



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

February 11, 2006

James J. Sheppard, President and  
Chief Executive Officer  
STP Nuclear Operating Company  
P.O. Box 289  
Wadsworth, Texas 77483

**SUBJECT: SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION - NRC  
INTEGRATED INSPECTION REPORT 05000498/2005005 AND  
05000499/2005005**

Dear Mr. Sheppard:

On December 31, 2005, the US 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 January 12, 2006, with you and 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 three findings of very low safety significance (Green), evaluated under the risk significance determination process (SDP). 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 (NCV) consistent with Section VI.A of the NRC Enforcement Policy. Additionally, two licensee-identified violations which were determined to be of very low safety significance are listed in this report. If you contest any NCV 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  
Project Branch A  
Division of Reactor Projects

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

Enclosure: NRC Inspection Report 05000498/2005005 and 05000499/2005005  
w/attachment: Supplemental Information

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**ENCLOSURE**

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

Dockets: 50-498, 50-499

Licenses: NPF-76  
NPF-80

Report No: 05000498/2005005  
05000499/2005005

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: September 27 through December 31, 2005

Inspectors: J. Cruz, Senior Resident Inspector  
J. Taylor, Resident Inspector  
H. Crouch, Reactor Engineer  
P. Goldberg, P.E., Reactor Inspector, Engineering Branch 2  
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B. Tindell, Reactor Inspector

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

## SUMMARY OF FINDINGS

IR 05000498/2005005, 05000499/2005005; 09/27/05-12/31/05; South Texas Project Electric Generating Station; Units 1 & 2; Integrated Resident Report, Refueling Outage, Event Followup

The report covered a three month period of inspection completed by the resident inspectors and project engineers and announced inspections by regional inspectors. Three Green noncited violations were identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) and was determined by the Significance Determination Process in Inspection Manual Chapter 0609. 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 3, dated July 2000.

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

#### Cornerstone: Initiating Events

- Green. A Green self-revealing noncited violation of Technical Specification 6.8.1.a and Regulatory Guide 1.33, Appendix A, was identified for failure to adhere to Plant Operating Procedure OPOP02-CV-004, "Chemical and Volume Control System Subsystem," Revision 41. The failure to follow procedure resulted in reactor coolant system inventory being diverted to the pressurizer relief tank when a letdown pressure relief valve opened during a letdown orifice swap. The licensee entered the performance deficiency into their corrective action program for resolution.

This finding is greater than minor because it had the actual impact of lifting a relief valve and is associated with the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. The finding is of very low safety significance because, assuming worst case degradation, the lifted relief valve would not have resulted in exceeding the Technical Specification limit for identified reactor coolant system leakage. The cause of the finding is related to the crosscutting element of human performance. (Section 1R20.1)

#### Cornerstone: Barrier Integrity

- Green. A Green self-revealing noncited violation of Technical Specification 6.8.1.a and Regulatory Guide 1.33, Appendix A, was identified for failure to adhere to Plant Operating Procedure OPOP08-FH-0003, "Fuel Transfer System," Revision 26. The failure to follow procedure resulted in fuel movers challenging the interlocks in the fuel transfer system. Specifically, a fuel mover attempted to lower a fuel assembly in the

upender while the upender was still rising. The interlock prevented the upender from making contact with the fuel assembly. The licensee entered the performance deficiency into their corrective action program for resolution.

This finding is greater than minor, because it involved the potential damage to fuel assemblies. Because this issue involves fuel assembly handling, it is not suitable for evaluation under the NRC Significance Determination Process. Therefore, this finding was reviewed by NRC management and determined to be of low safety significance because the event did not result in damage to a fuel assembly. The cause of the finding is related to the crosscutting element of human performance. (Section 1R20.2)

#### Cornerstone: Mitigating Systems

- Green. A Green self-revealing noncited violation of Technical Specification 3.7.4 was identified which requires in part, that with only two of three required essential cooling water loops operable, three loops be restored to operable within 7 days or be in at least hot standby within 6 hours. Contrary to the above, an analysis of cavitation induced pipe cracking discovered by inspection had rendered essential cooling water Train 2B inoperable for an indeterminate time greater than 7 days while Unit 2 continued to operate at 100% power. The licensee entered the performance deficiency into their corrective action program for resolution.

This finding is greater than minor because it affected the availability, reliability and capability objectives of the mitigating systems reactor safety cornerstone. Engineering analysis determined that if a seismic event had occurred, essential cooling water Train 2B could have been rendered non-functional. The finding is only of very low safety significance because of the low frequency of occurrences of seismic events at the site and because the minimum required two trains of essential cooling water for accident mitigation was available. The cause of the finding is related to the crosscutting element of problem identification and resolution. (Section 4OA3)

#### B. Licensee-Identified Violations

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

## REPORT DETAILS

### Summary of Plant Status

Unit 1 operated at essentially 100 percent power throughout the inspection period.

Unit 2 began the inspection period in coastdown at 93 percent power for scheduled Refueling Outage 2RE11. The unit was shutdown on October 1, restarted on November 2 and achieved full power shortly thereafter. The unit operated at essentially 100 percent power for the remainder of the inspection period.

#### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

#### 1R04 Equipment Alignment (71111.04)

##### Partial System 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 corrective action program to ensure problems were being identified and corrected.

- (Unit 2) The inspectors verified the condition of the Residual Heat Removal system Train A while the other two trains were in service using Plant Operating Procedure OPOP02-RH-001, "Residual Heat Removal System Operation," Revision 40, on October 6, 2005
- (Unit 2) The inspectors verified the condition of the Spent Fuel Pool cooling system during core offload using Plant Operating Procedure OPOP02-FC-0001, "Spent Fuel Pool Cooling and Cleanup System", Revision 46, on October 11-14, 2005

The inspectors completed two samples.

##### 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; (4) verified that fire extinguishers and hose stations were provided at their designated locations and that they were in a satisfactory condition; (5) verified that passive fire protection features (electrical raceway barriers, fire doors, fire dampers, steel fire proofing, penetration seals, and oil collection systems) were in a satisfactory material condition; (6) verified that adequate compensatory measures were established for degraded or inoperable fire protection features; and (7) reviewed the corrective action program to determine if the licensee identified and corrected fire protection problems.

- (Unit 2) Fuel Handling Building (Fire Zones Z310,317,318,322,330), September 29, 2005
- (Unit 2) Fuel Handling Building (Fire Zones Z311), October 11, 2005
- (Unit 2) Reactor Containment, Pressurizer Cubicle (Fire Zones Z224), October 20, 2005
- (Unit 1,2) Essential Cooling Water Building (Fire Zones Z600-605), November 2, 2005
- (Unit 1) Diesel Generator 13 Train "C" Emergency Ventilation Fan Room (Fire Zone 509), December 5, 2005
- (Unit 2) Electrical Auxiliary Building 10' Elevation Corridor (Fire Zone Z016), December 7, 2005

The inspectors completed six samples.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

The inspectors: (1) reviewed the Updated Safety Analysis Report, the flooding analysis, and plant procedures to assess seasonal susceptibilities involving external flooding; (2) reviewed the corrective action program 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.

- (Units 1 and 2) On October 19-20, 2005, the inspectors reviewed the flood analysis documentation and calculations for the intermediate valve compartments. The inspectors also conducted a walkdown of the internal water tight doors and penetrations for both units. A loose door handle was reported to the licensee and placed in the corrective action program.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R07 Biennial Heat Sink Performance (71111.07B)

a. Inspection Scope

The inspectors reviewed design documents (e.g., calculations and performance specifications), program documents, implementing documents (e.g., test and maintenance procedures), and corrective action documents. The inspectors reviewed heat exchanger testing and cleaning results, and design changes with licensee personnel.

