



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

August 17, 2007

James J. Sheppard, President and  
Chief Executive Officer  
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P.O. Box 289  
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SUBJECT: SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION - NRC  
INTEGRATION INSPECTION REPORT 05000498/2007003 AND  
05000499/2007003

Dear Mr. Sheppard:

On July 6, 2007, 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 report documents the inspection findings, which were discussed on July 12, 2007, with you and other members of your staff.

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

This report documents one NRC identified and two self-revealing findings of very low risk significance (Green). All of these findings were determined to involve violations of NRC requirements. In addition, a licensee-identified violation, which was determined to be of very low safety significance is listed in this report. However, because of the very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings as noncited violations (NCVs) consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest any NCVs in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011-4005; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington DC 20555-0001; and the NRC Resident Inspector at South Texas Project Electric Generating Station, Units 1 and 2, facility.

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

Sincerely,

/RA/

Claude E. Johnson, Chief  
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Division of Reactor Projects

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

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NRC Inspection Report 05000498/2007003 and 05000499/2007003  
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SUNSI Review Completed: CEJ ADAMS: ☒ Yes ☐ No Initials: CEJ  
☒ Publicly Available ☐ Non-Publicly Available ☐ Sensitive ☒ Non-Sensitive

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RIV:SRI:DRP/A	C:DRS/EB	C:DRS/OB	C:DRS/PEB	C:DRS/PSB
JLDixon	DAPowers	ATGody	LJSmith	MPShannon
E-CEJohnson	/RA/	DAPowers for	/RA/	/RA/
08/16/07	08/3/07	08/3/07	08/3/07	08/3/07
C:DRP/A				
CEJohnson				
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**U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV**

Dockets: 50-498, 50-499

Licenses: NPF-76, NPF-80

Report: 05000498/2007003 and 05000499/2007003

Licensee: STP Nuclear Operating Company

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

Location: FM 521 - 8 miles west of Wadsworth  
Wadsworth, Texas 77483

Dates: April 7 through July 6, 2007

Inspectors: J. Adams, Reactor Inspector  
J. Dixon, Senior Resident Inspector  
G. George, Reactor Inspector  
J. Taylor, Resident Inspector  
B. Tharakan, CHP, Health Physicist

Others: W. Johnson, Contractor

Approved By: Claude E. Johnson, Chief, Project Branch A  
Division of Reactor Projects

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## SUMMARY OF FINDINGS

IR 05000498/2007003, 05000499/2007003; 04/07/07 - 07/06/07; South Texas Project Electric Generating Station, Units 1 and 2; Integrated Resident and Regional Report; Refueling and Other Outage Activities, Access Control to Radiologically Significant Areas.

This report covered a 3-month period of inspection by resident and regional inspectors. The inspection identified three findings. 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's review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

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

#### Cornerstone: Initiating Events

- Green. The inspectors reviewed a self-revealing noncited violation of Technical Specification 6.8.1.a for the failure to follow Procedure 0POP03-ZG-0006, "Plant Shutdown from 100% to Hot Standby," Revision 28. As part of the shutdown, operations personnel are directed to reduce turbine load at the desired ramp rate by adjusting the load rate thumbwheel. However, during the evolution the thumbwheel was inadvertently moved in the wrong direction, thereby causing the turbine load rate to change from 0.25 percent/min to 200 percent/min. This resulted in a transient on the plant causing reactor power to lower by about 6 percent rated thermal power and average coolant temperature to rise by about 2.3 °F.

This finding was more than minor because it was associated with the Initiating Events Cornerstone attribute of human performance and it affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenged critical safety functions during power operations. The inspectors evaluated the violation using Inspection Manual Chapter 0609, "Significance Determination Process," Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," Phase 1 screening, and determined that it was of very low safety significance because, although the likelihood of a reactor trip increased, the likelihood that mitigating systems would not be available did not increase. This issue also had human performance crosscutting aspects, in the area of decision-making, because the licensee had not conducted effectiveness reviews of safety-significant decisions to verify the validity of the underlying assumptions, identify possible unintended consequences, and determine how to improve future decisions (H.1(b)). The licensee had previously evaluated most turbine control manipulations as 'skill of the craft' and did not identify the potential challenge to reactivity management. This was reflected in the manner in which the turbine was operated, always in the 'go' setting, and that the 200 percent/min position had not been previously

eliminated as it served no operational function. This directly contributed to the resultant plant transient (Section 1R20).

Cornerstone: Occupational Radiation Safety

- Green. The inspector identified two examples of a noncited violation of Technical Specification 6.12.1 because the licensee failed to conspicuously post and barricade two separate high radiation areas. On April 19, 2007, during a tour of the reactor containment building, the inspector observed the entryways to the steam generator and pressurizer cubicles were not conspicuously posted or barricaded. The licensee's corrective action was to post and barricade these two areas.

This 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 to ensure the adequate protection of a worker's health and safety from exposure to radiation because it could have resulted in workers being exposed to higher radiation levels. When processed through the Occupational Radiation Safety Significance Determination Process, the finding was determined to be of very low safety significance because it was not an as low as is reasonably achievable finding, there was no overexposure or substantial potential for an overexposure, and the ability to assess dose was not compromised. In addition, this finding had a human performance crosscutting aspect, associated with work practices, because the licensee failed to define and effectively communicate expectations about procedural compliance (H.4(b)). The licensee's common cause report, Condition Report 07-7030, concluded that the station had not taken the appropriate steps to ensure that workers' respect for radiation protection procedural compliance, boundary rigor, and reasons for radiation control were effectively communicated (Section 2OS1).

- Green. The inspector reviewed a self-revealing noncited violation of Technical Specification 6.8.1 because of a failure to follow procedural and radiation work permit requirements. On April 4, 2007, a worker entered a high radiation area without authorization, did not obtain a health physics briefing, and was not aware of the radiation protection controls established by the radiation work permit instructions. The licensee's corrective actions were to counsel the worker and brief associated maintenance and craft personnel about adhering to procedures and radiation work permit requirements.

This 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 to ensure the adequate protection of a worker's health and safety from exposure to radiation because it resulted in the worker being exposed to higher radiation levels. When processed through the Occupational Radiation Safety Significance Determination Process, the finding was determined to be of very low safety significance because it was not an as low as is reasonably achievable finding, there was no overexposure or substantial potential for an overexposure, and the ability to assess dose was not compromised. In addition, this finding had a human performance crosscutting

aspect, associated with work practices, because the licensee failed to ensure adequate supervisory and management oversight of work activities, including contractors, such that radiological safety was supported (H.4(c)). The licensee's common cause report, Condition Report 07-7030, concluded that the station did not have enough supervisors or radiation protection technicians in the field, in addition to management not consistently applying learning center requirements (Section 2OS1).

B. Licensee-Identified Violations

A violation of very low safety significance, which was identified by the licensee, has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. This violation and its corrective actions are listed in Section 4OA7 of this report.

## REPORT DETAILS

### Summary of Plant Status

Unit 1 began the inspection period at 100 percent rated thermal power (RTP) and operated at or near full RTP for the remainder of the inspection period.

Unit 2 began the inspection period in Refueling Outage 2RE12 on March 25, 2007. On April 27, 2007, Unit 2 went critical, closed the main generator output breaker on April 28, 2007, and achieved 100 percent RTP on May 1, 2007. Unit 2 operated at or near full RTP for the remainder of the inspection period.

### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

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

##### Readiness for Impending Adverse Weather Conditions

##### a. Inspection Scope

The inspectors completed a review of the licensee's readiness for impending adverse weather involving hurricanes. The inspectors: (1) reviewed plant procedures, the Updated Final Safety Analysis Report (UFSAR), and Technical Specifications (TSs) to ensure that operator actions defined in adverse weather procedures maintained the readiness of essential systems; (2) walked down portions of the below listed systems to ensure that adverse weather protection features (heat tracing, space heaters, weatherized enclosures, temporary chillers, etc...) were sufficient to support operability, including the ability to perform safe shutdown functions; (3) reviewed maintenance records to determine that applicable surveillance requirements were current before the anticipated hurricanes developed; and (4) reviewed plant modifications, procedure revisions, operator work arounds, and the corrective action program (CAP) to determine if recent facility changes challenged plant operation.

- June 21, 2007, Units 1 and 2, 345 kV switchyard, circulating water structure, essential cooling water (ECW) structure, and general site cleanliness

Documents reviewed by the inspectors included:

- Procedure 0PGP03-ZV-0001, "Severe Weather Plan," Revision 13
- Procedure 0PGP03-ZV-0002, "Hurricane Plan," Revision 1

The inspectors completed one sample.

##### b. Findings

No findings of significance were identified.

## 1R04 Equipment Alignment (71111.04)

### .1 Partial Walkdown

#### a. Inspection Scope

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

- May 9, 2007, Unit 2, Essential Chilled Water System Train B, while Train A was in maintenance
- June 12, 2007, Unit 1, ECW System Train A, while Train B was in maintenance

Documents reviewed by the inspectors included:

- UFSAR
- Procedure 0POP02-CH-0001, "Essential Chilled Water Operations," Revision 38
- Procedure 0POP02-EW-0001, "Essential Cooling Water Operations," Revision 41

The inspectors completed two samples.

