lube oil, thereby reducing the margin to the low lube oil pressure trip. The licensee had multiple opportunities to determine a more detailed review of changing the operation of the essential cooling water system was warranted

as part of the procedure change, the root cause review, and several meetings held to discuss the compensatory actions for the pumps.

Consequently, this resulted in essential chiller 22A being idle for greater than 14 days and failing to start on July 9, 2009. The licensee determined that the essential chiller was inoperable from June 30, 2009, until it was declared operable on July 11, 2009, a maximum of 11 days. The licensee evaluated the event in Condition Report 09-10502 and determined that the chiller trip on low lube oil pressure was the result of refrigerant saturation into the lube oil over long idle periods. The refrigerant saturation in the lube oil was exacerbated by the decision to run all three essential cooling water pumps simultaneously. The lack of a procedure or process that performs an evaluation for adverse effects when the plant is going to be run in a new or atypical configuration was determined to be a significant contribution cause. The licensee's initial corrective action was to place idle time restrictions on all the essential chillers until corrective maintenance items could be performed. These items included purge and equalizing solenoid valve timing changes, a change to the setpoint of the lube oil temperature thermostat, not performing the daily lube oil pump run on the idle trains, and running the essential chilled water pump for a minimal amount of time on the idle trains.

Analysis. The inspectors determined that the failure to perform an adequate engineering evaluation for changing the operation of the essential cooling water pumps was a performance deficiency. The finding was more than minor because it was associated with the Mitigating Systems Cornerstone attribute of configuration control and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Significance Determination Process Phase 1 worksheets from Inspection Manual Chapter 0609, the finding screened to a Phase 2 analysis because it resulted in the loss of the safety function of a single train of essential chilled water for greater than its technical specification allowed outage time.

A Region IV senior reactor analyst performed a Phase 2 significance determination using the presolved worksheets from the "Risk Informed Inspection Notebook for South Texas Project Electric Generating Station," Revision 2.01a. Assuming an exposure period of 11 days, the finding screened as potentially White requiring further review. The analyst performed a bounding Phase 3 significance determination using the South Texas Project, Units 1 and 2, Simplified Plant Analysis Risk model, Revision 3.50, dated September 25, 2009, to calculate the conditional core damage probability assuming that essential chiller 22A was in a failed condition. The analyst set "fail to run" to True to allow the simplified plant analysis risk model to automatically adjust the common cause basic events (adjusting them higher). The analyst used a cutset truncation of $1.0E-13$, which resulted in an incremental conditional core damage probability of $6.7E-6$. Since the condition actually existed for only 11 days, the approximate delta-core damage frequency was $11 \text{ days}/365 \text{ days} * 6.7E-6$, or $2E-7$ (Green). It is important to note that the analyst used a very conservative assumption, in that no credit was provided for chiller recovery or for partial function. Since the calculated change in core damage frequency was less than $1E-6$, the finding was of very low safety significance (Green). The dominant core damage sequences included: 1) steam line break outside of containment with a common cause failure of the other chillers, and 2) steam generator

tube rupture with a common cause failure of the steam generator power operated relief valves. Equipment that mitigated the significance included the functional chillers and the turbine driven auxiliary feedwater pump.

The analyst evaluated the possible core damage frequency contribution from external events and determined that seismic events dominated the evaluation. Since the internal event contributor was very low (2E-7), and the South Texas Project was not located in a seismically active region of the country, the analyst qualitatively ruled out external events as a significant contributor for this performance deficiency. To evaluate the change to the large early release frequency, the analyst again used the presolved worksheets from the "Risk Informed Inspection Notebook for South Texas Project Electric Generating Station," Revision 2.01a. The worksheets indicated that the performance deficiency was more significant to core damage frequency than to large early release frequency. In addition, this finding had human performance crosscutting aspects associated with resources in that the licensee did not ensure that procedures were adequate to maintain long term plant safety by maintaining design margins [H.2(a)].