For heat exchangers directly connected to the safety-related service water system, the inspectors verified whether thermal performance testing, or heat exchanger inspection, maintenance and cleaning, and the chemistry monitoring program provided sufficient controls to ensure proper heat transfer. Specifically, the inspectors reviewed: (1) heat exchanger test methods and test results from performance testing, (2) heat exchanger inspection and cleaning methods and results, (3) chemical water treatment and results, and (4) verification of design including flow balancing to ensure sufficient heat exchanger flow.

For heat exchangers directly or indirectly connected to the safety-related service water system, the inspectors verified the: (1) condition and operation were consistent with design assumptions in the heat transfer calculations, (2) potential for water hammer, as applicable, (3) chemistry controls for heat exchangers indirectly connected to the safety-related service water system, and (4) redundant and infrequently used heat exchangers are flow tested periodically to ensure sufficient flow.

If available, the inspectors reviewed additional nondestructive examination results for the selected heat exchangers that demonstrated structural integrity.

The inspectors selected three heat exchangers that ranked high in the plant specific risk assessment and were directly or indirectly connected to the safety-related service water system. The inspectors selected the following heat exchangers:

- Unit 1 component cooling water/essential cooling water heat exchanger
- Unit 1 residual heat removal heat exchanger, and
- Unit 2 emergency diesel generator jacket water heat exchanger

The inspectors completed three heat exchangers which exceeded the minimum required sample size of two heat exchangers.

The inspectors verified that the licensee had entered significant heat exchanger/heat sink problems into the corrective action program. The inspectors reviewed nine corrective action documents.

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection Activities (71111.08)

a. Inspection Scope

.1 Performance of Nondestructive Examination Activities Other than Steam Generator Tube Inspections

The inspectors observed and reviewed 13 visual examinations, two surface examinations, and three volumetric examinations. The two surface examinations were both liquid penetrant examinations. The three volumetric examinations were ultrasonic examinations. The inspectors also observed the ultrasonic system calibration. Of the examinations reviewed, none of them contained recordable indications that were accepted for continued service nor did any of the licensee-performed examinations since the last outage.

During the review of these examinations, the inspectors verified that the correct nondestructive examination procedures were used, examinations and conditions were as specified in the procedures, and test instrumentation or equipment was properly calibrated and within the allowable calibration period. The inspectors also reviewed the nondestructive examination certifications of personnel observed performing examinations or identified during review of completed examination packages.

The inspectors also observed and reviewed three Class 1 welds and verified that the weld process and post-weld examinations were performed in accordance with the ASME Code.

The one sample for this step is comprised of reviewing two or three non-destructive examination types to ensure they were performed in accordance with the ASME code (three were reviewed); reviewing one or two examinations where relevant indications were left in service to ensure this was done in accordance with the ASME code (none were reviewed because no relevant indications were left in service); and reviewing one to three welds to ensure they were performed in accordance with the ASME code (three were reviewed).

This sample was completed.

b. Findings

No findings of significance were identified.

.2 Pressurized Water Reactor Vessel Upper Head Penetration Inspection Activities

The inspector did not perform this inspection step because the licensee did not perform any activities in this area.

The one sample for this step is comprised of reviewing the bare metal visual inspection of the reactor vessel upper head penetrations and/or reviewing the volumetric/surface examination of these penetrations to ensure the examinations were performed in a manner consistent with the ASME code; reviewing one or two recordable indications that were left in service to ensure this was done in accordance with the ASME code; and if weld repairs were performed, reviewing one to three weld repairs to ensure this was done in accordance with the ASME code. The licensee did not perform any of these activities so the inspectors did not perform this sample.

.3 Boric Acid Corrosion Control Inspection Activities

a. Inspection Scope

The inspectors performed a review of the licensee's boric acid walkdown of the Unit 2 reactor containment as documented. The inspectors verified that the visual inspections emphasized locations where boric acid leaks can cause degradation to safety significant

components. The inspectors also reviewed five condition reports and associated work orders which documented the boric acid leaks identified during the walkdown.

The one sample for this step is comprised of reviewing a sample of the boric acid walkdown results performed by the licensee to verify that the inspections emphasize locations where boric acid leaks can cause degradation of safety significant components (the inspectors completed this); reviewing licensee response to one to three indications of boric acid leakage to verify that the licensee properly dispositioned them (the inspectors completed this); and reviewing one to three corrective actions associated with boric acid leaks to ensure they are consistent with the requirements of the ASME code and 10 CFR Part 50 Appendix B Criterion XVI (the inspectors completed this).

The inspectors completed this sample.

b. Findings

No findings of significance were identified.

.4 Steam Generator Tube Inspection Activities

a. Inspection Scope

The inspectors did not perform this inspection step because the licensee did not perform any activities in this area.

The one sample for this step is comprised of reviewing in-situ pressure testing to ensure it is properly performed; comparing flaws detected during this outage against predictions; ensuring eddy current inspections conform to the various requirements; evaluating any new degradation mechanisms detected during the inspections to ensure they are properly dispositioned; ensuring the scope of eddy current inspections emphasizes locations where flaws are expected to occur; confirm that repair processes are consistent with the Technical Specifications requirements; evaluating the repair criteria to ensure they are consistent with requirements; assess whether the licensee has properly evaluated any significant primary to secondary leakage; evaluating licensee response to any foreign material in the secondary side; evaluating eddy current analysis, if there are concerns based on any of the above evaluations. The inspectors did not complete this sample because the licensee did not perform any of the activities in this area.

.5 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed 11 inservice inspection-related condition reports issued during the current and past refueling outage, and verified that the licensee identified, evaluated,

corrected, and trended problems. In this effort, the inspector evaluated the effectiveness of the licensee's corrective action process, including the adequacy of the technical resolutions.

There is no sample associated with this step.

b. Findings

No findings of significance were identified.

The inspectors completed the required samples for Section 1R08 (.1, .2, .3, and .4) by performing two of the four samples - the other two could not be performed because the licensee did not perform any activities in these areas.

1R11 Licensed Operator Requalification (71111.11)

.1 Biennial Inspection (71111.11B)

a. Inspection Scope

The inspectors interviewed five personnel, including two operators, two instructors/evaluators, and an operations support person, regarding the policies and practices for administering requalification examinations. The inspectors also reviewed operator performance on the written and operating examinations. Examination results were assessed to determine if they were consistent with the guidance contained in NUREG 1021 and Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process."

The review included an assessment of 10 operating examination job performance measures (JPMs) and two scenarios that were used in the biennial requalification cycle to determine if they provided adequate discrimination at the minimum acceptable level of operator performance.

The results of the examinations were assessed to determine the licensee's appraisal of operator performance and the feedback of performance analysis to the requalification training program. The inspectors interviewed members of the training department and reviewed minutes of training review group meetings to assess the responsiveness of the licensed operator requalification program.

Additionally, the inspectors assessed the South Texas Project plant-referenced simulator for compliance with 10 CFR 55.46, Simulator Facilities, using Baseline Inspection Procedure 71111.11 (Section 03.11). This assessment included the adequacy of the licensee's simulation facility for use in operator licensing examinations and for satisfying experience requirements as prescribed by 10 CFR 55.46. The inspectors reviewed a sample of simulator performance test records (transient tests, surveillance tests, and malfunction tests,) simulator deficiency report records, and

processes for ensuring simulator fidelity commensurate with 10 CFR 55.46. The inspectors reviewed selected simulator deficiency reports generated by the licensee that did not result in changes to the configuration of the simulator to assess the responsiveness of the licensee's simulator configuration management program. The inspectors also interviewed members of the licensee's simulator configuration control group as part of this review.

b. Findings

No findings of significance were identified.

