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

January 30, 2003

William T. Cottle, President and
Chief Executive Officer
STP Nuclear Operating Company
P.O. Box 289
Wadsworth, Texas 77483

SUBJECT: SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION - NRC INSPECTION REPORT 50-498/02-09; 50-499/02-09

Dear Mr. Cottle:

On December 21, 2002, the NRC completed an inspection at your South Texas Project Electric Generating Station, Units 1 and 2, facility. The enclosed report documents the inspection findings which were discussed on January 9, 2003, with Mr. J. Sheppard and other members of your staff.

This 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. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel. This inspection was the third in a series of three inspections to cover steam generator replacement activities at the South Texas Project, Unit 2. This inspection covered steam generator removal and replacement activities and postinstallation verification and testing activities.

Based on the results of this inspection no finding of significance was identified.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response 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/

William D. Johnson, Chief
Project Branch A
Division of Reactor Projects

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

Enclosure:
NRC Inspection Report
50-498/02-09; 50-499/02-09

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RIV:RI:DRP/A	SRI:DRP/A	C:DRS/EMB	C:DRS/PSB	C:DRP/A
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01/21/03	01/21/03	01/29/03	01/29/03	01/30/03

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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Dockets:	50-498 50-499
Licenses:	NPF-76 NPF-80
Report No:	50-498/02-09; 50-499/02-09
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 22 - December 21, 2002
Inspectors:	N. F. O'Keefe, Senior Resident Inspector G. L. Guerra, Resident Inspector M. P. Shannon, Senior Health Physicist, Plant Support Branch W. M. McNeill, Senior Reactor Inspector, Engineering and Maintenance Branch J. M. Keeton, Project Engineer, Project Branch A
Approved By:	W. D. Johnson, Chief, Project Branch A, Division of Reactor Projects
Attachment:	Supplemental Information

SUMMARY OF FINDINGS

South Texas Project Electric Generating Station
NRC Inspection Report 50-498/02-09; 50-499/02-09

IR 05000498-02-09; IR 05000499-02-09; on 09/22-12/21/2002; South Texas Project Nuclear Operating Company; South Texas Project Electric Generating Station, Unit 2. Integrated Report of Steam Generator Replacement Activities.

The inspection was conducted by resident inspectors and region-based engineering and plant support inspectors. This inspection was the third in a series of three inspections to cover steam generator replacement activities at the South Texas Project. This inspection covered steam generator removal and replacement activities, and postinstallation verification and testing activities by the licensee. No findings of significance were identified. Unit 1 was included in this inspection to the extent of inspecting representative examples of licensee activities common to both units. 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. Inspector-Identified and Self-Revealing Findings

Cornerstone: Barrier Integrity

- Green. The South Texas Project Unit 2 steam generator replacement project was inspected utilizing the guidance in Inspection Procedure 50001, "Steam Generator Replacement Inspection," in a series of three inspection reports (50-498;499/02-07, 02-08, and 02-09). These inspections covered design and planning, steam generator removal and replacement, and postinstallation verification and testing. The inspections were conducted by resident and region-based engineering and plant support inspectors. The steam generator replacement outage was well planned and executed. The attention to lessons learned from the previous steam generator replacement outage were very effective in preventing recurrence of problems. Plant conditions were carefully controlled to minimize risk during construction activities.

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.

Report Details

Plant Status

Unit 1 began the inspection period at 100 percent power. Operators manually tripped Unit 1 on November 16, 2002, in response to a catastrophic failure of a circulating water pump. The unit was restarted on November 24, and resumed full power operations shortly after. Unit 1 operated at full power for the remainder of the inspection period.

Unit 2 began the inspection period at 100 percent power. The outage began on October 2, 2002, with the opening of the main generator breaker. The unit was started up on December 4, and breaker closure was on December 12; ending the outage. Full power was reached on December 12. On December 15, Unit 2 was manually tripped due to high turbine generator vibrations and indications of turbine damage. Unit 2 was in a forced outage at the end of the inspection period.