Enforcement. Technical Specification 3.7.14 requires, in part, that three independent essential chilled water system loops shall be operable during Modes 1, 2, 3, and 4 operations, and with only two loops operable, within 7 days restore at least three loops to operable status or apply the requirements of the Configuration Risk Management Program, or be in hot standby within the next 6 hours. Contrary to the above, from June 30 through July 11, 2009, the licensee operated with one essential chilled water loop inoperable for approximately 11 days, without taking the appropriate measures listed in the technical specification. Since this violation is of very low safety significance and was documented in the licensee's corrective action program as Condition Report 09-10502, it is being treated as a noncited violation consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000499/2010002-02, "Inadequate Engineering Evaluation Causes an Inoperable Essential Chilled Water Train."

40A5 Other Activities

(Closed) Temporary Instruction 2515/173, "Review of the Implementation of the Industry Groundwater Protection Voluntary Initiative"

a. Inspection Scope

An NRC assessment was performed of the licensee's groundwater protection program to determine whether the licensee implemented the voluntary Industry Groundwater Protection Initiative, dated August 2007 (Nuclear Energy Institute 07-07, ADAMS Accession Number ML072610036). Inspectors interviewed personnel, performed walkdowns of selected areas, and reviewed the following items:

- Records of the site characterization of geology and hydrology

- Evaluations of systems, structures, and/or components that contain or could contain licensed material and evaluations of work practices that involved licensed material for which there is a credible mechanism for the licensed material to reach the groundwater
- Implementation of an onsite groundwater monitoring program to monitor for potential licensed radioactive leakage into groundwater
- Procedures for the decision making process for potential remediation of leaks and spills, including consideration of the long term decommissioning impacts
- Records of leaks and spills recorded, if any, in the licensee's decommissioning files in accordance with 10 CFR 50.75(g)
- Licensee briefings of local and state officials on the licensee's groundwater protection initiative
- Protocols for notification to the local and state officials, and to the NRC regarding detection of leaks and spills
- Protocols and/or procedures for 30-day reports if an onsite groundwater sample exceeds the criteria in the radiological environmental monitoring program
- Groundwater monitoring results as reported in the annual effluent and/or environmental monitoring report
- Licensee and industry assessments of implementation of the groundwater protection initiative

b. Findings

No findings of significance were identified.

40A6 Meetings

Exit Meeting Summary

On January 28, 2010, the inspectors presented the radiation safety inspection results to Mr. L. Peter, Plant General 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 April 5, 2010, the resident inspectors presented the inspection results to Mr. E. Halpin, President and Chief Executive Officer, 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.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

R. Aguilera, General Supervisor, Health Physics
J. Ashcraft, Manager, Health Physics
J. Benavidez, Supervisor, Health Physics
C. Bowman, General Manager Oversight
W. Bullard, General Supervisor, Health Physics
J. Calvert, Manager, Training
R. Dunn Jr., Supervisor, Configuration Control and Analysis
R. Engen, Site Engineering Director
T. Frawley, Manager, Operations
R. Gangluff, Manager, Chemistry, Environmental and Health Physics
E. Halpin, President and Chief Executive Officer
W. Harrison, Manager, Licensing
G. Hildebrant, Manager, Plant Protection
K. House, Manager, Design Engineering
G. Janak, Manager, Operations Division, Unit 1
B. Jenewein, Manager, Systems Engineering
J. Lovejoy, Assistant Maintenance Manager
N. Mayer, Manager, Outage and Projects
A. McGalliard, Manager, Performance Improvement
R. McNiel, Manager, Maintenance Engineering
J. Mertink, Manager, Maintenance
J. Milliff, Manager, Operations Division, Unit 2
J. Paul, Engineer, Licensing Consultant
L. Peter, Plant General Manager
J. Pierce, Manager, Operations Training
G. Powell, Vice President, Engineering
M. Reddix, Manager, Security
D. Rencurrel, Senior Vice President, Units 1 and 2
K. Reynolds, Supervisor, Chemistry
M. Ruvalcaba, Testing and Programs Manager
R. Savage, Engineer, Licensing Staff Specialist
M. Schaefer, Manager, I&C Maintenance
D. Sherwood, Supervisor, Health Physics
K. Taplett, Senior Engineer, Licensing Staff
D. Zink, Supervising Engineer