.2 Quarterly Inspection (71111.11Q)

a. Inspection Scope

On December 5, 2005, 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 training scenario involved a failure of a steam generator feedwater pump concurrent with a large break loss of coolant accident.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R12 Maintenance Implementation (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 the Technical Specifications.

- (Unit 2) Steam generator feedwater pump corrective maintenance issues in response to high bearing temperatures, December 6, 2005
- (Unit 2) Auxiliary feedwater Pump 22 maintenance activities in response to discovery of foreign material in the re-circulation line, December 15, 2005

The inspectors completed two samples.

b. Findings

No findings of significance were identified.

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

.1 Risk Assessment and Management of Risk

a. Inspection Scope

The inspectors reviewed the three 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) the licensee identified and corrected problems related to maintenance risk assessments.

- (Unit 2) Evaluation of risk in accordance with Technical Specification 3.0.4.b prior to mode change conducted during refueling Outage 2RE11, October 31, 2005
- (Common) Evaluation of risk for Diesel Generator 21 extended allowed outage, November 28, 2005
- (Unit 2) Evaluation of risk for steam generator feedwater pump corrective maintenance activities, December 6, 2005

The inspectors completed three samples.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors: (1) reviewed plant status documents such as operator shift logs, emergent work documentation, deferred modifications, and standing orders to determine if an operability evaluation was warranted for degraded components; (2) referred to the Updated Safety Analysis Report and design basis documents to review the technical adequacy of licensee operability evaluations; (3) evaluated compensatory measures associated with operability evaluations; (4) determined



degraded component impact on any Technical Specifications; (5) used the 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.

- (Unit 1) Electrical Auxiliary Building HVAC backdraft damper failure to close when the supply fan was secured, October 13, 2005
- (Unit 1) Auxiliary feedwater Pump 14 exhibiting increased vibration measurements, October 22, 2005

The inspectors completed two samples.

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds (71111.16)

Selected Operator Workarounds

a. Inspection Scope

The inspectors reviewed the one below listed operator workaround to: (1) determine if the functional capability of the system or human reliability in responding to an initiating event is affected; (2) evaluate the effect of the operator workaround on the operator's ability to implement abnormal or emergency operating procedures; and (3) verify that the licensee has identified and implemented appropriate corrective actions associated with operator workarounds.

- (Unit 1) Emergency Diesel Generator 12 jacket water level alarm switch out of calibration resulting in plant operators being required to adjust standpipe level while the diesel was running, December 7, 2005

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

## 1R19 Postmaintenance Testing (71111.19)

### a. Inspection Scope

The inspectors selected the four 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 re-aligned, and deficiencies during testing were documented. The inspectors also reviewed the corrective action program to determine if the licensee identified and corrected problems related to postmaintenance testing.

- (Unit 2) Work Authorization Number 298842 and Work Order 453058, postmaintenance testing associated with emergent maintenance in response to Safety Injection Accumulator 2B Fill Valve FV-3974 exhibiting leak-by, October 26, 2005
- (Unit 1) Plant Maintenance Work Orders PM:MMD-1-91000010, Revision 07.0 postmaintenance testing associated with Emergency Diesel Generator 12 planned maintenance, October 31, 2005
- (Unit 2) Plant Operations Procedure OPOP02-RH-0001, "Residual Heat Removal System Operation," Revision 40, postmaintenance testing associated with planned maintenance, November 2, 2005
- (Unit 2) Plant Maintenance Work Orders PM:MM-2-88001972, Revision 08.0 and IC-2-05000278, Revision 00.0, postmaintenance testing associated with Auxiliary Feedwater Pump 24 planned maintenance, November 22, 2005

The inspectors completed four samples.

### b. Findings

No findings of significance were identified.

## 1R20 Refueling Outage (71111.20)

### a. Inspection Scope

During September 27 through November 2, 2005, the inspectors reviewed the following risk significant refueling items or outage activities to verify defense in depth commensurate with the outage risk control plan and compliance with the Technical Specifications: (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; (6) inventory control; (7) reactivity control; (8) containment closure; (9) reduced inventory or mid-loop conditions; (10) refueling activities; (11) heatup and cooldown activities; and (12) licensee identification and implementation of appropriate corrective actions associated with refueling and outage activities.

### b. Findings

#### .1 Inadvertent Letdown Relief Valve Opening

Introduction. A Green self-revealing noncited violation of Technical Specification 6.8.1.a and Regulatory Guide 1.33, Appendix A, was identified for failure to adhere to a procedure that resulted in a letdown pressure relief valve opening during a letdown orifice swap.

Description. On October 2, 2005, Unit 2 was in the process of a plant shutdown and cooldown in support of refueling outage 2RE11. A reactor operator attempted to place the small letdown orifice in service per Plant Operating Procedure OPOP02-CV-004, "Chemical and Volume Control System Subsystem." The large letdown orifice was in service when the procedure was performed. Step 9.4 of the procedure required that the operator adjust Pressure Control Valve PCV-0135 to obtain a letdown pressure of approximately 200 psig. During the performance of the activity, the reactor operator believed he had adjusted pressure appropriately but, according to information received from the plant computer following the event, pressure had only been adjusted to 285 psig. With pressure higher than required by procedure, there was not sufficient margin to allow PCV-0135 to be opened enough to compensate for the ensuing letdown pressure increase which occurred after opening the small letdown orifice isolation valve. Operators failed to manipulate the letdown orifice isolation valve in a manner that properly controlled pressure in the chemical and volume control system. As a result, the letdown line relief valve opened, diverting reactor coolant system (RCS) inventory to the primary relief tank. This event created the possibility of the relief valve sticking open and causing a small-break loss of coolant condition until the break could be isolated. The licensee entered this performance deficiency into their Corrective Action Program for resolution.

Analysis. The licensee's failure to adhere to a procedure that resulted in a letdown pressure relief valve opening during a letdown orifice swap was a performance deficiency. This finding was greater than minor because it had the actual impact of

lifting a relief valve and, therefore, was associated with an increase in the likelihood of an initiating event. As the finding was associated with the cornerstone attribute of Initiating Events and affected the associated cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations, it surpassed the screening criteria of Inspection Manual Chapter 0612, Appendix B. Using the Significance Determination Process of Inspection Manual Chapter 0609, Appendix A, under the initiating events cornerstone, the answer to the Phase 1 screening question of "Assuming worst case degradation, would the finding result in exceeding the Tech Spec limit for identified RCS leakage?" was determined to be "No" because there was no degradation of the chemical and volume control system letdown line relief valve or system that could have either decreased the probability of the relief valve to reseal nor prevent the system isolation valves from functioning, thereby precluding a draindown from the RCS to the primary relief tank. Therefore, the finding was determined to be of very low safety significance. As the root cause of the performance deficiency involved failure to follow procedure, this finding involved crosscutting aspects in the area of human performance related to personnel and attention to detail.