#### b. Findings

No findings of significance were identified.

### .2 Complete Walkdown

#### a. Inspection Scope

The inspectors: (1) reviewed plant procedures, drawings, the UFSAR, TSs, and vendor manuals to determine the correct alignment of the one system below; (2) reviewed outstanding design issues, operator work arounds, and UFSAR documents to determine if open issues affected the functionality of the system; and (3) verified that the licensee was identifying and resolving equipment alignment problems.

- April 18, 2007, Unit 2, residual heat removal (RHR) system Train A, while Train C was in maintenance

Documents reviewed by the inspectors included:

- System description

- Procedure 0POP02-RH-0001, "Residual Heat Removal System Operation," Revision 46

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

Quarterly Inspection

a. Inspection Scope

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

- April 11, 2007, Unit 2, engineered safeguards feature (ESF) switchgear rooms for Trains A, B, and C (Fire Zones Z004, Z042, and Z052)
- April 17, 2007, Unit 2, RHR System Train A rooms and cable spreading areas (Fire Zones Z006, Z025, and Z226)
- April 26, 2007, Unit 1, RHR System Train A cable spreading areas (Fire Zones Z006 and Z025)
- May 9, 2007, Unit 2, low head safety injection Pump 2A room and chemical additive room (Fire Zone Z307)
- June 6, 2007, Unit 2, Standby Diesel Generator 21 areas (Fire Zones Z502, and Z514)
- June 12, 2007, Unit 1, ECW System Train A rooms (Fire Zone Z600)

Documents reviewed by the inspectors included:

- Applicable fire preplans

The inspectors completed six samples.

b. Findings

No findings of significance were identified.

Annual Inspection

a. Inspection Scope

On June 6, 2007, the inspectors observed a fire brigade drill to evaluate the readiness of licensee personnel to prevent and fight fires, including the following aspects: (1) the number of personnel assigned to the fire brigade, (2) use of protective clothing, (3) use of breathing apparatuses, (4) use of fire procedures and declarations of emergency action levels, (5) command of the fire brigade, (6) implementation of prefire strategies and briefs, (7) access routes to the fire and the timeliness of the fire brigade response, (8) establishment of communications, (9) effectiveness of radio communications, (10) placement and use of fire hoses, (11) entry into the fire area, (12) use of fire fighting equipment, (13) searches for fire victims and fire propagation, (14) smoke removal, (15) use of prefire plans, (16) adherence to the drill scenario, (17) performance of the postdrill critique, and (18) restoration from the fire drill. The licensee simulated a fire in the Unit 2 relay room.

Documents reviewed by the inspectors included:

- Fire Hazards Analysis Report
- Fire preplan EAB01-FP-0032, "Relay Cabinet Area of Control Room," Revision 3

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

Semi-annual Internal Flooding

a. Inspection Scope

The inspectors: (1) reviewed the UFSAR, the flooding analysis, and plant procedures to assess seasonal susceptibilities involving internal flooding; (2) reviewed the UFSAR and CAP to determine if the licensee identified and corrected flooding problems; (3) inspected underground bunkers/manholes to verify the adequacy of (a) sump pumps, (b) level alarm circuits, (c) cable splices subject to submergence, and

(d) drainage for bunkers/manholes; (4) verified that operator actions for coping with flooding can reasonably achieve the desired outcomes; and (5) walked down the below listed areas to verify the adequacy of: (a) equipment seals located below the floodline, (b) floor and wall penetration seals, (c) watertight door seals, (d) common drain lines and sumps, (e) sump pumps, level alarms and control circuits, and (f) temporary or removable flood barriers.

- April 12, 2007, Units 1 and 2, isolation valve cubicles including the auxiliary feedwater (AFW) pump rooms

Documents reviewed by the inspectors included:

- Drawing 9M069B0175, "Plumbing Isolation Valve Cubicle Bldg Embedment Plan Area 11," Revision 0
- Drawing 9M069B0176, "Plumbing Isolation Valve Cubicle Bldg Floor Plan El 10' 0" Area 11," Revision 8
- Drawing 9M069B0177, "Plumbing Isolation Valve Cubicle Bldg Floor Plan El 34' 0" Area 11," Revision 2 with Field Change Request HBP-2740
- Calculation MC-5557, "IVC Flooding Analysis," Revision 8

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection Activities (71111.08)

.1 Inspection Activities Other Than Steam Generator Tube Inspections, Pressurized Water Reactor Vessel Upper Head Penetration Inspections, Boric Acid Corrosion Control

a. Inspection Scope

The procedure requires review of two or three types of nondestructive examination (NDE) activities (volumetric, surface and visual). The inspector reviewed examples of three different NDE types, including ultrasonic, magnetic particle, and visual.

The procedure requires review of one or two examinations from the previous outage with recordable indications that were accepted for continued service. No examples were noted during the previous outage.

If the licensee completed welding on the pressure boundary for Class 1 or 2 systems since the beginning of the previous outage, the procedure requires verification for

one-to-three welds that acceptance and preservice examinations were done in accordance with American Society of Mechanical Engineers (ASME) Code. The inspector reviewed structural overlay welding on four pressurizer welds.

The procedure requires verification that one or two ASME Section XI Code repairs or replacements meet Code requirements. The inspector reviewed welding on one control rod drive mechanism canopy seal weld repair.

The inspector verified, through direct observation or record review, that ultrasonic, magnetic particle and visual examinations of the components listed below were performed in accordance with ASME Code requirements.

<u>System</u>	<u>Component/Weld Identification</u>	<u>Examination Method</u>	<u>Observation or Record review</u>
Reactor Coolant System	12-RC-2312-4	Ultrasonic	Observation
Reactor Coolant System	4-RC-2320-BB1-4	Ultrasonic	Record Review
Reactor Coolant System	4-RC-2123-BB1-3	Ultrasonic	Record Review
Reactor Coolant System	4-RC-2320-BB1-5	Ultrasonic	Record Review
Containment Building	Auxiliary Air Lock Door	Visual (VT-1/3)	Observation
AFW System	8-AF-2008-GA2C, Welds ISPL1 - ISPL8	Magnetic Particle	Observation

During the review of each examination, the inspector verified that the correct procedures were used, that examinations and conditions were as specified in the procedure, and that test instrumentation or equipment was properly calibrated and within the allowable calibration period. The inspector also reviewed documentation such as ultrasonic, magnetic particle and visual inspection records to determine if the indications revealed by the examinations were compared against the ASME Code specified acceptance standards. This review also determined that indications were appropriately dispositioned.

The inspector verified the NDE certifications of those personnel observed performing examinations or identified during review of completed examination packages.

The inspectors completed one sample under Section 02.01.

b. Findings

No findings of significance were identified.

.2 Reactor Vessel Upper Head Penetration Inspection Activities

a. Inspection Scope

This was the first outage where upper head penetration nozzle volumetric examinations were performed on Unit 2. In lieu of this inspection procedure, the inspector performed Temporary Instruction 2515/150, "Reactor Pressure Vessel Head and Vessel Head Penetration Nozzles," Revision 3. This inspection is documented in Section 4OA5 of this report. No samples were completed under Section 02.02.

b. Findings

No findings of significance were identified.

.3 Boric Acid Corrosion Control Inspection Activities (PWRs)

a. Inspection Scope

The inspector reviewed a sample of boric acid corrosion control walkdown visual examination activities. The inspector determined that the licensee's visual inspections emphasized locations where boric acid leaks could cause degradation of safety significant components.

The inspector reviewed seven engineering evaluations performed for boric acid found on piping and components. The review verified that ASME Code wall thickness requirements were maintained and that the degraded conditions were properly entered and dispositioned in the licensee's CAP.

The inspectors completed one sample under Section 02.03.

b. Findings

No findings of significance were identified.

.4 Steam Generator Tube Inspection Activities

a. Inspection Scope

The licensee did not perform any steam generator tube inspection activities.

Consequently, the inspector did not perform any activities under this section. No samples were completed under Section 02.04.

b. Findings

No findings of significance were identified.

.5 Identification and Resolution of Problems

a. Inspection Scope

The inspection procedure requires review of a sample of problems associated with inservice inspections documented by the licensee in the CAP for appropriateness of the corrective actions.

The inspectors reviewed one condition report (CR) which dealt with inservice inspection activities and found the corrective actions were appropriate. The CRs reviewed are listed in the documents reviewed section. From this review, the inspectors concluded that the licensee has an appropriate threshold for entering issues into the CAP and has procedures that direct a root cause evaluation when necessary. The licensee also has an effective program for applying industry operating experience.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

a. Inspection Scope

On June 12, 2007, the inspectors observed testing and training of senior reactor operators and reactor operators to identify deficiencies and discrepancies in the training, to assess operator performance, and to assess the evaluator's critique. The first training scenario involved a design basis loss of all main feedwater with a complicated reactor trip anticipated transient without scram. The second training scenario involved a loss of power to a distribution panel which causes multiple false control room indications, followed by a main generator trip, reactor trip, and then escalating into a steam generator tube leak.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

## 1R12 Maintenance Effectiveness (71111.12)

### a. Inspection Scope

The inspectors reviewed the two below listed maintenance activities to: (1) verify the appropriate handling of structure, system, and component (SSC) performance or condition problems; (2) verify the appropriate handling of degraded SSC functional performance; (3) evaluate the role of work practices and common cause problems; and (4) evaluate the handling of SSC issues reviewed under the requirements of the Maintenance Rule, 10 CFR Part 50, Appendix B, and TSs.