NRC Personnel

J. Dixon, Senior Resident Inspector
B. Tharakan, CHP, Resident Inspector

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000499/2010002-01	NCV	Failure to Follow Procedures Results in Repetitive Malfunction of Electrical Auxiliary Building Air Handling Unit 21B Smoke Purge Inlet Damper (Section 1R22)
05000499/2010002-02	NCV	Inadequate Engineering Evaluation Causes an Inoperable Essential Chilled Water Train (Section 4OA3)

Closed

05000499/2009-001-01	LER	Essential Chiller 22A Trip on Low Oil Pressure (Section 4OA3)
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LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

CONDITION REPORTS

09-17780 10-165 10-362

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OPGP03-ZV-0004	Freezing Weather Plan	2
OPOP01-ZO-0004	Extreme Cold Weather Guidelines	29
OPOP02-CH-0005	Essential Chiller Operation	55, 56

WORK AUTHORIZATION NUMBERS

354939

Section 1R04: Equipment Alignment

CONDITION REPORTS

06-16539 09-2903

DRAWINGS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
5Q159F00045#1	Piping and Instrumentation Diagram Standby Diesel Fuel Oil	10
5Q159F22540#1	Piping and Instrumentation Diagram Standby Diesel Jacket Water	21
5Q159F22542#1	Piping and Instrumentation Diagram Standby Diesel Lube Oil	19
5R289F05038#1	Piping and Instrumentation Diagram Essential Cooling Water System Train 1C	16

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OPOP02-AF-0001	Auxiliary Feedwater	31
OPOP02-CH-0005	Essential Chiller Operation	56
OPOP02-DG-0003	Emergency Diesel Generator 13(23)	48
OPOP02-EW-0001	Essential Cooling Water Operations	50

Section 1R05: Fire Protection

FIRE PREPLANS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
0EAB31-FP-0047	Fire Preplan Electrical Auxiliary Building Cable Spreading/Power Cabling Area, Train B	6
0MAB20-FP-0129	Fire Preplan Mechanical Auxiliary Building Non-Radioactive Pipe Chase	3

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OPGP03-ZF-0001	Fire Protection Program	21
OPGP03-ZF-0018	Fire Protection System Functionality Requirements	14
OPGP03-ZF-0019	Control of Transient Fire Loads and Use of Combustible and Flammable Liquids and Gases	7

Section 1R11: Licensed Operator Requalification Program

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
LOR094 Exam 5	Licensed Operator Requalification 2009 Annual Performance Test	1
0ERP01-ZV-IN01	Emergency Classification	8
0POP04-RC-0004	Steam Generator Tube Leakage	24
0POP05-EO-EO00	Reactor Trip or Safety Injection	20
0POP05-EO-EO20	Faulted Steam Generator Isolation	9
0POP05-EO-EO30	Steam Generator Tube Rupture	21

Section 1R12: Maintenance Effectiveness

CONDITION REPORTS

02-17213	08-3164	09-10745
06-15116	09-3676	09-17421
08-67	09-4716	09-19283

MISCELLANEOUS

<u>TITLE</u>	<u>REVISION/DATE</u>
Chemical and Volume Control (CV) System Health Reports	First Quarter 2008 - Fourth Quarter 2009
Chemical and Volume Control System Risk Significance Basis Document	3
Incore Instrumentation (II) System Health Reports	First Quarter 2008 - Fourth Quarter 2009
Maintenance Rule System Scoping Basis Report	July 27, 2005

Section 1R13: Maintenance Risk Assessment and Emergent Work Controls

CONDITION REPORTS

09-14242	09-20355	10-5725
09-19687	10-4149	

MISCELLANEOUS

<u>TITLE</u>	<u>REVISION</u>
2RE14 Shutdown Risk Assessment Report	
Projected Risk Profiles for Unit 1 for the weeks of January 18, 2010 and January 25, 2010	
Projected Risk Profiles for Unit 2 for the week of January 18, 2010	
South Texas Project 1RE15 Outage Report September 30 - November 18, 2009	
Work Activity Risk Plan of Action 2019	1