Enforcement. Technical Specification 6.8.1.a requires that procedures be established, implemented, and maintained covering the applicable procedures in Appendix A of Regulatory Guide 1.33. Appendix A, Item 3.n, requires procedures be maintained for the chemical and volume control system. Plant Operating Procedure OPOP02-CV-004, "Chemical and Volume Control System Subsystem," Revision 41, was not properly implemented in that failure to follow procedure resulted in the lifting of a letdown relief valve. The opening of the letdown relief valve increased the risk of an initiating event of an interfacing system small loss of coolant accident and degraded the reactor coolant system barrier integrity. Because this finding was entered into the licensee's Corrective Action Program as CR 05-12063 and is of very low safety significance, this finding is being treated as an NCV consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000499/2005005-01, Inadvertent Letdown Relief Valve Opening.

## .2 Improper Fuel Handling

Introduction. A Green self-revealing noncited violation of Technical Specification 6.8.1.a and Regulatory Guide 1.33, Appendix A, was identified for failure to adhere to a procedure during fuel movement.

Description. On October 12, 2005, while off-loading the reactor core in Unit 2, fuel movers challenged the interlocks in the fuel transfer system. Specifically, a fuel mover attempted to lower a fuel assembly in the upender while the upender was still rising. The interlock prevented the upender from making contact with the fuel assembly. There was an apparent miscommunication in that the refuel machine operator understood that the upender was fully raised when in fact it was still moving. Step 7.10 of Plant Operating Procedure OPOP08-FH-0003, "Fuel Transfer System," required that fuel movers visually verify that the upender is in the vertical position prior to moving a fuel assembly using the fuel handling machine.

Analysis. The inspectors determined that this finding was a performance deficiency, in that the fuel movers failed to follow procedure. This issue was determined to be more than minor, because it involved the potential damage to fuel assemblies. Because this issue involves fuel assembly handling it is not suitable for evaluation under the NRC Significance Determination Process. Therefore, this finding was reviewed by NRC management and determined to be of very low safety significance (Green) because the event did not result in damage to a fuel assembly. As the root cause of the performance deficiency involved failure to follow procedure, this finding involved crosscutting aspects in the area of human performance related to personnel and attention to detail.

Enforcement. Technical Specification 6.8.1.a requires that procedures be established, implemented, and maintained covering the applicable procedures in Appendix A of Regulatory Guide 1.33. Appendix A, Item 2.k. requires procedures be implemented for preparation for refueling and refueling equipment operation. Plant Operating Procedure OPOP08-FH-0003, "Fuel Transfer System," Revision 26, was not properly implemented in that failure to follow procedure resulted in challenged interlocks in the fuel transfer system. The failure to follow procedure increased the risk of potential damage to fuel assemblies. Because this finding was entered into the licensee's Corrective Action Program as CR 05-12885 and is of very low safety significance, this finding is being treated as an NCV consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000499/2005005-02, Improper Fuel Handling.

## 1R22 Surveillance Testing (71111.22)

### a. Inspection Scope

The inspectors reviewed the Updated Final Safety Analysis Report, procedure requirements, and Technical Specifications to ensure that the two 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 Technical Specification operability; (9) test equipment removal; (10) restoration of plant systems; (11) fulfillment of ASME Code requirements; (12) updating of performance indicator data; (13) engineering evaluations, root causes, and bases for returning tested SSC's 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.

- (Unit 2) Plant Surveillance Procedure OPSP03-RC-0006, "Reactor Coolant Inventory," Revision 15, September 28, 2005
- (Unit 1) Plant Surveillance Procedure OPSP03-CS-0003, "Containment Spray Pump 1C(2C) Inservice Test," Revision 12, December 6, 2005

The inspectors completed two samples.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP2 Alert Notification System Testing (71114.02)

a. Inspection Scope

The inspectors discussed with licensee staff the status of offsite siren and tone alert radio systems to determine the adequacy of licensee methods for testing the alert and notification system in accordance with 10 CFR Part 50, Appendix E. The licensee's alert and notification system testing program was compared with criteria in NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, Federal Emergency Management Agency (FEMA) Report REP-10, "Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants," and the licensee's current FEMA-approved alert and notification system design report. The inspectors also reviewed Plant General Procedure OPGP05-ZV-0006, "Emergency Notification and Response System," Revision 3, and Desktop Guide ZV-0013, "Alert Radio Maintenance and Distribution," Revision 0.

The inspectors completed one sample during this inspection.

b. Findings

No findings of significance were identified.

1EP3 Emergency Response Organization Augmentation Testing (71114.03)

a. Inspection Scope

The inspectors reviewed Plant General Procedure OPGP05-ZV-0014, "Emergency Response Activities," Revisions 2, 3, and 5, Form 19, "ENRS Test (Autodialer Test)," and the results of three call-in and drive-in drills to determine the licensee's ability to staff emergency response facilities in accordance with the licensee emergency plan and the requirements of 10 CFR Part 50 Appendix E. The inspectors also interviewed licensee staff responsible for maintaining the licensee's Emergency Notification and Response System.

The inspectors completed one sample during this inspection.

b. Findings

No findings of significance were identified.

1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies (71114.05)

a. Inspection Scope

The inspectors reviewed the following documents related to the licensee's corrective action program to determine the licensee's ability to identify and correct problems in accordance with 10 CFR 50.47(b)(14) and 10 CFR Part 50 Appendix E.

OPGP03-ZX-0002, "Condition Reporting Process," Revision 30

0ERP01-ZV-RE02, Form 2, "Emergency Event Documentation Worksheet," Event Number 1C0301, Unusual Event, July 15, 2003

0ERP01-ZV-RE02, Form 2, "Emergency Event Documentation Worksheet," Event Number 1C0401, Unusual Event, April 6, 2004

Drill reports for 10 combined functional and stand-alone station emergency preparedness drills and exercises

Nine Quality Assurance Audits and Monitoring Reports

Summaries of all corrective actions assigned to the emergency preparedness department between June 2003 and September 2005

Details of 17 selected condition reports

The inspector completed one sample during this inspection.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope

The inspectors reviewed licensee submittals for the performance indicators listed below for the period July 1, 2004, through September 30, 2005. The definitions and guidance of NEI 99-02, "Regulatory Assessment Indicator Guideline," Revisions 2 and 3, were used to verify the licensee's basis for reporting each data element in order to verify the

accuracy of performance indicator data reported during the assessment period. The licensee's performance indicator data were also reviewed against the requirements of Plant General Procedure OPGP05-ZV-0013, "Performance Indicator Tracking Guide," Revision 1.

Emergency Preparedness Cornerstone:

- Drill and Exercise Performance
- Emergency Response Organization Participation
- Alert and Notification System Reliability

The inspectors reviewed a 100 percent sampling of drill and exercise scenarios, licensed operator simulator training sessions, notification forms, and attendance and critique records associated with training sessions, drills, and exercises conducted during the verification period. The inspectors reviewed 23 selected emergency responder qualification and training records, and a 100 percent sample of quarterly drill participation records. The inspectors reviewed a 100 percent sample of siren test and maintenance records and procedures. The inspectors also interviewed licensee personnel that were accountable for collecting and evaluating the PI data.

The inspectors completed three samples during this inspection.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Daily CR Review

a. Inspection Scope

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

b. Findings and Observations

No findings of significance were identified.