- June 21, 2007, Units 1 and 2, qualified display process system overall system health due to issues associated with failed capacitors affecting distribution Panel 1202
- July 5, 2007, Units 1 and 2, RHR overall system health due to safety injection test connection leakage pressurizing the safety injection header

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed two samples.

### b. Findings

No findings of significance were identified.

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

### .1 Risk Assessment and Management of Risk

#### a. Inspection Scope

The inspectors reviewed the four below listed assessment activities to verify: (1) performance of risk assessments when required by 10 CFR 50.65 (a)(4) and licensee procedures prior to changes in plant configuration for maintenance activities and plant operations; (2) the accuracy, adequacy, and completeness of the information considered in the risk assessment; (3) that the licensee recognizes, and/or enters as applicable, the appropriate licensee-established risk category according to the risk assessment results and licensee procedures; and (4) that the licensee identified and corrected problems related to maintenance risk assessments.

- April 7-27, 2007, Unit 2, Refueling Outage 2RE12 activities
- Week of May 7, 2007, Unit 1, planned maintenance on Train A equipment
- Week of May 14, 2007, Unit 2, planned maintenance on Train A equipment
- Week of June 11, 2007, Unit 1, planned maintenance on Train B equipment, including a freeze seal inside containment to repair a 3/4 inch safety injection

test connection valve

Documents reviewed by the inspectors included:

- 2RE12 Shutdown Risk Assessment Group Report
- Work activity risk plan of action Evaluation 1673
- Procedure 0PMP04-ZG-0113, "Liquid Nitrogen (LN<sub>2</sub>) Freeze Seal," Revision 7

The inspectors completed four samples.

b. Findings

No findings of significance were identified.

.2 Emergent Work Control

a. Inspection Scope

The inspectors: (1) verified that the licensee performed actions to minimize the probability of initiating events and maintained the functional capability of mitigating systems and barrier integrity systems; (2) verified that emergency work-related activities such as troubleshooting, work planning/scheduling, establishing plant conditions, aligning equipment, tagging, temporary modifications, and equipment restoration did not place the plant in an unacceptable configuration; and (3) reviewed the UFSAR to determine if the licensee identified and corrected risk assessment and emergency work control problems.

- Week of April 20, 2007, Units 1 and 2, Unit 2 power ascension with Load Center 2G1 deenergized due to a material deficiency (load center provides power to multiple secondary plant equipment), main generator voltage regulator power supply failure, and Nuclear Instrument 46 low voltage reading; Unit 1 control room envelope (CRE) heating, ventilation, and air conditioning (HVAC) failing periodic surveillance test resulting in train inoperability

Documents reviewed by the inspectors included:

- CRs 07-7397, -7412, -7485, and -7576

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

## 1R15 Operability Evaluations (71111.15)

### a. Inspection Scope

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

- March 5, 2007, Unit 2, evaluation of leakage past long path recirculation isolation Valve 2-AF-0092 for AFW Pump 23 resulting in the train being inoperable and potential impact to the other trains, including extent of condition concerning Unit 1, per CR 07-3436
- May 1, 2007, Unit 1, evaluation of operability/reportability review for failed nuclear instrumentation log count rate card per CR 07-6164
- May 9, 2007, Unit 2, evaluation of failure to satisfy electrical separation criteria, which impacted protected train equipment during Refueling Outage 2RE12 per CRs 07-6091, -6092, -6093, and -7134
- June 28, 2007, Unit 1, evaluation of AFW Pump 14 trip-throttle valve linkage excess impact space per CR 07-9966

The inspectors completed four samples.

### b. Findings

For more information on a licensee identified noncited violation (NCV) associated with the leakage past long path recirculation isolation Valve 2-AF-0092, see Sections 4OA3.3 and 4OA7.

## 1R19 Postmaintenance Testing (71111.19)

### a. Inspection Scope

The inspectors selected the six below listed postmaintenance test activities of risk significant systems or components. For each item, the inspectors: (1) reviewed the applicable licensing basis and/or design-basis documents to determine the safety functions; (2) evaluated the safety functions that may have been affected by the maintenance activity; and (3) reviewed the test procedure to ensure it adequately tested the safety function that may have been affected. The inspectors either witnessed or reviewed test data to verify that acceptance criteria were met, plant impacts were

evaluated, test equipment was calibrated, procedures were followed, jumpers were properly controlled, the test data results were complete and accurate, the test equipment was removed, the system was properly realigned, and deficiencies during testing were documented. The inspectors also reviewed the UFSAR to determine if the licensee identified and corrected problems related to postmaintenance testing.

- April 10, 2007, Unit 2, replacement of 12 cells on Unit 2 Class 1E Train A battery due to cracked terminal posts per Work Order (WO) 437981 and Procedures 0PSP06-DJ-0003, "125 Volt Class 1E Battery Surveillance Test," Revision 13; 0PSP06-DJ-0002, "125 Volt Class 1E Battery Quarterly Surveillance Test," Revision 19; and 0PSP06-DJ-0007, "125 Volt Class 1E Battery Combined Service and Performance Surveillance Test," Revision 3
- April 11, 2007, Unit 1, personnel airlock equalizing valve repair per WO 461742; Procedures 0PSP11-XC-0002, "LLRT —90 Personnel Airlock Barrel Test," Revision 10 and 0PSP11-XC-0015, "Personnel/Auxiliary Airlock Operability Testing," Revision 4; and CR 07-5870
- April 24, 2007, Unit 2, ESF Transformer E2A and 4.16 kV/480 V load center Transformers E2A1 and E2A2 tap setting changes per WOs 391632 and 391633, and work authorization numbers (WAN) 321243 and 321242 (CR 04-11502)
- May 1, 2007, Unit 1, postmaintenance testing/calibration of Nuclear Instrument 46, following replacement per Procedure 0PSP05-NI-0046A, "Extended Range NI Full Power Alignment and Calibration (NI-0046)," Revisions 11 and 12
- May 2, 2007, Unit 1, CRE positive pressure test following damper adjustment and door seal repairs per Procedures 0PSP11-HE-0002, "Control Room Emergency Air Cleanup System Function Test," Revision 29 (including review of previous test results on September 9, 2005), 0PEP05-ZH-0013, "HVAC Test and Balance Procedure," Revision 5, and CRs 07-3133, and -7485
- June 28, 2007, Unit 1, postmaintenance testing of AFW Pump 14 after maintenance per WAN 324199, and preventative maintenance MM-1-93000907, and Procedure 0PSP03-AF-0007, "Auxiliary Feedwater Pump 14(24) Inservice Test," Revision 32

The inspectors completed six samples.

b. Findings

No findings of significance were identified.

## 1R20 Refueling and Other Outage Activities (71111.20)

### a. Inspection Scope

The inspectors reviewed the following risk significant refueling items or outage activities on Unit 2 during Refueling Outage 2RE12, which commenced March 25, 2007, to verify defense in depth commensurate with the outage risk control plan, compliance with the TSs, and adherence to commitments in response to Generic Letter 88-17, "Loss of Decay Heat Removal": (1) the risk control plan, (2) tagging/clearance activities, (3) reactor coolant system instrumentation, (4) electrical power, (5) decay heat removal, (6) spent fuel pool cooling, (7) inventory control, (8) reactivity control, (9) containment closure, (10) reduced inventory or midloop conditions, (11) refueling activities, (12) heatup and cooldown activities, (13) restart activities; and (14) licensee identification and implementation of appropriate corrective actions associated with refueling and outage activities. The inspectors' containment inspections included observation of the containment sump for damage and debris, supports, braces, and snubbers for evidence of excessive stress, water hammer, or aging. Additionally, the inspectors reviewed the licensee's activities associated with the following evolutions: (1) pressurizer weld overlay project, (2) volumetric and bare metal reactor vessel head inspection, (3) emergency sump screen replacement, (4) temporary reactor vessel head cover, (5) integrated leak rate testing of the reactor containment building, and (6) control rod drive mechanism Number 35 lower canopy seal weld mechanical clamp repair.

Documents reviewed by the inspectors included:

- 2RE12 Shutdown Risk Assessment Group Report
- CRs 07-2903, -4401, -5308, -5862, and -6548
- Procedure 0PGP03-ZA-0014, "Foreign Material Exclusion Program," Revision 8
- Procedure 0PGP03-ZA-0098, "Station Housekeeping," Revision 12

The inspectors completed one sample.

### b. Findings

Introduction. The inspectors reviewed a self-revealing Green NCV of TS 6.8.1.a for the failure to follow Procedure 0POP03-ZG-0006, "Plant Shutdown from 100% to Hot Standby," Revision 28.