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
0PGP03-ZA-0069	Control of Heavy Loads	22
0PGP03-ZA-0090	Work Process Program	34
0PGP03-ZI-0026	General Rigging and Inspection of Lifting Devices	15
0PGP03-ZM-0028	Erection and Use of Temporary Scaffolding	14
0PGP03-ZO-0002	Qualifications and Conduct of Operators for Cranes, Hoists, and Monorail Systems	15
0POP03-ZG-0004	Reactor Startup	33
0POP03-ZG-0006	Plant Shutdown from 100% to Hot Standby	36
0POP04-RS-0001	Control Rod Malfunction	25
1TEP02-RS-0001	Control Rod Axial Repositioning to Align Rod C5	0
WCG-0001	Work Screening and Processing	21

WORK AUTHORIZATION NUMBERS

376576 384098 385917

Section 1R15: Operability Evaluations

CONDITION REPORTS

09-18999	10-259	10-1955
09-19656	10-752	10-1998
09-20079	10-1738	10-2166
09-20129	10-1951	10-2262
09-21053	10-1954	10-3742
10-40		

MISCELLANEOUS

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION/DATE</u>
DCP 07-16094-1	Change Mobilith AW 1 Grease to Mobil Grease XHP 221	March 6, 2008
IG-05-4	Replacement Control Rod Drive Mechanism Operational Experience	October 21, 2005
LTR-ME-10-9	Evaluation of CRDM Failure to Withdraw at STP Unit 1 Issue	1
RRVH-STP-08-006	MHI CRDM Pre-Operation Testing	July 8, 2008
RRVH-STP-10-004	Transmittal of STP Unit 1 CRDM Operability Evaluation	1
RRVH-WEC-STP-10-006	Project: South Texas Project Units 1 and 2 RRVH Subject: Unit 1 CRDM Issue	February 7, 2010
STI 9301227246	Commercial Grade Item Dedication Package 501-46438	October 1, 1993
TB-06-17	CRDM Transitory Misstepping Due to Crud	December 12, 2006
TB-77-14	CRDM Misstepping	October 10, 1977
VTD-T147-0008	Vendor Technical Information for Terry Turbine Maintenance Guide, AFW Application	3

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OPGP03-ZM-0004	Lubrication Program	16
OPMP07-AM-0041	QDPS APC-D1 Removal From Service	6
OPOP04-RS-0001	Control Rod Malfunction	25

Section 1R20: Refueling and Other Outage Activities

CONDITION REPORTS

10-259	10-1954	10-1998
10-1951	10-1955	

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OPOP03-ZG-0004	Reactor Startup	33
OPOP03-ZG-0006	Plant Shutdown from 100% to Hot Standby	36, 37, 38
OPOP03-ZG-0007	Plant Cooldown	59
OPOP04-RS-0001	Control Rod Malfunction	25
OPSP10-ZG-0005	Shutdown Margin Verification – Modes 1 and 2	4
1TOP02-RS-0001	Rod Testing	0
1TOP02-RS-0002	Rod Bank Testing	0

Section 1R22: Surveillance Testing

CONDITION REPORTS

06-15147	09-21141	10-4282
09-1508	10-681	10-4439
09-1562	10-1027	10-4454
09-2900	10-1033	10-4455
09-8101	10-1267	10-5568
09-12241	10-4150	

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OPMP04-EW-0001	Essential Cooling Water Pump Maintenance	28
OPMP04-EW-0001A	Essential Cooling Water Pump Maintenance (Product-Lubricated Bearing Design)	0
OPSP03-EW-0011	Essential Cooling Water Pump 1B(2B) Reference Value Measurement	17
OPSP03-RS-0001	Monthly Control Rod Operability	25, 28
OPSP03-RS-0003	Control Rod Operability (Single Rod)	0
OPSP11-MS-0001	Main Steam Safety Valve Inservice Test	17

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OPGP03-ZX-0002	Condition Reporting Process	37
CAP-0001	CR Classification Guideline	1

WORK AUTHORIZATION NUMBERS

311429	376218	384397
343343	380625	390613
371423	381301	398595
373117		

Section 2RS06: Radioactive Gaseous and Liquid Effluent Treatment (IP71124.06)

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
MN-08-0-44015	Quality Monitoring Report	November 17, 2008
MN-09-1-57053	Quality Monitoring Report	November 17, 2009
07-02	Quality Assurance Audit - Chemistry/Radiochemistry, Non-Radiological Environmental, and Offsite Dose Calculation Manual	July 17, 2007