## .2 Semiannual Sample Review

### a. Inspection Scope

On December 23, 2005, the inspectors completed a semiannual review of licensee internal documents, reports, and performance indicators to identify trends that might indicate the existence of more significant safety issues. The inspector's review nominally considered the 6-month period of July through December 2005, although some examples expanded beyond those dates when the scope of the trend warranted. Corrective actions associated with a sample of the issues identified in the licensee's trend reports were reviewed for adequacy. The inspectors evaluated the licensee's implementation of the corrective action program as specified in licensee Plant General Procedure OPGP03-ZX-0002, "Condition Reporting Process," and 10 CFR Part 50, Appendix B. Documents reviewed by the inspectors included:

- Condition Record Daily Monitor
- System Performance Indicators
- System Health Reports
- Systems Engineering Quick Hitter List
- Quality Assurance Audit Reports
- Selected Work Orders from the 3rd and 4th Quarters of 2005
- South Texas Project Internal Performance Summary Reports

### b. Findings and Observations

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

- The equipment reliability of the essential chillers continue to remain problematic and the number of unplanned entries into Technical Specification required Limiting Conditions for Operation appear to be trending in a negative manner
- In the fourth quarter of the year, vital inverter issues became more visible following the inverter replacements which took place during the most recent refueling outages in each unit
- Reactivity management issues regarding control rod drive mechanism and control board valve mis-position errors appear to represent a negative trend in site performance

#### 4OA3 Event Followup (71153)

(Closed) LER 05000499/20050004-00 and LER 05000499/20050004-01, Inoperability of Essential Cooling Water 2A and 2B Trains

##### a. Inspection Scope

The inspectors reviewed LER 05000499/20050004 and the subsequent event report Supplement 1, to verify that the cause of the essential cooling water (ECW) Train 2B inoperability for more than the Technical Specification allowed outage time was identified and that corrective actions were reasonable. The inoperability was declared due to cavitation pitting, circumferential cracking, secondary axial cracking and pipe end to flange weld separations discovered in the aluminum bronze pipe inside a slip-on flange immediately downstream of the Component Cooling Water Heat Exchanger 2B ECW return throttle valve. The structural integrity of the pipe could not be verified using the requirements of NRC Generic Letter 90-05, "Guidance for Performing Temporary Repair of ASME Code Class 1, 2, and 3 Piping," so the train was declared inoperable due to non-compliance with ASME Code requirements.

##### b. Findings

Introduction. A Green self-revealing NCV was identified for the failure to perform the required actions specified in Technical Specification 3.7.4 with less than three independent ECW loops operable.

Description. In May 2005, cavitation damage was discovered in the slip-on flange assembly immediately downstream of the component cooling water (CCW) Heat Exchanger 1B ECW Return Throttle Valve 1-EW-0064. Work requests were initiated to inspect the CCW heat exchanger return throttle valves in all trains of both units.

Cavitation pitting, circumferential pipe cracking, secondary axial pipe cracking, and pipe end to flange weld separation were also discovered in the aluminum bronze pipe inside a slip-on flange immediately downstream of the CCW Heat Exchanger 2A ECW return throttle valve, 2-EW-0027. Structural integrity of the pipe could not be verified using the requirements of NRC Generic Letter 90-05, "Guidance for Performing Temporary Repair of ASME Code Class 1, 2, and 3 Piping." Because structural integrity could not be demonstrated, ECW Train 2A was declared noncompliant with ASME Code requirements and inoperable per Technical Specification requirements. The licensee determined, based on metallurgical analysis of the failed parts, that ECW Train 2A was inoperable for an undetermined period of time. The condition logically existed for a period longer than the Technical Specification 3.7.4 allowed outage time although the length of time is not known. On August 15, 2005 an inspection of the corresponding Train 2B throttle valve, 2-EW-0064, discovered a similar condition and it was also declared inoperable.

Initial root cause analysis and engineering evaluation results for the condition (APTECH calculation AES-C-5862-1, CR 05-8601-25) concluded that the discovered condition on ECW Train 2A justifies the acceptance criteria for both the upset and faulted conditions per the 2004 edition of the ASME Section XI pipe flaw acceptance criteria. The licensee is committed to the 1989 version of the ASME code and used those limits to determine the initial operability impact. Since ECW Train 2A was acceptable per the 2004 version of the code and since ECW Train 2C was also considered operable, the safety function for the ECW system was met and the safety consequences were low. The condition discovered on ECW Train 2B was susceptible only to a seismic event which has a very low frequency of occurrence at the South Texas Project site.

It was noted in the licensee's root cause analysis that several missed opportunities to prevent the condition had occurred:

- A hydraulic transients analysis completed in May 1984 by the construction architect/engineer identified the cavitation potential of the ECW throttle valves. The analysis recommended valve manufacturer's data should be reviewed in light of the low-back pressure, high-head-drop conditions.
- In December 1985, an ECW design verification review identified that the system throttle valves could experience flashing or cavitation conditions. The review recommended that restricting orifices should be added as needed. However, the licensee's response erroneously dismissed the cavitation item because pressure at the discharge of the valve is much greater than the vapor pressure.
- A May 1986 observation and evaluation of the ECW system preoperational testing noted that the CCW discharge butterfly valve was noisy, identified a potential solution, and recommended further hydraulic transient testing. Documented results of the hydraulic transient testing in July 1986 report concluded the noise at the CCW heat exchanger throttle valves was due to cavitation potential but did not warrant reorientation of the valves. It was recommended that the valves should be specifically included in the "Plant Vibration Monitoring Program" and further actions be based on results from that program.
- In 1990, the licensee completed its response to NRC Generic Letter 89-13, "Service Water System Problems Affecting Safety-Related Equipment." Although the focus of the generic letter was bio-fouling and heat transfer degradation, Recommended Action 3 was to "Ensure by establishing a routine inspection and maintenance program for open-cycle service water system piping and components that corrosion, erosion, protective coating failure, silting and bio-fouling cannot degrade the performance of the safety-related systems supplied by service water." The licensee's response to this recommendation was that the preventive maintenance program meets the requirements of this recommended action. The preventive maintenance program, however, is based on components and does not normally address maintenance of piping.

- In 1991, inspections were performed on Train 1B and 1C CCW heat exchanger ECW return throttle valves. These inspections were performed in response to concerns about bio-fouling. When the valves were inspected, damage was noted to the valve body and portions of the valves' seat rings were missing. In response to the observed damage to the seating surfaces, the licensee committed to never use these valves as maintenance boundary isolation valves.

No actions were taken, however, to initiate preventive maintenance activities to monitor erosion of the valves.

- Early in 1999 (CR 99-550), erosion of ECW piping in high flow velocity areas was identified as a potential system-wide issue. During routine system maintenance, erosion wear had been identified at aluminum bronze tubesheets, in piping elbows, and in other fittings at areas of relatively high flow velocity. Because of the problems experienced with high flow noise and cavitation sounds, the piping downstream of the CCW heat exchanger ECW return throttle valves was identified as one of the main areas of concern. Some initial pipe wall thickness readings were obtained with ultrasonic testing. Because of the carbon steel slip-on flange, these readings were taken in the aluminum bronze piping just downstream of the flange. The readings showed wall loss of up to about 0.050 inches in some areas. While this amount of wall thinning was significant, it was still well above the minimum wall thickness. Based on these sample readings, ECW piping erosion was considered a long term "life of the plant" issue. Action to develop a wall thickness monitoring plan was therefore extended.
- In July 2003, CR 03-10566 was written by the ECW system engineer to perform an inspection of the gear operator and the internals of the Train 1B CCW heat exchanger ECW return throttle valve. This inspection was in response to a previous failure of a gear operator on one of the self-cleaning strainer backwash throttle valves, the failure of a circulating water system motor operated butterfly valve, and industry operating experience with butterfly valve stem to disc separation. A CCW heat exchanger ECW return throttle valve was selected because it is subject to flow-induced high vibrations. Train 1B was selected because it was scheduled for an extended allowed outage time maintenance window in October 2003. Removal of the valve from the system was requested to also allow internal visual inspection of the downstream piping to aid in selecting appropriate measuring locations for the proposed ECW erosion monitoring program. Although planning for the work order was completed in August 2003, the work order was not worked during the October 2003 extended allowed outage time and was then not implemented until May 2005.