1. REACTOR SAFETY
Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R08 Inservice Inspection Activities (50001, 71111.08)

Performance of Nondestructive Examination (NDE) of Steam Generator Replacement Activities Other than Steam Generator Tube Inspections

a. Inspection Scope

The inspectors observed licensee and contractor NDE personnel perform the ASME Code Section XI examinations listed below:

SYSTEM	COMPONENT/WELD IDENTIFICATION	EXAMINATION METHOD
Feedwater	Pipe to Pipe/HFW-0603	Radiograph
Feedwater	Pipe to Elbow/HFW-0444	Radiograph
Feedwater	Pipe to Elbow/HFW-0450	Radiograph
Auxiliary Feedwater	Pipe to Weldolet/HFW-0137R1	Radiograph
Auxiliary Feedwater	Pipe to Pipe/HFW-0139	Radiograph
Feedwater	Pipe to Pipe/HFW-0151	Radiograph
Reactor Coolant	Safe End to Elbow(Demonstration)	Ultrasonic

The inspectors verified that the examiners used the correct NDE procedure and that the requirements specified in the procedure met the ASME Code. The baseline inservice inspection of the new welds from the steam generator replacement had not been performed at the time of this inspection. The inspectors did observe the demonstration of the ultrasonic examination of the replacement steam generator safe end to reactor coolant system elbow weld which will be used for baseline inspection.

The inspectors observed the welding of the reactor coolant piping and main steam system. The inspectors verified the welders used proper welding parameters as well as qualified procedures. The inspectors also reviewed the postweld heat treatment records of Welds HFW-0433 and HFW-0444 and verified that the licensee properly followed the procedure and ASME Code requirements. The inspectors observed performance of the following welds:

SYSTEM	DESCRIPTION	WELD NUMBER
Reactor Coolant System	Pipe to Nozzle	FW0002CUT1
Reactor Coolant System	Pipe to Nozzle	FW0005CUT1
Reactor Coolant System	Pipe to Nozzle	FW0012CUT1
Reactor Coolant System	Pipe to Nozzle	FW0013CUT1
Reactor Coolant System	Pipe to Nozzle	FW0018CUT1
Reactor Coolant System	Pipe to Nozzle	FW0021CUT1
Reactor Coolant System	Pipe to Nozzle	FW0028CUT1
Reactor Coolant System	Pipe to Nozzle	FW0029CUT1
Main Steam System	Pipe to Nozzle	HFW0213
Main Steam System	Pipe to Elbow	HFWS0214

b. Findings

No findings of significance were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors witnessed or reviewed the results of postmaintenance testing for the following five maintenance activities:

- (Unit 2) 0TEP04-SG-0001, “Steam Generator Replacement and Core Reload Initial Start-Up Testing,” Revision 2, on December 3-11, 2002
- (Unit 2) 0TEP04-SG-0003, “Low Power Steam Generator Water Level Control Test,” Revision 3, on December 6, 2002
- (Unit 2) 0TEP04-SG-0004, “Steam Generator Water Level Control Test,” Revision 3, on December 9, 2002

- (Unit 2) 0TEP04-SG-0005, “Load Swing Test,” Revision 2, on December 12, 2002

- (Unit 2) 0TEP04-SG-0006, “Large Load Reduction Test,” Revision 2, on December 13, 2002

In each case, the test procedures were reviewed to determine if the test adequately verified proper performance of the components affected by outage maintenance activities. The Updated Final Safety Analysis Report, Technical Specifications, and design-basis documents were also reviewed as applicable to determine the adequacy of the acceptance criteria listed in the test procedures.

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities (71111.20)

a. Inspection Scope

The inspectors reviewed plant conditions and observed selected refueling outage activities associated with the Unit 2 Ninth Refueling Outage to verify that the licensee maintained the plant in a configuration consistent with the requirements of Technical Specifications and with the assumptions of the outage risk assessment. For this inspection, the inspectors reviewed the following activities as they related to entering conditions necessary for performing the steam generator replacement. Coverage of the full scope of Inspection Procedure 71111.20 is documented in Inspection Report 50-498;499/02-05. The inspectors observed portions of the following activities:

- Monitoring of reactor shutdown and plant cooldown activities
- Control of outage activities
- Reduced inventory and midloop conditions
- Refueling activities
- Monitoring of heatup and startup activities

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors evaluated the adequacy of periodic testing of the following important nuclear plant equipment. This review included aspects such as preconditioning, the impact of testing during plant operations, the adequacy of acceptance criteria, test frequency, procedure adherence, record keeping, the restoration of standby equipment, the effectiveness of the licensee’s problem identification and resolution program, and

test equipment accuracy, range and calibration. The inspectors reviewed the following test, which was performed after completing substantial replacement of reactor coolant system pressure boundary components:

- (Unit 2) 0PSP15-RC-0001, "Reactor Coolant System Leakage Pressure Test," Revision 8, on December 2, 2002

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors used the guidance in Inspection Procedure 71111.23 to review the following three temporary modifications with respect to design bases, approvals, and tracking. The inspectors reviewed the associated 10 CFR 50.59 screening, updated procedures, and drawings. The inspectors also walked down the temporary modification.