Description. On March 24, 2007, operations personnel were performing a plant shutdown to commence Refueling Outage 2RE12 in accordance with Procedure 0POP03-ZG-0006 which directs operations personnel to reduce turbine load at the desired ramp rate by adjusting the load rate thumbwheel. The operating crew briefed the shutdown as part of normal processes, but also emphasized key steps due to operations trainees performing parts of the evolution. The crew appropriately briefed the step of adjusting the turbine ramp load rate thumbwheel, to include moving the setting from 0.25 percent/min to 0.5 percent/min by moving the thumbwheel in the down direction. When it came time for the evolution to occur, the trainee informed the reactor operator that he was about to manipulate the thumbwheel from 0.25 percent/min to 0.5 percent/min by moving the thumbwheel in the down direction by one increment. The

reactor operator agreed and the trainee manipulated the thumbwheel. However, instead of moving the thumbwheel in the down direction, the trainee moved the thumbwheel in the up direction by one increment causing the turbine load rate to change from 0.25 percent/min to 200 percent/min. The trainee immediately recognized the incorrect action and placed the turbine load control in 'hold', while informing the reactor operator, who restored the thumbwheel to the 0.25 percent/min position. The resulting transient on the plant caused reactor power to lower by about 6 percent RTP and average coolant temperature to rise by about 2.3 °F.

During a review of the transient, the licensee determined that the thumbwheel was not in accordance with the plant design. Design drawings provided that the thumbwheel have a mechanical stop between the 0.25 percent/min and the 200 percent/min settings preventing the thumbwheel from repositioning from the minimum setting to the maximum setting in a one increment change. This stop was confirmed in the simulator and on the Unit 1 turbine thumbwheel. The licensee replaced the thumbwheel during the current refueling outage, added operator aids on the panel to indicate the raise and lower directions and the change in each increment, and removed the 200 percent/min position. Removing the 200 percent/min position design change is planned for the upcoming Unit 1 refueling outage.

Analysis. The performance deficiency associated with this event was the failure to follow Procedure 0POP03-ZG-0006, "Plant Shutdown From 100% to Hot Standby," Revision 28, specifically the failure to properly adjust the main turbine load rate thumbwheel. This finding was more than minor because it was associated with the Initiating Events Cornerstone attribute of human performance, and it affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. This event had the actual impact of causing an unexpected power reduction and corresponding average coolant temperature increase. The inspectors evaluated the finding using Inspection Manual Chapter 0609, "Significance Determination Process," Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," Phase 1 screening, and determined that it was of very low safety significance (Green) because, although the likelihood of a reactor trip increased, the likelihood that mitigating systems would not be available did not increase. This issue also had human performance crosscutting aspects, in the area of decision-making, because the licensee had not conducted effectiveness reviews of safety-significant decisions to verify the validity of the underlying assumptions, identify possible unintended consequences, and determine how to improve future decisions (H.1(b)). The licensee had previously evaluated most turbine control manipulations as 'skill of the craft' and had not identified the potential challenge to reactivity management. This was reflected in the manner in which the turbine was operated, always in the 'go' setting, and that the 200 percent/min position had not been previously eliminated as it served no operational function. This directly contributed to the resultant plant transient.

Enforcement. Technical Specification Section 6.8.1.a requires that written procedures be established, implemented, and maintained covering the activities specified in Appendix A, "Typical Procedures for Pressurized Water Reactors and Boiling Water Reactors," of Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)," dated February 1978. Regulatory Guide 1.33, Appendix A, Section 2, list

general plant operating procedures, of which, plant shutdown to hot standby is listed. Procedure 0POP03-ZG-0006, "Plant Shutdown from 100% to Hot Standby," states in part "...Commence turbine load reduction at the desired ramp rate." This was discussed, and briefed, to be adjusting the turbine load rate thumbwheel from 0.25 percent/min to 0.5 percent/min. Contrary to this, on March 24, 2007, operations personnel inadvertently adjusted the turbine load rate thumbwheel from 0.25 percent/min to 200 percent/min. Since this violation is of very low safety significance (Green) and it has been entered into the licensee's CAP as CR 07-4371, this violation is being treated as a NCV consistent with Section VI.A of the Enforcement Policy: NCV 05000499/2007003-01, "Improper Turbine Load Rate Manipulation Results in Unexpected Power Reduction."

## 1R22 Surveillance Testing (71111.22)

### a. Inspection Scope

The inspectors reviewed the UFSAR, procedure requirements, and TSs to ensure that the five below listed surveillance activities demonstrated that the SSC's tested were capable of performing their intended safety functions. The inspectors either witnessed or reviewed test data to verify that the following significant surveillance test attributes were adequate: (1) preconditioning; (2) evaluation of testing impact on the plant; (3) acceptance criteria; (4) test equipment; (5) procedures; (6) jumper/lifted lead controls; (7) test data; (8) testing frequency and method demonstrated TS operability; (9) test equipment removal; (10) restoration of plant systems; (11) fulfillment of ASME Code requirements; (12) updating of performance indicator (PI) data; (13) engineering evaluations, root causes, and bases for returning tested SSCs not meeting the test acceptance criteria were correct; (14) reference setting data; and (15) annunciators and alarms setpoints. The inspectors also verified that the licensee identified and implemented any needed corrective actions associated with the surveillance testing.

- April 11, 2007, Unit 2, integrated leak rate test of the reactor containment building per Procedure 0PSP11-IL-0007, "Reactor Containment Building Integrated Leakage Rate Test," Revision 6 and CRs 07-3884, -4470, -4505, and -5164 (containment isolation valve)
- April 17, 2007, Unit 1, solid state protection system Train S per Procedure 0PSP03-SP-0005S, "SSPS Logic Train S Function Test," Revision 23
- April 18, 2007, Unit 2, Standby Diesel Generator 22 loss of offsite power, and loss of offsite power and ESF actuation tests per Procedures 0PSP03-DG-0008, "Standby Diesel 12(22) LOOP Test," Revision 17, and 0PSP03-DG-0014, "Standby Diesel 12(22) LOOP - ESF Actuation Test," Revision 18 and CR 07-6507
- May 8, 2007, Unit 2, reactor coolant leakage detection following reactor startup from Refueling Outage 2RE12 per Procedure 0PSP03-RC-0006, "Reactor Coolant Inventory," Revision 17

- May 9, 2007, Unit 1, inservice testing of low head safety injection Pump 1A per Procedure 0PSP03-SI-0001, "Low Head Safety Injection Pump 1A(2A) Inservice Test," Revision 13

The inspectors completed five samples.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed the UFSAR, plant drawings, procedure requirements, and TSs to ensure that the one below listed temporary modification was properly implemented. The inspectors: (1) verified that the modification did not have an affect on system operability/availability, (2) verified that the installation was consistent with the modification documents, (3) ensured that the post-installation test results were satisfactory and that the impact of the temporary modification on permanently installed SSC's were supported by the test, (4) verified that the modifications were identified on control room drawings and that appropriate identification tags were placed on the affected drawings, and (5) verified that appropriate safety evaluations were completed. The inspectors verified that licensee identified and implemented any needed corrective actions associated with temporary modifications.

- April 24, 2007, Unit 2, ESF Transformer E2A and 4.16 kV/480 V Load Center Transformers E2A1 and E2A2 tap setting changes

Documents reviewed by the inspectors included:

- DCP 04-11502-8, "ESF Transformer E2A(7E132EAT0E1A) and 4.16 kV/480 V Load Center Transformers E2A1 And E2A2 Tap Setting Changes"
- WOs 391632 and 391633
- WANs 321243 and 321242

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

## 2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

### 2OS1 Access Control To Radiologically Significant Areas (71121.01)

#### a. Inspection Scope

This area was inspected to assess the licensee's performance in implementing physical and administrative controls for airborne radioactivity areas, radiation areas, high radiation areas, and worker adherence to these controls. The inspector used the requirements in 10 CFR Part 20, the TSs, and the licensee's procedures required by TSs as criteria for determining compliance. During the inspection, the inspector interviewed the radiation protection manager, radiation protection supervisors, and radiation workers. The inspector performed independent radiation dose rate measurements and reviewed the following items:

- Performance indicator events and associated documentation packages reported by the licensee in the Occupational Radiation Safety Cornerstone
- Controls (surveys, posting, and barricades) of radiation, high radiation, or airborne radioactivity areas
- Radiation work permits, procedures, engineering controls, and air sampler locations
- Conformity of electronic personal dosimeter alarm set points with survey indications and plant policy; workers' knowledge of required actions when their electronic personnel dosimeter noticeably malfunctions or alarms
- Barrier integrity and performance of engineering controls in airborne radioactivity areas
- Physical and programmatic controls for highly activated or contaminated materials (non-fuel) stored within spent fuel and other storage pools
- Self-assessments, audits, licensee event reports, and special reports related to the access control program since the last inspection
- Corrective action documents related to access controls
- Licensee actions in cases of repetitive deficiencies or significant individual deficiencies
- Radiation work permit briefings and worker instructions
- Adequacy of radiological controls, such as required surveys, radiation protection job coverage, and contamination control during job performance
- Dosimetry placement in high radiation work areas with significant dose rate gradients

- Changes in licensee procedural controls of high dose rate - high radiation areas and very high radiation areas
- Controls for special areas that have the potential to become very high radiation areas during certain plant operations
- Posting and locking of entrances to all accessible high dose rate - high radiation areas and very high radiation areas
- Radiation worker and radiation protection technician performance with respect to radiation protection work requirements

The inspector completed 20 of the required 21 samples.

b. Findings

- .1 Introduction. The inspector identified two examples of a NCV of TS 6.12.1 because the licensee failed to conspicuously post and barricade two separate high radiation areas.