COMPENSATORY SAMPLING

<u>UNIT</u>	<u>MONITOR</u>	<u>DATE</u>
1	RT-8010B	October 16-20, 2009

CONDITION REPORTS

08-01918	08-15030	09-14153
08-06181	09-13960	09-16400
08-11554	09-14090	09-16420
08-12449		

INPLACE FILTER TESTING RECORDS

<u>UNIT</u>	<u>SYSTEM</u>	<u>TRAIN</u>	<u>TEST</u>	<u>DATE</u>
1	Control Room Makeup and Cleanup	3VIII XV001 (Train A)	HEPA	November 12, 2008
		3VIII XV004 (Train A)		
1	Control Room Makeup and Cleanup	3VIII XV001 (Train A)	Charcoal	November 13, 2008
		3VIII XV004 (Train A)		
1	Control Room Makeup and Cleanup	3VIII XV001 (Train A)	Laboratory	November 18, 2008
		3VIII XV004 (Train A)		
1	Fuel Handling Building	3VI2IV XV001 (Train A)	HEPA	January 13, 2010
1	Fuel Handling Building	3VI2IV XV001 (Train A)	Charcoal	July 15, 2009
1	Fuel Handling Building	3VI2IV XV001 (Train A)	Laboratory	July 7, 2009
2	Control Room Makeup and Cleanup	3V112V XV002 (Train B)	HEPA	June 11, 2009
2	Control Room Makeup and Cleanup	3V112V XV002 (Train B)	Charcoal	June 11, 2009
2	Control Room Makeup and Cleanup	3V112V XV002 (Train B)	Laboratory	June 11, 2009

LEAKAGE OR SPILL DECOMMISSIONING RECORDS

09-7831

09-9599

MISCELLANEOUS

TITLE

2007 Radioactive Effluent Release Report

A10

Attachment

TITLE

2008 Radioactive Effluent Release Report
2009 Part 61 Dry Active Waste Sampling Results

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
0PCP07-ZS-0016	Continuous Atmospheric Monitors	34
0PCP09-ZR-0017	Liquid Permit Generation	15
0PGP03ZO0053	Radiological Ground Water Protection Program	0
0POP02-WL-0100	Liquid Waste Release	14
0PSP07-VE-0002	Gaseous Effluent Sampling and Analysis	12
0PSP07-VE-0005	Gaseous Effluent Dose Assessment	5
0PSP07-ZR-0003	Offsite Dose	2

RELEASE PERMITS

1379 (L) 1476 (L) 292 (G)

SAMPLING AND ANALYSIS RESULTS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
VE217	Unit 1 Vent Particulate	January 27, 2010
VE220	Unit 1 Vent Charcoal	January 27, 2010

Section 2RS07: Radiological Environmental Monitoring Program (IP71124.07)

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
08-01 (RC)	Radiological Controls, Radioactive Waste, and Radiological Environmental Monitoring Program (REMP)	March 18, 2008
MN-09-0-47658	REMP Quality Monitoring Report	March 30, 2009

CALIBRATION AND MAINTENANCE RECORDS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
0PSP05-EM-0001	Primary Meteorological System Calibration	July 15, 2009
0PSP05-EM-0001	Primary Meteorological System Calibration	December 15, 2009
0PSP05-EM-0002	Backup Meteorological System Calibration	June 17, 2009
0PSP05-EM-0002	Backup Meteorological System Calibration	October 21, 2009
400-00136-005	Air Flow Calibrator	July 16, 2009

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
400-00136-005	Air Flow Calibrator	January 19, 2009
400-00136-006	Air Flow Calibrator	July 7, 2009
400-00136-006	Air Flow Calibrator	January 19, 2009

CONDITION REPORTS

08-14864	09-727	09-12770
08-16370	09-2444	09-13592
08-17432		

MISCELLANEOUS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
AM-0-05000051	Meteorological Tower Inspection 2007 Annual Environmental Operating Report 2008 Annual Environmental Operating Report 2007 Land Use Census 2008 Land Use Census 2009 Land Use Census 2007 Interlaboratory Comparison 2008 Interlaboratory Comparison	June 18, 2009