- T2-98-19449-1, "Installation of the Temporary Construction Power System," on October 7, 2002

- T2-98-19446-8, "Reactor Cavity Decking," on October 15, 2002

- Work Package P-TMP-366, "Installation and Removal of Temporary Air, Argon, Acetylene, and Oxygen Supply and Distribution Systems," on October 30, 2002

Additional information concerning the review of temporary services is located in Section 4OA5 of this report.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY
Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (50001, 71121.01)

a. Inspection Scope

The inspector reviewed and compared radiological controls for airborne radioactivity areas, radiation areas, and high radiation areas for the Unit 2 steam generator replacement work activities with regulatory requirements to ensure compliance. The following items were reviewed:

- Area postings and other access controls for steam generator work activities
- Steam generator radiation work permits and radiological surveys involving potential airborne radioactivity areas and high radiation areas
- Contamination control activities
- Dosimetry placement when work involved a significant dose gradient
- Selected corrective action documents involving access controls to radiologically significant areas (Condition Reports (CR) 02 -14080, 02-15286, and 02-15465)

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES (OA)

4OA2 Identification and Resolution of Problems

.1 Welding and Nondestructive Examination Inspection (71111.08)

a. Inspection Scope

The inspectors reviewed the condition reports issued during the current outage and reviewed in detail a sample of four condition reports on the steam generator welding and nondestructive testing activities. The inspectors verified that the licensee identified, evaluated, corrected, and trended in accordance with the program requirements in place at the South Texas Project.

b. Findings

No findings of significance were identified.

.2 Steam Generator Replacement Outage Inspection (50001)

a. Inspection Scope

The inspectors reviewed the daily condition report summary issued during the current outage for risk-significant issues to see that the licensee was properly implementing the corrective action program. The inspectors verified that the licensee identified, evaluated, corrected, and trended in accordance with the program requirements in place at the South Texas Project. The inspectors also reviewed the licensee's actions to identify and correct lessons learned from the Unit 1 steam generator replacement project.

b. Findings

No findings of significance were identified.

4OA5 Steam Generator Replacement Activities

.1 Steam Generator Removal and Replacement Inspections (50001, 71111.20, 71111.23)

a. Inspection Scope

The inspectors used the guidance in Inspection Procedure 50001 to perform the following steam generator removal and replacement inspection activities.

Welding and Nondestructive Examination Activities

An inspection to review welding and nondestructive examination activities was performed during the steam generator replacement outage by regional office-based specialist inspectors. The results of the inspection are documented in Section 1R08 above.

Lifting and Rigging Activities

The inspectors observed and reviewed several activities throughout the outage associated with lifting and rigging. The inspectors observed and reviewed preparations, procedures, crane and rigging inspections, and lay-down areas associated with the following activities:

- Construction of the outside lift system
- Partial bio-wall and interference removal and replacement
- Installation of the temporary power transformer (Condition Report Engineering Evaluation (CREE) 02-6956-1 and 02-9041-1) and Work Package E-TPS-242, “Temporary Power/Transformer in Containment”
- Temporary handling device construction and removal
- Reactor cavity decking construction and removal
- Old steam generator removal
- Onload of new steam generators
- Transport of old steam generators to storage facility

Major Structural Modifications

The inspectors observed the implementation and reviewed documentation related to several structural modifications. The inspectors observed and reviewed the removal and reinstallation of the following structural modifications to support removal and replacement of steam generators:

- Containment bio-wall removal as interference (CR 98-19446-2)

- Structural supports for steam generators and all attached piping during all phases of removal and installation of the steam generators (Design Change Packages 98-19444-2 Supplement 1, 98-19443-1 Supplement 1, 98-19443-2, Supplement 1, and 98-19446-3 Supplement 1)

Containment Access and Integrity

This was not applicable to South Texas Project steam generator replacement. The cutting of the outer containment wall was not necessary.

Outage Operating Conditions

The inspectors used Inspection Procedure 71111.20 to verify proper outage conditions. Section 1R20 above records the activities reviewed.

Radiation Protection Controls

An inspection to review radiation protection controls was performed during the steam generator replacement outage by regional office-based specialist inspectors. The results of the inspection are documented in Section 2OS1 above.

Foreign Materials Control

The inspectors performed frequent observations of the steam generator replacement activities to verify the licensee was implementing proper foreign materials controls. In particular, the inspectors observed controls related to reactor coolant system and secondary side openings.