Description. On April 19, 2007, during a tour of the reactor containment building, the inspector observed that the entrance to the steam generator platform and the entrance to the pressurizer cubicle were not conspicuously posted or barricaded. The dose rates in each of these two areas were as high as 140 millirem per hour. The licensee's corrective action was to post and barricade these two areas.

Analysis. The failure to conspicuously post and barricade two high radiation areas was a performance deficiency. This 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 to ensure the adequate protection of a worker's health and safety from exposure to radiation because it could have resulted in workers being exposed to higher radiation levels. When processed through the Occupational Radiation Safety Significance Determination Process, the finding was determined to be of very low safety significance (Green) because it was not an as low as is reasonably achievable (ALARA) finding, there was no overexposure or substantial potential for an overexposure, and the ability to assess dose was not compromised. In addition, this finding had a human performance crosscutting aspect, associated with work practices, because the licensee failed to define and effectively communicate expectations about procedural compliance (H.4(b)). The licensee's common cause report, CR 07-7030, concluded that the station had not taken the appropriate steps to ensure that workers' respect for radiation protection procedural compliance, boundary rigor, and reasons for radiation control were effectively communicated.

Enforcement. Technical Specification 6.12.1, states in part that, pursuant to 10 CFR 20.1601c, in lieu of the requirements of 10 CFR 20.1601a, each radiation area where the intensity of radiation is greater than 100 millirem per hour but less than 1000 millirem per hour at 30 centimeters from the radiation source shall be barricaded and conspicuously posted as a high radiation area. Contrary to this requirement, on April 19, 2007, the high radiation areas around the steam generators and pressurizer, where the intensity of radiation was greater than 100 millirem per hour but less than 1000 millirem per hour at 30 centimeters, were not conspicuously posted or barricaded. Because the finding was of very low safety significance (Green) and has been entered into the licensee's CAP as CR 07-6574, this violation is being treated as a NCV

consistent with Section VI.A of the NRC Enforcement Policy:  
NCV 05000499/2007003-02, "Two Examples of a Failure to Conspicuously Post and Barricade a High Radiation Area."

- .2 Introduction. The inspector reviewed a self-revealing NCV of TS 6.8.1 for a failure to follow procedural and radiation work permit requirements for entry into high radiation areas.

Description. On April 4, 2007, a worker entered a high radiation area without authorization, did not obtain a health physics briefing, and was not aware of the radiation protection controls established by the radiation work permit instructions. The worker entered the reactor containment building on Radiation Work Permit (RWP) 2007-023 entitled "Maintenance and support work outside the biowall." The RWP specifically prohibited access inside the biowall. However, when the worker was requested to support the snubber testing group, the worker proceeded inside the biowall and entered a posted high radiation area without obtaining a briefing from health physics about the radiological conditions and changing to a RWP that authorized the entry. The dose rates inside the high radiation area were as high as 140 millirem per hour at 30 centimeters from the source. During the entry inside the biowall, the worker's electronic personal dosimeter alarmed on dose rate, however, instead of exiting the area immediately and reporting to Health Physics, the worker continued to work. Approximately one hour later, the worker was prevented from logging out of the radiologically controlled area by the licensee's software, at which time, the health physics department became aware of the problem. The licensee's corrective actions were to counsel the worker and brief associated maintenance and craft personnel about adhering to procedures and radiation work permit requirements.

Analysis. The failure to obtain authorization prior to entering a high radiation area was a performance deficiency. This 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 to ensure the adequate protection of a worker's health and safety from exposure to radiation because the worker was exposed to higher radiation levels. When processed through the Occupational Radiation Safety Significance Determination Process, the finding was determined to be of very low safety significance (Green) because it was not an ALARA finding, there was no overexposure or substantial potential for an overexposure, and the ability to assess dose was not compromised. In addition, this finding had a human performance crosscutting aspect, associated with work practices, because of the failure of the licensee to ensure adequate supervisory and management oversight of work activities, including contractors, such that radiological safety was supported (H.4(c)). The licensee's common cause report, CR 07-7030, concluded that the station did not have enough supervisors or radiation protection technicians in the field, in addition to management not consistently applying learning center requirements.

Enforcement. Technical Specification 6.8.1.a, states in part that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978. Section 7.e of Regulatory Guide 1.33 requires radiation protection procedures for access control, including RWPs. The licensee's Procedure OPGP03-ZR-0051, "Radiological Access Controls," Revision 22, Step 6.7.1, states that personnel entering a high radiation area shall be assigned a RWP that permits entry to a high radiation area, be made knowledgeable of the radiological conditions, and is aware of the RWP

instructions. Contrary to this requirement, on April 4, 2007, a radiation worker entered the high radiation area inside the biowall assigned to a RWP that prohibited entry inside the biowall and was not made knowledgeable of the current radiological conditions or RWP instructions. Because the finding was of very low safety significance (Green) and has been entered into the licensee's CAP as CR 07-5357, this violation is being treated as a NCV consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000499/2007003-03, "Failure to Obtain Authorization to Enter a High Radiation Area."

## 2OS2 ALARA Planning and Controls (71121.02)

### a. Inspection Scope

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

- Interfaces between operations, radiation protection, maintenance, maintenance planning, scheduling, and engineering groups
- Integration of ALARA requirements into work procedure and radiation work permit documents
- First-line job supervisors' contribution to ensuring work activities are conducted in a dose efficient manner
- Self-assessments, audits, and special reports related to the ALARA program since the last inspection

The inspector completed one of the required 15 samples and three of the optional samples.

### b. Findings

No findings of significance were identified.

## 4. OTHER ACTIVITIES

### 4OA1 Performance Indicator Verification (71151)

#### a. Inspection Scope

##### Cornerstone: Initiating Events

The inspectors sampled licensee submittals for the three PIs listed below for the period from April 2006 through March 2007 for Units 1 and 2. The definitions and guidance of Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 4, were used to verify the licensee's basis for reporting each data element in order to verify the accuracy of PI data reported during the assessment period. The inspectors reviewed licensee event reports, monthly operating reports, and

operating logs as part of the assessment. Licensee PI data were also reviewed against the requirements of Procedures OPGP05-ZN-0007, "Preparation and Submittal of NRC Performance Indicators," Revision 3, and OPGP05-ZV-0013, "Performance Indicator Tracking Guide," Revision 3.

- Unplanned scrams per 7,000 critical hours
- Unplanned scrams with loss of normal heat removal
- Unplanned power changes per 7,000 critical hours

The inspectors completed three samples for each unit.

#### Cornerstone: Occupational Radiation Safety

The inspector reviewed licensee documents from October 1, 2006, through March 31, 2007. The review included corrective action documentation that identified occurrences in locked high radiation areas (as defined in the licensee's TSSs), very high radiation areas (as defined in 10 CFR 20.1003), and unplanned personnel exposures (as defined in NEI 99-02, Revision 4). Additional records reviewed included ALARA records and whole body counts of selected individual exposures. The inspector interviewed licensee personnel that were accountable for collecting and evaluating the PI data. In addition, the inspector toured plant areas to verify that high radiation, locked high radiation, and very high radiation areas were properly controlled. Performance indicator definitions and guidance contained in NEI 99-02, Revision 4, were used to verify the basis in reporting for each data element.

- Occupational Exposure Control Effectiveness

The inspector completed the required one sample.

#### Cornerstone: Public Radiation Safety

The inspector reviewed licensee documents from October 1, 2006, through March 31, 2007. Licensee records reviewed included corrective action documentation that identified occurrences for liquid or gaseous effluent releases that exceeded PI thresholds and those reported to the NRC. The inspector interviewed licensee personnel that were accountable for collecting and evaluating the PI data. Performance indicator definitions and guidance contained in NEI 99-02, Revision 4, were used to verify the basis in reporting for each data element.

- Radiological Effluent Technical Specification/Offsite Dose Calculation Manual  
Radiological Effluent Occurrences

The inspector completed the required one sample.

#### b. Findings

No findings of significance were identified.

## 4OA2 Identification and Resolution of Problems (71152)

### .1 Routine Review of Identification and Resolution of Problems

The inspectors performed a daily screening of items entered into the licensee's CAP. This assessment was accomplished by reviewing WOs, CRs, etc... and attending corrective action review and work control meetings. The inspectors: (1) verified that equipment, human performance, and program issues were being identified by the licensee at an appropriate threshold and that the issues were entered into the corrective action program; (2) verified that corrective actions were commensurate with the significance of the issue; and (3) identified conditions that might warrant additional followup through other baseline inspection procedures. The inspectors used the licensee's Procedure OPGP03-ZX-0002, "Condition Reporting Process," Revision 31, for understanding the threshold level for generating a CR.