The licensee entered this performance deficiency into their Corrective Action Program for resolution.

Analysis. The performance deficiency associated with this event is a failure to comply with the required actions specified in Technical Specification 3.7.4. This finding is greater than minor because it affected the availability, reliability and capability objectives of the mitigating systems reactor safety cornerstone. Engineering analysis subsequent to finding degraded ECW Train 2B piping determined that if a seismic event had occurred, Train 2B of ECW could have been rendered non-functional. The finding was only of very low safety significance because of the low frequency of occurrences of seismic events and because the minimum required two trains of ECW for accident mitigation would have been available. Additionally, the finding did not involve the total loss of any safety function, identified by a licensee PRA, IPEEE, or similar analysis, that contributed to the external event initiated core damage accident sequences. As there were several missed opportunities to prevent the performance deficiency, this issue involved crosscutting aspects in the area of problem identification and resolution.

Enforcement. Technical Specification 3.7.4 requires in part, that with only two of three required ECW loops operable, three loops be restored to operable within seven days or be in at least Hot Standby within six hours. Contrary to the above, an analysis of cavitation induced pipe cracking discovered by inspection had rendered ECW Train 2B inoperable for an indeterminate time greater than 7 days while Unit 2 continued to operate at 100 percent power. Because this failure to perform the Technical Specification requirement is of very low safety significance and has been entered into the licensee Corrective Action Program (CR 05-8601), this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000499/2005005-03, Inoperability of Essential Cooling Water Trains 2A and 2B.

#### 40A5 Other

.1 (Closed) Unresolved Item (URI) 05000498;499/2005004-01: Potential for Submerged Cables.

In Condition Report (CR) 03-18389, it was documented that the grade had been raised around some manholes in the yard that contained safety-related cables so that there was a potential for water to drain into the cable vaults below. In NRC Inspection Report 05000498;499/2005004, this Unresolved Item was opened in order to gather more information about the issue, including allowing the licensee to complete inspections of the cable vaults.

On December 21, 2005, regional inspectors conducted telephonic interviews with licensee personnel, and reviewed new information from CR 03-18389. The inspectors determined that the corrective actions for the 2003 CR had not been prompt, which is a violation of Title 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action." The licensee had inspected all of the cable vaults that contain safety-related cables and, although water was found, no cables were submerged. In addition, the cable vaults with the highest water level contained cables that were going to be replaced in July 2006 so that the condition would have been discovered before the cables would have become

submerged. Therefore, this issue is minor because it would not have become a more significant safety concern if left uncorrected. Although this issue should be corrected, it constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the Enforcement Policy.

.2 Temporary Instruction 2515/160: Pressurizer Penetration Nozzles and Steam Space Piping Connections in U.S. Pressurized Reactors

a. Inspection Scope

Implementation of this technical instruction was required for facilities that include Alloy 600 base metal materials or Alloy 82/182 weld metal materials in the design of their pressurizer penetration nozzles, heater sleeves, or steam space piping components. The inspectors observed and reviewed the inspection of 13 such welds and independently inspected five of the such welds. The inspectors reviewed the certification for the nondestructive examination inspectors performing the work and determined them to be current and correct.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

The results of the Licensed Operator Requalification inspection were presented to Mr. G. Parkey, Vice President, Generation, and other members of his staff on September 1, 2005.

The results of the preliminary inspection were presented to Mr. T. Jordan, Vice President, Engineering and Technical, and other members of the licensee staff at the conclusion of the Heat Sink Performance biennial inspection on October 05, 2005, during a telephonic exit.

The results of the inservice and Temporary Instruction 2515/160 inspection were presented to Mr. J. Sheppard, President and Chief Executive Officer, and other members of licensee management on October 13, 2005.

The results of the emergency preparedness inspection were presented to Mr. J. Sheppard and other members of his staff on November 30, 2005.

The results of the review of Unresolved Item 2005004-01 were presented to Ms. R. Savage, Senior Staff Specialist, and Mr. M. Ruvalcaba, Systems Engineering Supervisor, on December 21, 2005, during a telephonic exit.

The results of the resident inspection were presented to Mr. G. Parkey and other members of licensee management on January 12, 2006.

During each exit meeting, the inspectors asked the licensee representatives whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified. Licensee management acknowledged the inspection findings.

#### Other Meetings

Mr. Claude Johnson, Branch Chief, Division of Reactor Safety, visited the site and toured selected areas of the facility on October 13, 2005.

Mr. Bruce Mallett, Regional Administrator, visited the site and toured selected areas of the facility on December 19, 2005.

#### 40A7 Licensee-Identified Violations

The following violations of very low significance (Green) were identified by the licensee and are violations of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as an NCV.

- Technical Specification 3.3.2 Action 30 states, in part, that with irradiated fuel in the spent fuel pool and with the number of operable engineered safety feature actuation channels less than the minimum channels operable requirement, fuel movement within the spent fuel pool or crane operation with loads over the spent fuel pool may proceed provided the fuel handling building exhaust air filtration system is in operation and discharging through at least one train of HEPA filters and charcoal absorbers (emergency mode). On October 22, 2005, during an outage work review, the licensee identified that Technical Specification 3.3.2, Action 30 was not performed as required. On October 19, 2005, during fuel movement, Train C fuel handling building HVAC engineered safety feature actuation relays became inoperable due to Electrical Bus E2C11 being de-energized for planned maintenance and the fuel handling building exhaust air filtration system was not placed in emergency mode. These relays require direct current power to automatically place the Fuel Handling building HVAC in the emergency mode and would not have actuated with Bus E2C11 de-energized. The bus was de-energized for approximately three hours. This item was documented in the licensee's Corrective Action Program as Condition Report 05-13732. This finding is of very low safety significance due to the short duration of the condition and that the ability to manually align to the emergency mode was not compromised.
- 10 CFR 50.54(q) requires a licensee maintain and follow an approved emergency plan. Contrary to this, the licensee did not follow their emergency plan by removing ARM-8095, which was required by their emergency action level

scheme. This was identified in the licensee's corrective action system as Condition Report 04-10494. This finding is of very low safety significance because it involved one of several indicators for a single emergency action level at the Notification of Unusual Event level.