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OPGP03-ZA-0087	Meteorological Data	7
OPGP03-ZO-0053	Radiological Ground Water Protection Program	1
OPGP03-ZR-0039	Radiological Environmental Monitoring Program	16
OPRP10-ZL-0022	Quality Control of Radiological Laboratory Equipment	8
OPRP10-ZL-0023	REMP Interlaboratory Comparison Program	10
OPRP10-ZU-0001	REMP Sample Collection	6
OPRP10-ZU-0007	Environmental TLD Monitoring	10

Section 2RS08: Radioactive Solid Waste Processing and Radioactive Material handling, Storage, and Transportation (IP71124.08)

AUDITS, SELF-ASSESSMENTS, AND SURVEILLANCES

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
SR-2009-23	EXELON Nuclear Audit of AREVA Environmental, Inc.	August 25, 2009
MN-08-1-42203	Quality Monitoring Report	October 9, 2008

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
MN-09-1-56162	Quality Monitoring Report	October 21, 2009
MN-09-1-56438	Quality Monitoring Report	October 28, 2009
MN-09-2-46592	Quality Monitoring Report	February 2, 2009
09-027(VA)	STP Nuclear Operating Company Audit of Studsvik Processing Facility, LLC	June 30, 2009
Quality Audit Report 08-01	Radiological Controls, Radioactive Waste, and Radiological Environmental Monitoring Program (REMP)	March 18, 2008

CONDITION REPORTS

08-3577	08-6876	09-10752
08-3636	08-8820	09-11219
08-4341	09-374	09-11606
08-4588	09-5602	09-11720
08-5540	09-5603	09-18065

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
0PGO03-ZO-0017	Radioactive Waste Process Control Program	6
0PGO03-ZR-0001	Determination of Radioactive Material Curie Content, Reportability, DOT Sub-Type and Waste Classification	8
0PGO03-ZR-0002	Radioactive Waste Shipments	19
0PGO03-ZR-0009	10CFR61 Sampling and Analysis Program	7
0PGO03-ZR-0011	Shipment of Radioactive Material	15
0PGO03-ZR-0013	Receipt of Radioactive Material	11
0PGO03-ZR-0025	Preparation and Shipment of High Integrity Containers or Reusable Polyethylene Waste Containers	2
0PRP11-ZR-0003	Radioactive Material Transportation Accidents	2
0PGP03-ZA-0115	Hazardous Material Transportation Incident Response	1

RADIOACTIVE MATERIAL SHIPMENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>DATE</u>
STP-0-08-0044	LSA High Radiation Area Trash	October 2, 2008
STP-1-09-0038	Type A Westinghouse ISI Equipment	October 28, 2009
STP-1-09-0042	DAW	November 12, 2009
STP-2-08-0010	Type B Unit 2 Trinuke Filers	May 13, 2008
STP-2-09-0006	Dewatered Bead Resin & Charcoal	February 26, 2009

Section 40A1: Performance Indicator Verification

CONDITION REPORTS

07-7752	08-17817	09-20050
08-14683	09-14200	09-20069
08-16875	09-18936	10-200

Section 40A2: Identification and Resolution of Problems

MISCELLANEOUS

TITLE

Unit 1 Operator Burden Working Report
Unit 2 Operator Burden Working Report
Unit 1 Control Board Issue Report
Unit 2 Control Board Issue Report

Section 40A3: Event Follow-Up

CONDITION REPORTS

08-13702	09-10502	09-13122
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MISCELLANEOUS

TITLE

Essential Chiller Task Force Report

Section 40A5: Other Activities

Temporary Instruction 2515/173

CONDITION REPORTS

08-12955	09-12770
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MISCELLANEOUS

<u>TITLE</u>	<u>DATE</u>
Conceptual Site Model for Units 1 and 2 Groundwater Protection Initiative	May 2009
Self Assessment for Implementation for the Groundwater Monitoring/Control Program	March 3, 2009

PROCEDURES

<u>NUMBER</u>	<u>TITLE</u>	<u>REVISION</u>
OPGP03-ZO-0053	Radiological Ground Water Protection Program	1