### .2 Semiannual Trend Review

#### a. Inspection Scope

The inspectors completed a semiannual trend review of repetitive or closely related issues that were documented in trend reports, problem lists, PIs, health reports, QA audits, CR documents, etc... to identify trends that might indicate the existence of more safety significant issues. The inspectors review consisted of the 6-month period of January through June 2007. When warranted, some of the samples expanded beyond those dates to fully assess the issue. The inspectors compared and contrasted their results with the results contained in the licensee's quarterly trend reports. Corrective actions associated with a sample of their issues identified in the licensee's trend report were reviewed for adequacy.

#### b. Findings

No findings of significance were identified. However, the inspectors did make the following observation which was shared with licensee management.

- Over the course of the review period, the inspectors noted a potential adverse trend in relation to equipment clearance orders and mispositioned component events. These events have resulted primarily from improper or inadequate use of human performance error prevention techniques, for example, failing to follow procedure, peer checks, self checks, etc. One of the licensee's root causes into these events has concluded that the importance of the use of human performance tools has not been internalized due to inconsistent expectations, implementation, and enforcement. The licensee has captured these events in their CAP under various CRs and still has corrective actions planned or in place.

### .3 Occupational Radiation Safety Review

#### a. Inspection Scope

The inspector evaluated the effectiveness of the licensee's problem identification and resolution process with respect to the following inspection areas:

- Access Control to Radiologically Significant Areas (Section 20S1)

- ALARA Planning and Controls (Section 2OS2)

b. Findings

No findings of significance were identified.

4OA3 Follow-up of Events and Notices of Enforcement Discretion (71153)

a. Inspection Scope

The inspectors: (1) reviewed operator logs, plant computer data, and/or strip charts for the below listed evolutions to evaluate operator performance in coping with nonroutine events and transients; (2) verified that operator actions were in accordance with the response required by plant procedures and training; and (3) verified that the licensee has identified and implemented appropriate corrective actions associated with personnel performance problems that occurred during the nonroutine evolutions sampled.

.1 (Closed) Licensee Event Report (LER) 05000498/2006-004-00, "Multiple Main Steam Safety Valves Found Outside Acceptance Criteria"

On September 25, 2006, testing of Unit 1 main steam safety valves just prior to Refueling Outage 1RE13 revealed that two of the six valves being tested failed the "as found" acceptance test. The valves were greater than 3 percent above the setpoint on initial lift. Per scope expansion guidance, four more valves were tested and passed. Further evaluation of the failed valves indicated that they had been overhauled during the previous outage. To determine a generic cause, two more valves that were overhauled in the last outage were tested. One lifted greater than 3 percent high and the other was within 1.5 psi of exceeding the limit. Four valves in Unit 2 that had been overhauled during its previous outage were then tested. Three of these lifted higher than setpoint, though within the 3 percent limit. One exceeded the specification. All valves were readjusted to within 1 percent of the required setpoint. Analysis determined that the higher pressure lifts were caused by bonding of oxide layers that can rapidly build up on the seat and disc surface after overhaul. Once the bond is broken, lifts are at lower pressures. The failed valves had not been lifted or experienced a cooldown cycle to break the bonds since overhaul. The main steam lines and steam generators are protected by five safety valves each, set at staggered setpoints, and a power operated relief valve. Risk analysis determined there was no adverse impact to core damage frequency or to the large early release frequency. The licensee documented the event in CR 06-11475 and corrective actions were appropriate. This LER is closed.

.2 (Closed) LER 05000499/2007-001-00, "Auxiliary Feedwater Pump Inoperable Longer Than Allowed Under Technical Specifications"

During the postmaintenance test on Unit 2 AFW Pump 23 on March 5, 2007, pump discharge flow was not as expected. Subsequent investigation revealed that long path recirculation isolation Valve 2-AF-0092 was leaking past its closed seat. Upon valve disassembly, it was discovered that the valve stem locking nut was broken into two pieces. The valve was repaired, lubricated, and returned to service on March 9, 2007. The cause of the stem nut failing was determined to be no periodic maintenance to ensure that the stem was properly lubricated. Corrective actions included inspecting

and verifying the operability of the other trains and units similar valves, and revising the preventative maintenance and surveillance procedures. The enforcement aspects of this finding are discussed in Section 4OA7. This LER is closed.

The inspectors completed two samples.

b. Findings

No findings of significance were identified.

4OA5 Other Activities

.1 Implementation of Temporary Instruction (TI) 2515/166 - Pressurized Water Reactor Containment Sump Blockage Unit 2 (Open)

a. Inspection Scope

Results for the preliminary inspection for South Texas Project, Unit 1, were documented in Inspection Report 05000498/2006005.

On April 11, 2007, the inspectors reviewed the licensee's implementation of Unit 2 plant modifications and procedure changes committed to in the licensee's response to Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized Water Reactors." In addition, the inspectors verified that the changes were reviewed and documented in accordance with 10 CFR 50.59 processes.

As directed by TI 2515/166, the inspectors observed the physical installation of the sump strainers as committed in the licensee's response to Generic Letter 2004-02. The inspectors did not identify any regulatory concerns with physical modifications; however, the inspectors did identify that certain assumptions for the strainer design had not been validated. Specifically, the licensee did not verify that the quantity of tags, latent debris, and volume retention areas were bounded by the design assumptions. The licensee entered this concern into the CAP as CR 02-5326. Since there is a concern with the adequacy of the design, the inspectors forwarded the concern to the Office of Nuclear Reactor Regulation for review.

The licensee did not commit to any changes to existing programs for latent debris, labeling, and unqualified coatings; however, the inspectors reviewed the existing program control documents. No regulatory concerns were identified. Although no regulatory concerns were identified, the inspectors did identify a weakness with the program control documents. The existing controls lacked guidance on controlling the introduction of potential debris (i.e. latent, tags, labels, and coatings) during future operations. The licensee entered this concern into the CAP as CR 02-5326.

The inspectors identified a weakness in Procedure 0PSP04-XC-0001, "Inspection of Containment Emergency Sumps, Units 1 and 2," Revision 17. Surveillance Requirement 4.5.2.D requires verification that the system suction inlets are not restricted by debris and that the components show no evidence of structural distress or abnormal corrosion. By reading the procedure and observing the strainer installation, it was not evident to the inspectors how and when licensee personnel would be directed to inspect the internal sections of the furthest strainer modules. The weakness in the procedure

led to inspectors questioning the adequacy of the surveillance inspection following installation of the new strainers in Unit 1. After meeting with the technician who completed the surveillance in Unit 1, the inspectors were notified that the internal sections of the strainer modules were visually inspected. Since the internal sections were inspected, the inspectors did not identify any performance deficiency. However, as the procedure was written, the weakness could have lead to a missed surveillance. The licensee entered this concern into the CAP as CR 07-5920. Subsequently, the procedure was revised to add a step for visual internal inspection of the strainer modules.

The licensee stated that additional updates to their Generic Letter 2004-02 commitments may occur at a later date. This is because of ongoing industry testing of chemical and downstream effects. Final review and acceptance of chemical and downstream effects will be completed by the Office of Nuclear Reactor Regulation.

b. Findings

No findings of significance were identified.

.2 Implementation of TI 2515/150 - Reactor Pressure Vessel Head and Vessel Head Penetration Nozzles (NRC Order EA-03-009)

a. Inspection Scope

The inspectors performed applicable sections of TI 2515/150 on Unit 2 to determine whether the inspections by the licensee were consistent with the licensee's response to NRC Order EA-03-009, "Reactor Pressure Vessel Head and Vessel Head Penetration Nozzles," and any subsequent related correspondence between the licensee and the NRC staff. The licensee's ultimate corrective action repair plan is the replacement of the reactor pressure vessel (RPV) head on Unit 2 during Refueling Outage 2RE14 in 2010.

The procedure requires that, if the licensee is performing nonvisual non-destructive examination of the RPV head, the inspectors should review 10 percent of the vessel head nozzle volumetric examinations. The inspector reviewed volumetric examinations of 6 control element drive mechanisms plus 5 additional nozzles out of a total of 76 nozzles. The inspector also verified that examination methods used were capable of identifying stress corrosion cracking. The licensee performed a combination of ultrasonic examination of the vessel head penetration nozzle base material and an assessment to determine if leakage has occurred into the interference fit zone. The inspector observed the ultrasonic examinations of the 11 penetrations and briefly answered the following:

- (1) For each of the examination methods used during the outage, was the examination:
  - (a) Performed by qualified and knowledgeable personnel? (Briefly describe the personnel training/qualification process used by the licensee for this activity.)

Yes, the licensee verified that all individuals involved were knowledgeable, qualified, and that their certifications were up-to-date.

The licensee contracted the data collection and analysis activities to Areva. The individuals that examined the data were at a minimum Ultrasonic Level II qualified. The licensee observed Areva performing an EPRI demonstration that was successful. The inspector reviewed the certification records for personnel performing the automated examinations and data analysis.

- (b) Performed in accordance with demonstrated procedures?

Yes, Areva procedures were used which have been used at other facilities. The inspector verified that qualified personnel performed the examinations in accordance with approved procedures. Examinations and procedures reviewed are listed in the Attachment.

- (c) Able to identify, disposition, and resolve deficiencies?