ATTACHMENT: SUPPLEMENTAL INFORMATION



## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee

T. Bowman, Manager, Operations  
W. Bullard, Manager, Health Physics  
J. Conly, Licensing Engineer  
T. Frawley, Manager, Performance Improvement  
R. Gangluff, Manager, Chemistry  
S. Head, Manager, Licensing  
J. Heil, System Engineering  
T. Jordan, Vice President, Engineering and Technical  
J. Lovejoy, Manager, Instrumentation and Control Maintenance  
N. Mayer, Supervisor, Outage and Projects  
M. McBurnett, Manager, Quality and Licensing  
A. McGallird, Supervisor, Nuclear Steam Supply System Engineering  
A. Mikus, Supervisor, Communication and Public Affairs  
W. Mookhoek, Senior Engineer, Quality and Licensing  
J. Morris, Engineer, Licensing Staff  
G. Parkey, Vice President, Generation  
T. Powell, Manager, Systems Engineering  
D. Rencurrel, Manager, Plant Engineering  
R. Savage, Senior Staff Specialist  
J. Sheppard, President and CEO  
M. Smith, Supervisor, Quality  
L. Spiess, Nondestructive Evaluation Technician, Level III  
J. Stauber, Inservice Inspection Program Engineer  
D. Stillwell, Supervisor, Configuration Control and Analysis  
T. Walker, Manager, Quality  
C. Younger, Inservice Inspection Engineer

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened and Closed

05000499/2005005-01	NCV	Inadvertent Letdown Relief Valve Opening (Section 1R20.1)
05000499/2005005-02	NCV	Improper Fuel Handling (Section 1R20.2)
05000499/2005005-03	NCV	Inoperability of Essential Cooling Water 2A and 2B Trains(Section 4OA3)

### Closed

0500499/2005-004-00	LER	Inoperability of Essential Cooling Water 2A and 2B Trains (Section 4OA3)
0500499/2005-004-01	LER	Inoperability of Essential Cooling Water 2A and 2B Trains (Section 4OA3)
05000498;499/2005004-01	URI	Potential for Submerged Cables (Section 4OA5.1)

## LIST OF DOCUMENTS REVIEWED

In addition to the documents identified 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:

### Heat Sink Performance (71111.07)

#### Procedures

OPCP01-ZA-0038, "Plant Chemistry Specifications," Revision 30

OPMP04-ZG-0011, "Heat Exchanger Cleaning (General Guidelines and Instructions)," Revision 6

OPE07-EW-0001, "Performance Test for Essential Cooling Heat Exchangers," Revision 6

#### Condition Records

05-7071

03-10566

04-11103

05-2294

05-1845

05-3995

03-13948

95-7568

99-741

#### Calculations

MC-06482A, "Essential Chilled Water Minimum Flow Requirements For EAB, CRE. FBH & MAB Coolers," Revision 0

DCP 00-5014-5, "Document Change Notice to Calculation MC-6482"

94E-0095-20, "Room Heat Loads," Revision 0 & Calculation Revision Notice EE-991864N201, dated August 28, 2000

DCP 00-15286-03, "Document Change Notice to Procedure OPG04-ZE-0309," Supplement 0

DCP 05-255-8, "Document Change Notice to Procedure OPG04-0309," dated May 12, 2005

DCP 04-1238-40, "Document Change Notice to Procedure MC06482," dated December 16, 2004

Specifications

3R209NS0033, "Specification for Component Cooling Water," Revision 2

Testing Procedures, Calculations, and Results

OPSP03-EW-0017, "Essential Cooling Water System Train A Testing," Revision 23

OPSP03-EW-0018, "Essential Cooling Water System Train B Testing," Revision 33

OPSP03-EW-0019, "Essential Cooling Water System Train C Testing," Revision 33

OPEP07-EW-001, "Performance Test for Essential Cooling Water Heat Exchangers," Revision 6

Work Orders

MM-2-CH-97001689

WAN-245552

WAN- 60320

WAN-211670

WAN-433004

WAN-245552

WAN-182366

WAN-127055

WAN-242779

WAN-132435

WAN-151418

WAN-85507

Miscellaneous

STP letter to NRC, "Response to NRC Generic Letter 89-13, Service Water System Problems Affecting Safety Related Equipment," dated January 29, 1990

STP letter to NRC, "Service Water System Problems Affecting Safety Related Equipment," dated April 3, 1991

STP letter to NRC, "Service Water System Problems Affecting Safety Related Equipment," dated March 27, 1991

STP letter to NRC, "Service Water System Problems Affecting Safety Related Equipment," dated May 15, 1991

LER-2-2005-04, "Inoperability of Essential Cooling Water 2A and 2B Trains," Revision 0

NRC Inspection Report 50-498;499/92-201, "South Texas Project Electric Generating Station Service Water System Operational Performance Inspection," dated August 24,1992

Inservice Inspection Activities (71111.08)

OPEP10-ZA-0001, "Qualification and Certification of Nondestructive Examination Personnel for Examination Methods Other than the Ultrasonic Examination Method for the Inservice Inspection Program" Revision 3

OPEP10-ZA-0002, "Qualification and Certification of nondestructive Examination Personnel for the Ultrasonic Examination Method for the Inservice Inspection Program," Revision 1

OPEP-10-ZA-0004, "General Ultrasonic Examination," Revision 2

OPEP10-ZA-0012, "Color Contrast Solvent Removable Liquid Penetrant Examination for ASME XI PSI/ISI," Revision 2

OPEP10-ZA-0018, "Dry Powder Magnetic Particle Examination for ASME XI PSI/ISI," Revision 1

OPEP10-ZA-0024, "ASME XI Examination for VT-1 and VT-3," Revision 1

OPGP03-ZE-0027, "ASME Section XI Repair, Replacement and Postmaintenance Pressure Testing," Revision 22

OPGP03-ZE-0033, "RCS Pressure Boundary Inspection for Boric Acid Leaks," Revision 9

SSI-A-005, "Qualification and Certification of Nondestructive Examination Personnel," Revision 22

SSI-A-013, "Qualification and Certification of Ultrasonic Examination personnel for ASME XI PSI/ISI Inspections," Revision 3

UTI-057, "Modeling Component Configuration Profiles for Dissimilar Metal Welds," Revision 0

UTI-PDI-UT-2, "PDI Generic Procedure for the Ultrasonic Examination of Austenitic Pipe Welds," Revision 1

Miscellaneous Documents

NOC-AE-04001762, "Response to NRC Bulletin 2004-01, 'Inspection of "Alloy 82/182/600 Materials Used in the Fabrication of Pressurizer Penetrations and Steam Space Piping Connections at Pressurized-Water Reactors"' July 27, 2004

NOC-AE-05001890, "Response to Nuclear Regulatory Commission Bulletin 2004-01, 'Inspection of Alloy 82/182/600 Materials Used in the Fabrication of Pressurizer Penetrations and Steam Space Piping Connections at Pressurized-Water Reactors'" June 9, 2005

"Examination Plan for the 2RE11 Inservice Inspection of Unit 2 South Texas Project Electric Generating Station" September 2005

"Inservice Inspection Program Plan for Examination of Component Support, Containment Metal Liner, Repair/Replacement Activities, Steam Generator Tubing, System Pressure Testing and Weld Inspection Programs for the Second Inspection Interval of the South Texas Project Electric Generating Station Units 1 and 2" Revision 2

Liquid Penetrant Examinations

750620-PCW4  
RHARHS-2A-IWA2

Ultrasonic Examinations

12-RC-2212 BB1  
12-RC-2221-BB1  
12-RC-2312-BB1

Visual Examinations:

Pressurizer upper head nozzle - N2 Spray Nozzle  
Pressurizer upper head nozzle - N3 Safety Nozzle  
Pressurizer upper head nozzle - N4A Relief Nozzle  
Pressurizer upper head nozzle - N4B Safety Nozzle  
Pressurizer upper head nozzle - N4C Safety Nozzle  
RPV Loop A outlet nozzle to safe end - 29-RC-2101, RPV2-N2ASE  
RPV Loop B outlet nozzle to safe end - 29-RC-2201, RPV2-N2BSE  
RPV Loop C outlet nozzle to safe end- 29-RC-2301, RPV2-N2CSE  
RPV Loop D outlet nozzle to safe end - 29-RC-2401, RPV2-N2DSE  
Safe End to RPV Loop A inlet nozzle - 27.5-RC-2103, RPV2-N2ASE  
Safe End to RPV Loop B inlet nozzle - 27.5-RC-2203, RPV2-N2BSE  
Safe End to RPV Loop C inlet nozzle - 27.5-RC-2303, RPV2-N2CSE  
Safe End to RPV Loop D inlet nozzle - 27.5-RC-2403, RPV2-N2DSE