Temporary Services

The inspectors reviewed the work package and drawings, then observed the installation, use, and removal of temporary services in the containment building during the outage. Instructions for the use and controls for construction power, acetylene, oxygen, and argon were reviewed, and the actual installation of each system was compared to the approved system sketches. For the welding services systems, the inspectors assessed licensee efforts to assess the potential impact not installing excess flow check valves as intended, since the supply hoses contained flammable gases and traversed areas with equipment which was important to safety. The following documents were reviewed:

- CREE 02-16034-1, “Failure of the Temporary Oxy/Acetylene Hose Line”
- CREE 02-16034-2, “Issues Related to the Temporary Oxy/Acetylene System”
- CREE 98-10060-3, “Acceptability of Temporary Devices for Containment Closure in Modes 5 and 6”

Storage of Old Steam Generators

The inspectors observed the transport and storage of the old steam generators to the onsite storage facility. The radiological safety plans were reviewed. The storage structure and periodic monitoring plan was previously inspected in Inspection Report 50-498;499/00-02.

b. Findings

No findings of significance were identified.

.2 Postinstallation Verification and Testing Inspection (50001, 71111.19, 71111.22)

a. Inspection Scope

The inspectors used the guidance in Inspection Procedure 50001 to perform the following postinstallation verification and testing inspection activities.

Containment Testing

This was not applicable to South Texas Project. The cutting of the outer containment wall was not necessary.

Licensee’s Postinstallation Inspections and Verifications

The inspectors observed the implementation and reviewed several postinstallation surveillance and tests conduced under the licensee’s return to service program. Specific items reviewed are documented in Sections 1R19 and 1R22 above. Specifically, the inspectors reviewed changes to the licensee’s program for reactor coolant system and secondary side leakage testing due to the newly installed steam generators. The inspectors also reviewed the response of steam generator level and flow system controls after the licensee recalibrated the instrumentation affected by steam generator replacement.

b. Findings

No findings of significance were identified.

.3 Security Considerations and Adverse Impact to Other Unit

a. Inspection Scope (50001)

Throughout the outage, the inspectors checked for potential adverse impacts to Unit 1 (the nonoutage unit) caused by outage activities, equipment configurations, etc., in accordance with Inspection Procedure 50001. When Unit 1 was manually tripped on November 16, 2002, and entered an unplanned outage, the inspectors similarly verified that Unit 2 activities did not interfere with the safe shutdown operation of Unit 1. The inspectors made frequent observations of security practices to verify that the licensee provided appropriate support for affected vital and protected area barriers during outage activities.

b. Findings

No findings of significance were identified.

4OA6 Meetings, including Exit

Senior Management Site Visit

On November 8, 2002, Mr. E. Merschoff, Regional Administrator, NRC Region IV, visited the site to tour the plants, observe security measures and steam generator replacement activities, and to be briefed on plant issues. The tour included areas of the Unit 2 containment building. The visit included a drop-in meeting with Mr. G. Parkey, Vice President, Generation.

Exit Meetings

The results of the access control to radiologically significant areas inspection were presented to Mr. T. Jordan, Vice President, Engineering and Technical Services, and other members of licensee management on October 25, 2002.

The results of the welding inspection were presented to Mr. G. Parkey, Vice President, Generation, and other members of licensee management on November 8, 2002.

The results of the resident inspection were presented to Mr. J. Sheppard, Vice President and Assistant to the President/CEO, and other members of licensee management on January 9, 2003.

In each case, the inspectors asked the licensee representatives whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

4OA7 Licensee-Identified Violations. The following violations of very low safety significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600 for being dispositioned as noncited Violations (NCV).

1. Technical Specification 6.12.1 requires, in part, that personnel entering a high radiation area be provided with a radiation monitoring device which continuously integrates the radiation dose rates in the area and alarms when a preset integrated dose is received. However, entry into such areas with this monitoring device may be made after the dose rate levels have been established and the individuals have been made knowledgeable of them. On October 6, 2002, a carpenter crew entered Room 201 in the Unit 2 reactor containment building without contacting health physics personnel to obtain a radiological briefing, as described in Condition Report 02-14080. Also, on October 20, 2002, a worker entered the Unit 2 D steam generator platform without contacting health physics personnel to obtain a radiological briefing, as described in CR 02-15286. Radiation levels were as high as 200 millirem per hour on D steam generator platform. Because the findings were not an as low as reasonably achievable (ALARA) planning or work control issue, there was no overexposure or significant potential for an overexposure and the ability to assess dose was not compromised. These were determined to be two examples of a violation of very low safety significance and are being treated as noncited violations.