Yes, Areva identified, dispositioned, and resolved the following deficiencies: (1) two penetrations with recordable indications due to weld geometry anomalies, which were dispositioned as acceptable; and (2) two penetrations that required an alternate method - eddy current examination of the J-groove weld surface - due to component configuration.

- (d) Capable of identifying the primary water stress corrosion cracking and/or RPV head corrosion phenomena described in the Order?

Yes, the licensee, in conjunction with Areva, is capable of identifying head corrosion as described in the Order. The procedural controls in place and the requirements of the inspecting personnel were adequate to ensure that the licensee was capable of identifying small leaks.

- (2) What was the physical condition of the reactor vessel head (e.g., debris, insulation, dirt, boron from other sources, physical layout, viewing obstructions)?

The licensee performed a visual inspection of the top of the head during this outage. Based on the visual inspection and the volumetric examination data, the head is in good condition. This was the licensee's first volumetric examination of the reactor vessel head penetrations.

- (3) Could small boron deposits, as described in the Bulletin 01-01, be identified and characterized?

Yes, the licensee has a program in place through visual examination and has reviewed Areva's program and procedures to ensure that they are capable of detecting and characterizing small boron deposits.

- (4) What material deficiencies (i.e., cracks, corrosion, etc.) were identified that required repair?

Two indications were determined to be a weld geometry anomalies that did not connect to the wetted surface. There were no repairs on the reactor vessel head.

- (5) What, if any, impediments to effective examinations, for each of the applied methods, were identified (e.g., centering rings, insulation, thermal sleeves, instrumentation, nozzle distortion)?

The licensee did not encounter any impediments to effective examinations. The licensee was able to achieve 360° coverage, at least one inch below, and at least 2 inches above the weld for all but two penetrations. On Control Rod Drive Mechanisms 82 and 83, the licensee was not able to meet the requirement to examine 1 inch below the weld and as such used the alternate method of eddy current examination of the J-groove weld surface.

- (6) What was the basis for the temperatures used in the susceptibility ranking calculation, were they plant-specific measurements, generic calculations (e.g., thermal hydraulic modeling, instrument uncertainties, etc.)?

The temperature used in the calculation was the average temperature from the unheated junction thermocouples in the reactor vessel level system. This plant-specific data was averaged over the operating cycle and then an 8°F instrument uncertainty was added to achieve the average temperature for that cycle.

- (7) During non visual examinations, was the disposition of indications consistent with the guidance provided in Appendix B of this temporary instruction? If not, was a more restrictive flaw evaluation guidance used?

Yes, the licensee ensured that the disposition of indications would be in accordance with Appendix B of this temporary instruction. However, no indications were found that invoked this requirement.

- (8) Did procedures exist to identify potential boric acid leaks from pressure-retaining components above the reactor pressure vessel head?

Yes, licensee Procedure OPGP03-ZE-0033, "RCS Pressure Boundary Inspection for Boric Acid Leaks," Revision 9, provides guidance on how, when, where, and why boric acid walkdowns are performed to identify leakage.

- (9) Did the licensee perform appropriate follow-on examinations for the indications of boric acid leaks from pressure-retaining components above the reactor pressure vessel head?

After observation of a leaking Control Rod Drive Mechanism canopy seal weld, the licensee performed a bare metal visual inspection of the reactor vessel head and concluded that boric acid did not penetrate the insulation nor contact the base metal in the head.

Additionally, the licensee performed a bare metal visual examination of the reactor vessel head. The inspectors performed a 100 percent review of the inspection and observed no unusual indications. The requirement to inspect volumetric examinations in accordance with TI 2515/150 at STP Unit 2 has been completed.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

On April 13, 2007, the inspectors presented the results of the inservice inspection effort to Mr. Ed Halpin, Site Vice President, and other members of licensee management. Licensee management acknowledged the results. During the inspection, the inspectors asked whether any materials examined should be considered proprietary. No proprietary information was identified.

On April 20, 2007, the inspector presented the occupational radiation safety inspection results to Mr. Ed Halpin, Site Vice President, and other members of the staff, who acknowledged the findings. The inspector confirmed that proprietary information was not provided or examined during the inspection.

On July 12, 2007, the inspectors presented the inspection results of the integrated inspection report to Mr. James J. Sheppard, President and Chief Executive Officer, and other members of the licensee's management staff at the conclusion of the inspection. The licensee acknowledged the findings presented. The inspectors noted that while proprietary information was reviewed, none would be included in this report.

4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, for being dispositioned as a NCV.

- Technical Specification 3.7.1.2.a requires that with one motor-driven AFW pump inoperable that the pump be restored to operable status within 28 days. Contrary to this, on March 14, 2007, the determination was made that due to leakage past long path recirculation isolation Valve 2-AF-0092, AFW Pump 23 was inoperable for a period of time greater than 28 days. CR 07-3436 attributes the cause of the leakage past the seat to lack of a periodic preventative maintenance to lubricate the stem. This resulted in the stem galling the threads and in the stem locking nut breaking into two pieces. As part of the corrective actions, the licensee tested all the other trains isolation valves and is reviewing the preventative maintenance program on these types of valves. The Significance Determination Process Phase 1 Worksheet resulted in a Phase 2 determination because one train of safety related equipment had been inoperable for greater than its TS allowed outage time. The Phase 2 worksheet determined that this finding was of very low safety significance.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee Personnel

R. Aguilera, Radiological Manager, Radiological Engineering  
T. Bowman, General Manager Oversight  
W. Bullard, Manager, Health Physics  
K. Coates, Plant General Manager  
D. Cobb, STP Employee Concerns Program (EAP) Manager  
J. Cook, Process Improvement Leadership Team  
K. Danielski, ALARA Planner, Health Physics  
R. Engen, Manager, Maintenance Engineering  
T. Frawley, Manager, Performance Improvement  
R. Gangluff, Manager, Chemistry, Environmental and Health Physics  
E. Halpin, Site Vice President  
W. Harrison, Senior Engineer, Quality and Licensing  
S. Head, Manager, Licensing  
K. House, Manager, Design Engineering  
W. Jump, Manager, Work Management  
J. Mertink, Manager, Operations  
W. Mookhoek, Senior Engineer, Licensing  
H. Murray, Manager, Maintenance  
M. Murray, Manager, Systems Engineering  
R. Niemann, Site ANII  
G. Powell, Manager, Site Engineering  
D. Rencurrel, Vice President, Engineering  
M. Ruvalcaba, Supervisor, Systems Engineering  
R. Savage, Staff Specialist, Licensing  
W. Schulz, Design Engineering  
J. Sepulveda, Unit 2 Supervisor, Health Physics  
J. Sheppard, President and CEO  
K. Silverthorne, Welding Engineer  
L. Spiess, NDE Level III  
J. Stauber, Testing/Program  
C. Stone, Unit 1 Supervisor, Health Physics  
K. Taplett, Senior Engineer, Licensing  
S. Thomas, Process Improvement Leadership Team  
T. Walker, Manager, Quality  
C. Younger, Test Engineering Supervisor

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened and Closed

05000499/2007003-01	NCV	Improper Turbine Load Rate Manipulation Results in Unexpected Power Reduction (H.1(b)) (Section 1R20)
05000499/2007003-02	NCV	Two Examples of a Failure to Conspicuously Post and Barricade a High Radiation Area (H.4(b)) (Section 2OS1)
05000499/2007003-03	NCV	Failure to Obtain Authorization to Enter a High Radiation Area (H.4(c)) (Section 2OS1)

### Closed

05000498/2006-004-00	LER	Multiple Main Steam Safety Valves Found Outside Acceptance Criteria (Section 4OA3)
05000499/2007-001-00	LER	Auxiliary Feedwater Pump Inoperable Longer Than Allowed Under Technical Specifications (Section 4OA3)

### Discussed

None

## LIST OF DOCUMENTS REVIEWED

In addition to the documents referred to in the inspection report, the following documents were selected and reviewed by the inspectors to accomplish the objectives and scope of the inspection and to support any findings:

### **Section 1R08: Inservice Inspection Activities**

#### CRs

02-16320	06-12985	07-5215	07-5468
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#### Drawings

10017D47, "South Texas Unit 2 Pressurizer Safety & Relief Nozzle Configuration PRZ-2-N3-SE," Revision 0

1598E81, "Closure Head (THX) General Assembly," Revision D

A-RC-8, "South Texas Project Electric Generating Station Unit 2," Revision 2

#### Miscellaneous Documents

Letter from R. A. Gramm (NRC) to W. T. Cottle (STPNOC), "South Texas Project, Units 1 and 2 - Request for Relief, RR-ENG-2-27, From American Society of Mechanical Engineers Code Requirements for Repair/Replacement Activity of Control Rod Drive Mechanism Canopy Seal Welds (TAC NOS: MB6576 and MB6577)," November 5, 2002

Letter from R. A. Gramm (NRC) to W. T. Cottle (STPNOC), "South Texas Project, Units 1 and 2 - Request for Relief, RR-ENG-2-27, Revision 3, From American Society of Mechanical Engineers Code Requirements for Repair/Replacement Activity of Reactor Pressure Vessel Head Penetration Canopy Seal Welds (TAC NOS: MB8398 and MB8399)," April 23, 2003