Condition Reports

04-4279	04-16752	05-12001
04-5109	05-888	05-12073
04-5473	05-1854	05-12343
04-11975	05-1973	

Drawings:

4C369PRC457, Reactor Coolant "RC", Revision 9  
A-RPV-1, "Reactor Pressure Vessel," Revision 0  
A-RPV-2, "Reactor Pressure Vessel," Revision 0

Weld Certifications:

Weld Procedure Specification P8-T-Ag,

Procedure Qualification Record 016  
Procedure Qualification Record 035  
Procedure Qualification Record 037  
Procedure Qualification Record 046  
Procedure Qualification Record 197

Welds:

Drawing 4C369PRC0457, FW0011  
PC 7B Pipe to Valve RC0057B, Weld FW007  
PC 7B Pipe to Valve RC0057B, Weld FW008

Boric Acid Corrosion Control Examinations:

BMI and lower RPV head  
LHSI 2C to RCS Loop 2C Hot Leg MOV  
Pzr Spray LP 2A, PCV-655C bypass valve  
RHR Pump 2A Suction First MOV  
RHR Pump 2C Suction First MOV

Licensed Operator Regualification (71111.11)

Procedures

0PGP03-ZT-0132	Licensed Operator Regualification	Revision 6
LOR-GL-001	LOR Training Program Guidelines	Revision 12
LOR-GL-002	Annual and Biennial Evaluation Guidelines	Revision 11
LOR-GL-003	Exam Bank Guidelines	Revision 2
LOR-GL-004	Two-Year Training Plan Guidelines	Revision 5
LOR-GL-006	Conduct of Simulator Training Guidelines	Revision 15

Scenarios

054-08  
054-15

Job Performance Measures

001.01.r8	014.01.r9	111.01.r2	120.02.r4
003.01.r8	028.02.r6	111.01.r3	143.02
011.02.r8	046.01.r9	115.01.r5	145.02

Requalification Plans

LOR 2004-2005 Two-Year Plan  
LOR Simulator Sample Plan  
Cycle 054 Requalification Schedule

Cycle Written Exams

LOR 051	Written Exam 1
LOR 051	Written Exam 2
LOR 051	Written Exam 3
LOR 051	Written Exam 4
LRO 051	Written Exam Remediation Plans (8)
LOR 041	Written Exam 1
LOR 041	Written Exam 2
LOR 041	Written Exam 3
LRO 041	Written Exam Remediation Plans (1)
LOR 043	Written Exam 1
LOR 043	Written Exam 2
LOR 043	Written Exam 3

Open Simulator DRs

1528	1712	1748	1789	1820
1661	1717	1753	1797	1821
1662	1718	1760	1800	1822
1663	1722	1763	1812	1823
1673	1726	1776	1815	1826
1685	1727	1784	1819	1827
1686	1739	1787		



Scenario-Based Test Checklists

IST 403.27	IST 403.15	IST 403.08	IST 403.24
IST 403.12	IST 403.22	IST 403.01	IST 403.14
IST 403.03	IST 403.28	IST 403.13	IST 403.06
LOS 010.01	IST 403.17	IST 403.05	IST 403.26
IST 403.16	IST 403.29		

Plant Events (Plant Condition Records also provided)

DR 1608	Charging flow following reactor trip mismatch of plant data & simulator
DR 1607	Simulator test of feedwater pump trip (no startup pump available) (CR 03-3139)
DR 1782	Reactor trip, AFW actuation (CR 02-17080)
CR 05-3171	Solid plant operations
CR 03-7772-1	Reactor containment building atmosphere monitor
CR 00-0500-35	Loss of grid

Section 71111.12 Maintenance Implementation (Condition Records reviewed)

96-10465	97-12499	97-13259	95-1718	99-12426	00-792
00-3152	02-5184	03-18541	05-6342		

Section 1EP2

South Texas Project Electric Generating Station, Site Specific Offsite Radiological Emergency Preparedness Prompt Alert and Notification System Independent Technical Review, August 1989

Addendum, Prompt Notification System for the South Texas Project Electric Generating Station, April 1997

Final Report, South Texas Project Electric Generating Station Site Specific Offsite Radiological Emergency Preparedness Prompt Alert and Notification System Quality Assurance Review, April 1998

### Section 1EP3

0ERP01-ZV-IN03, "Emergency Response Organization Notification," Revision 12  
0PGP05-ZV-0003, "Emergency Response Organization," Revision 8  
0PGP05-ZV-0007, "Prompt Notification System," Revision 6  
0PGP05-ZV-0016, "Prompt Notification System Implementation Procedure," Revision 3

#### Drill Reports for:

March 9, 2004, Call-In Drill  
October 28, 2004, Drive-In Drill  
August 30, 2005, Call-In Drill

### Section 1EP5

#### Procedures:

Desktop Guide ZV-0014, "Emergency Response Equipment Operability," Revision 0

#### Drill Reports for:

Combined Functional Drill, May 5, 2004  
Combined Functional Drill, June 22, 2004  
Combined Functional Drill, August 10, 2004  
Combined Functional Drill, August 31, 2004  
Combined Functional Drill, October 28, 2004  
Combined Functional Drill, January 5, 2005  
Combined Functional Drill, June 8, 2005  
Combined Functional Drill, July 26, 2005  
Field Monitoring Drill, December 1, 2004  
Medical Services Exercise, May 18, 2005

#### Condition Reports:

2003-13873, 14039, 15093  
2004-254, 2247, 2650, 3177, 8997, 10494, 11148, 12265, 15103  
2005-2585, 7997, 10886

#### Other Reports:

Quality Audit Report 04-01, Emergency Preparedness  
Quality Audit Report 05-01, Emergency Preparedness  
Quality Monitoring Report MN-05-0-5564  
Quality Monitoring Report MN-05-0-5696  
Quality Monitoring Report MN-05-0-5981  
Quality Monitoring Report MN-05-0-6002  
Quality Monitoring Report MN-05-0-7719  
Quality Monitoring Report MN-05-0-8242  
Quality Monitoring Report MN-05-0-8573

Other Documents:

50.54Q evaluation associated with CR2005-2585

Lesson Plan EPT001.02, "Emergency Direction Part 2," Revision 7

Section 4OA1

0ERP01-ZV-IN01, "Emergency Classifications," Revision 6

0ERP01-ZV-IN02, "Notifications to Offsite Agencies," Revision 18

0ERP01-ZV-IN07, "Offsite Protective Action Recommendations," Revision 10

0ERP01-ZV-TP01, "Offsite Dose Calculations," Revision 16

0PGP05-ZV-0001, "Emergency Response Exercises and Drills," Revision 7

Miscellaneous Documents

0PGP03-ZV-0001, "Severe Weather Plan," Revision 12

Section 4OA5 Other

CRs

03-18389

**LIST OF ACRONYMS**

ALARAAs	Low As is Reasonably Achieved
CCW	component cooling water
CFR	<i>Code of Federal Regulations</i>
CR	condition report
ECW	essential cooling water
EPZ	emergency planning zone
LER	licensee event report
NCV	noncited violation
PI	performance indicators
RCS	reactor coolant system
SSC	structure, system, and component
WAN	work authorization number