2. Technical Specification 6.8.1.a requires that the licensee have procedures for the radiation work permit (RWP) system. Section 6.2.3 of Procedure OPGP03-ZR-0051, "Radiological Access and Work Controls," Revision 14, stated, in part, that RWP instructions shall be adhered to at all times. On October 23, 2002, a worker entered the Unit 2 A steam generation platform using RWP 2002-2-0213, without obtaining a prejob briefing as required by this RWP. Specifically, although the individual was briefed on the radiation levels, health physics personnel did not brief the individual on the travel route or the need to have continuous coverage from health physics personnel located on the 19 foot elevation of the reactor containment building; therefore, the briefing was not adequate, as described in CR 02-15465. General radiation levels on A steam generator platform were as high as 520 millirem per hour. Because the finding was not an ALARA planning or work control issue, there was no overexposure or significant potential for an overexposure and the ability to assess dose was not compromised. This violation was determined to be of very low safety significance and is being treated as a noncited violation.

ATTACHMENT

Supplemental Information

PARTIAL LIST OF PERSONS CONTACTED

Licensee

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W. Bullard, Supervisor, Health Physics
K. Coates, Manager, Maintenance
R. Gangluff, Manager, Chemistry
E. Halpin, Plant Manager
S. Head, Manager, Licensing
T. Jordan, Vice President, Engineering and Technical Services
M. Kanavos, Manager, Plant Modifications
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J. LeValley, Area Project Manager
R. Lovell, Manager, Training
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F. Mangan, Vice President, Business Services
J. Meyers, Senior Health Physics Specialist
M. Oswald, Supervising Engineer, Design Engineering
G. Parkey, Vice President, Generation
T. Powell, Manager, Health Physics
J. Price, Supervisor, Design Engineering
K. Richards, Installation/Return to Service Manager
J. Sheppard, Vice President & Assistant to the President/CEO
K. Silverthorne, Supervisor, Welding Programs
J. Simmons, Health Physics Steam Generator Replacement Project Manager
C. Stone, Supervisor, Radiation Protection
D. Stonestreet, Unit 2 Outage Director
D. Towler, Manager, Generation Quality
T. Walker, Quality Manager

Licensee Contractor

J. Atwell, Project Manager Steam Generator Replacement (Bechtel)

DOCUMENTS REVIEWED

The following documents were selected and reviewed by the inspectors to accomplish the objectives and scope of the inspection and to support any findings:

a. Condition Report Engineering Evaluations:

CREE 98-10060-3, “Acceptability of the Temporary Devices for Containment Closure”

CREE 98-19446-7, Revision 0, “STP Unit 2 Steam Generator Replacement Rigging and Transport”

b. Radiography Control Plan

c. South Texas Project Steam Generator Replacement Project Argon Safety Plan

d. National Fire Protection Association Code 51, “Standard for the Design and Installation of Oxygen-Fuel Gas Systems for Welding, Cutting, and Allied Processes,” 1997 Edition

e. Work Package P-TMP-366, “Installation and Removal of Temporary Air, Argon, Acetylene, and Oxygen Supply and Distribution Systems”

f. Compressed Gas Association G-1.6-1996, “Recommended Practices for Mobile Acetylene Trailer Systems”

g. Drawings:

FSK 2M-022, Revision 0, “Temporary Oxygen Distribution System”
FSK 2M-099, Revision 0, “Temporary Acetylene Distribution System”
FSK 2M-021, Revision 0, “Temporary Argon Distribution System”

h. Design Change Package 98-19446-6, Supplement 0, “Unit 2 Outside Lift System/ Runway Foundation Installation”

Welding and NDE Inspection

Condition Reports

02-16019	02-16020	02-16255	02-16291

Procedures

Number	Procedure	Revision
GWS-1	Bechtel General Welding Specification	7 with Amendment 7
P1-AT-Lh(CVN+40)	Bechtel Welding Procedure Specification	2
P3(G3)-T-o(CVN+40)	Bechtel Welding Procedure Specification	1
P8-T(RA)	Bechtel Welding Procedure Specification	3
RT-ASME III	Bechtel Nondestructive Examination Standard Radiographic Examination	3
PHT-1	Bechtel Welding Standard Postweld Heat Treatment of Field Welds	1
THX-ISI-215	Ultrasonic Examination of Replacement Steam Generators Safe End to Main Coolant Elbow Welds for South Texas Project	1 with Field Change Notice 1

Radiographic Examinations Test Reports

RT-2-045	RT-2-047	RT-2-048
RT-2-054	RT-2-057	RT-2-060

Work Orders

P-MSA-278, MS “A” Piping Removal/Installation
P-RCA-257, S/G “A” RCS Piping and FOSAR
P-RCB-258, S/G “B” RCS Piping and FOSAR
P-RCC-259, S/G “C” RCS Piping and FOSAR
P-RCD-260, S/G “D” RCS Piping and FOSAR