Letter from D. W. Rencurrel (STPNOC) to U.S.N.R.C., "South Texas Project Units 1 and 2 Docket No. STN 50-498, STN 50-499, Inspection and Mitigation of Alloy 82/182 Pressurizer Butt Welds - Revised," February 22, 2007

WPS 8-F43 MC-GTAW, "Welding Procedure Specification," Revision 3

PQR 690 R/1, "Procedure Qualification Record," September 22, 2001

PQR 481 R/1, "Procedure Qualification Record," February 14, 1995

ASME Code Case -504-2, Alternative Rules for Repair of Classes 1, 2, and 3 Austenitic Stainless Steel Piping Section XI, Division 1, March 12, 1997

Letter from J. E. Dyer (NRC) to J. J. Sheppard (STPNOC), "Confirmatory Action Letter - South Texas Project, Units 1 and 2 (TAC Nos. MD4186 and MD4187)," March 27, 2007

WPS 03-08-T-801-103897, "Welding Procedure Specification," Revision 2

WPS 03-08-T-802-103897, "Welding Procedure Specification," Revision 2

MT-2007-052, "MT Examination of Pipe Lugs 15PL1 - 15PL8, 8-AF-2008-GA2," April 20, 2007

UT-2007-008, "UT Examination of 4-RC-2123-BB1 / Elbow to Pipe / weld 3," April 6, 2007

UT-2007-005, "UT Examination of 4-RC-2320-BB1 / Pipe to Elbow / weld 4," April 6, 2007

UT-2007-009, "UT Examination of 4-RC-2320-BB1 / Elbow to Pipe / weld 5," April 6, 2007

UT-2007-014, "UT Examination of 12-RC-2312-NSS / Pipe to Elbow / weld 4," April 4, 2007

#### Procedures

0PEP10-ZA-0024, "ASME XI Examination for VT-1 and VT-3," Revision 1

UTI-PDI-UT-2, "PDI Generic Procedure for the Ultrasonic Examination of Austenitic Pipe Welds," Revision 2

0PEP10-ZA-0004, "General Ultrasonic Examination," Revision 3

0PGP03-ZO-0046, "RCS Leakage Monitoring," Revision 3

0PGP03-ZE-0033, "RCS Pressure Boundary Inspection for Boric Acid Leaks," Revision 9

0PEP10-ZA-0025, "ASME Section XI Visual Examination for IWE Containment Inspections," Revision 0

## **Section 1R12: Maintenance Effectiveness**

### **CRs**

06-1039	06-10715	06-12876	06-16250
06-3248	06-11142	06-13417	07-582
06-4091	06-11247	06-15884	07-592
06-5151	06-11972	06-16036	07-2532

### **System Health Reports**

Qualified Display Process System, First Quarter 2005 through First Quarter 2007  
Residual Heat Removal System, First Quarter 2005 through First Quarter 2007

## **Section 2OS1: Access to Radiologically Significant Areas**

### **Audits and Self-Assessments - Quality Monitoring Reports**

MN06020175	MN06120086	MN07021746	MN07022244
MN06020211	MN06120327	MN07021866	MN07022595
MN06020352	MN07020142	MN07021983	MN07122634
MN06120066	MN07021537	MN07022022	

### **CRs**

07-5357	07-6513	07-6590	07-6959
07-6508	07-6574		

### **Procedures**

Radiation Protection Conduct of Operations, Chapter 2, Communications and Remote Monitoring, Revision 9

0PGP03-ZR-0048, "Personnel Dosimetry Program," Revision 14

0PGP03-ZR-0050, "Radiation Protection Program," Revision 9

0PGP03-ZR-0051, "Radiological Access Controls," Revision 22

0PRP01-ZR-0005, "Access Control Point Management," Revision 13

0PRP04-ZR-0011, "Radiation Protection Key Control," Revision 19

0PRP04-ZR-0015, "Radiological Posting and Warning Devices," Revision 22

0PRP04-ZR-0016, "Radiological Air Sample Analysis," Revision 17

0PRP07-ZR-0009, "Performance of High Exposure Work," Revision 27

## RWPs

2007-0-0023, 2RE12-Maintenance and Support Work Outside Biowall

2007-2-0060, 2RE12-Replacement of Emergency Sumps

2007-2-0061, 2RE12-Reactor Head Disassembly/Reassembly - Inspect/Clean Upper/Lower O-Ring Grooves and Seating Surfaces

2007-2-0080, 2RE12-Work in the Pressurizer for Weld Overlay

2007-2-0098, 2RE12-Install Freeze Seals on Guide Tubes to Support Replacement of Thimbles and Incore Fittings

## **Section 20S2: ALARA Planning and Controls**

### CRs

07-1700	07-2016	07-2077	07-6551
07-2002			

### Procedures

Radiation Protection Conduct of Operations, Chapter 18, ALARA Planning, Revision 0

0PGP03-ZR-0052, "ALARA Program," Revision 10

0PRP07-ZR-0010, "Radiation Work Permits/Radiological Work ALARA Reviews," Revision 20

## **Section 40A1: Performance Indicator Verification**

### Procedures

AD-0008, "Collection of NRC Performance Indicator Data - Public Radiation Safety Cornerstone," Revision 1

## **Section 40A2: Identification and Resolution of Problem**

### CRs

07-754	07-2369	07-5341	07-5758
07-1632	07-2520	07-5744	07-6559
07-2216	07-3320		

## **Section 40A5: Other Activities**

TI 2515/150, Reactor Pressure Vessel Head and Vessel Head Penetration Nozzles

### Procedures

0PSP11-RC-0016, "Susceptibility Category Assessment for Reactor Pressure Vessel Head Inspections," Revision 0

51-9044833-000, "RPV Head Penetration Inspection Plan and Coverage Assessment for South Texas Project Nuclear Station - Unit 2," Revision 1

54-ISI-603-003, "Automated Ultrasonic Examination of RPV Closure Head Penetrations Containing Thermal Sleeves," Revision 3

54-ISI-604-002, "Automated Ultrasonic Examination of RPV Closure Head Penetrations," Revision 2

54-ISI-605-003, "Automated Ultrasonic Examination of RPV Closure Head Small Bore Penetrations," Revision 3

#### TI 2515/166, Pressurized Water Reactor Containment Sump Blockage

##### Drawings

SFS-STP-GA-10, "South Texas Project Units 1&2 Sure-Flow Strainer Track Arrangements – Sump C," Revision 5

SFS-STP-PA-7104, "South Texas Project Units 1&2 Sure Flow Strainer Component Details," Revision 7

##### Calculations

WES010-CALC-001, "South Texas Project Post-LOCA Containment Water Level Calculation," Revision 0

PCI-5473-S01, "Structural Evaluation of Strainers for Containment Emergency Sumps," Revision 0

CN-SEE-05-76, "South Texas Project Sump Debris Downstream Effects Evaluation for ECCS Equipment," Revision 2

0415-0200009WN, "GSI-191 Containment Recirculation Sump Evaluation: Debris Transport," Revision A

0415-0200007WN, "GSI-191 Containment Recirculation Sump Evaluation: Debris Generation," Revision A

0415-0200013WN, "GSI-191 Containment Sump Evaluation: Debris Accumulation and Head Loss," Revision A

0415-0200015WN, "Evaluation of Containment Recirculation Sump: Upstream Effects for STPEGS," Revision A

0415-0200054WN, "Total Head Loss," Revision A

##### Procedures

0PSP04-XC-0001, "Inspection of Containment Emergency Sumps, Units 1&2," Revision 17  
0PGP03-ZO-0020, "Equipment Labeling," Revision 12

### Design Change Packages

02-5326-23, Supp #0, "Install Emergency Sump Strainers," Dated 09/21/2006  
02-5326-23, Supp #1, "Install Emergency Sump Strainers," Dated 02/15/2007  
02-5326-23, Supp #2, "Install Emergency Sump Strainers," Dated 02/22/2007  
02-5326-18, Supp #0, "Install Emergency Sump Strainers," Dated 03/30/2006

### Miscellaneous Documents

0415-0200057WN, "Sump Strainer Performance Test Report," Revision A

NOC-AE-05001922, "Supplement 1 to the Response to Generic Letter 2004-02,"  
Dated 08/31/2005

### CRs

02-5326	07-5797	07-5920
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### **LIST OF ACRONYMS**

AFW	auxiliary feedwater
ALARA	as low as is reasonably achievable
ASME	American Society of Mechanical Engineers
CAP	corrective action program
CFR	Code of Federal Regulations
CR	condition report
CRE	control room envelope
ECW	essential cooling water
ESF	engineered safeguards feature
HVAC	heating, ventilation, and air conditioning
LER	Licensee Event Report
NCV	noncited violation
NDE	nondestructive examination
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
PI	performance indicator
RHR	residual heat removal
RPV	reactor pressure vessel
RTP	rated thermal power
RWP	radiation work permit
SSC	structure, system, and component
TI	Temporary Instruction
TSs	Technical Specifications
UFSAR	Updated Final Safety Analysis Report
WAN	work authorization number
WO	work order