UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
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April 12, 2002

EA-02-007

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

SUBJECT: NRC SOUTH TEXAS ELECTRIC GENERATING STATION - NRC INSPECTION REPORT 50-498/01-08; 50-499/01-08

Dear Mr. Cottle:

On March 23, 2002, the NRC completed an inspection at your South Texas Project Electric Generating Station, Units 1 and 2. The enclosed report documents the inspection findings which were discussed on March 28, 2002, with you and members of your staff.

This inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel.

Based on the results of this inspection, the NRC has identified three issues that were evaluated under the risk-significance determination process as having very low safety significance (Green). The NRC has also determined that violations are associated with two of these issues. These violations are being treated as noncited violations (NCVs), consistent with Section VI.A of the Enforcement Policy. These NCVs are described in the subject inspection report. If you contest the violation or significance of these NCVs, 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; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the South Texas Project Electric Generating Station, Units 1 and 2, facility.

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).

Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

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
50-498/01-08; 50-499/01-08

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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Dockets:	50-498 50-499
Licenses:	NPF-76 NPF-80
Report No:	50-498/01-08 50-499/01-08
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
Date:	December 30, 2001 through March 23, 2002
Inspectors:	N. F. O'Keefe, Senior Resident Inspector G. L. Guerra, Resident Inspector D. B. Allen, Senior Resident Inspector, Comanche Peak D. R. Carter, Radiation Specialist P. J. Elkmann, Emergency Preparedness Analyst, Plant Support Branch
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, Units 1 and 2
NRC Inspection Report 50-498/01-08; 50-499/01-08

IR 05000498-01-08; IR 05000499-01-08; on 12/29/2001 - 3/23/2002; STP Nuclear Operating Company; South Texas Project Electric Generating Station; Units 1 & 2. Integrated Res/Reg Rpt; Event fwp, problem identification and reporting.

The inspection was conducted by resident inspectors and region based plant support inspectors. The inspection identified three Green issues and two noncited violations. The significance of issues is indicated by their color (Green, White, Yellow, or Red) and was determined by the Significance Determination Process (SDP) in Inspection Manual Chapter 0609. Findings for which the SDP does not apply are indicated by No Color or by the severity level of the applicable violation. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at http://www.nrc.gov/NRR/OVERSIGHT/index.html.

A. Inspector Identified Findings

Cornerstone: Mitigating Systems

- Green. The licensee's failure to properly assess the impact of a failed fire damper in the electrical auxiliary building ventilation system on the operability of the control room ventilation system resulted in all three trains of control room ventilation being inoperable for longer than the allowed outage time permitted by Technical Specifications. The damper redirected air flow in a way that degraded the control room radiological barrier by preventing that system from attaining the positive pressure required by Technical Specifications. This violation of Technical Specification 3.7.7 is being treated as a noncited violation, consistent with Section VI.A.1 of the NRC Enforcement Policy. This issue is in the licensee's corrective action program as Condition Report 02-3183 (NCV 498/200108-01).

  This issue involved a degraded control room radiological barrier and was more than minor due to the potential impact on the mitigation capability provided by control room operators. A Phase 1 Significance Determination Process screening determined this issue to be of very low risk significance (Green) (Section 1R15.2).

- Green. The Train 1C essential cooling water pump failed during a postmaintenance test following maintenance on the pump. Bearing lubricating water channels were found to be blocked by foreign material introduced during the maintenance work. Additionally, operators failed to recognize the inadequate lubricating water flow and continued to run the pump for 10 minutes before it failed. The inspectors concluded that the operating and maintenance procedures were inappropriate to the circumstances. The maintenance procedures for rebuilding the pump did not adequately ensure that the appropriate cleanliness requirements were implemented during the work, and the

portion of the operating procedure used to fill and vent the system following maintenance did not correctly incorporate vendor manual information to ensure timely verification of adequate cooling water flow. This was determined to be a violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings." This violation is associated with an inspection finding that was characterized by the Significance Determination Process as having very low safety significance (Green) and is being treated as a noncited violation, consistent with Section VI.A.1 of the NRC Enforcement Policy. This issue is in the licensee's corrective action program as Condition Report 01-14883. This closes Unresolved Item 50-498/2002-06-01 and Notice of Enforcement Discretion 01-4-02 (NCV 498/200108-02). EA-02-007 was assigned to this violation because it is associated with an NOED.

A Phase 3 Significance Determination Process evaluation was performed to assess the safety impact of having this train of cooling water and the loads it supported inoperable for the additional out-of-service time incurred as a result of the failure induced by foreign material. It was determined to be of very low safety significance (Green). Evaluating risk using the zero maintenance model resulted in a delta core damage frequency of 5.05E-7/year and a delta large early release frequency of 3.75E-8/year (Section 4OA3.2).

Cornerstone: Barrier Integrity

- Green. The inspectors identified a finding of very low safety significance associated with the licensee's handling of a reactor coolant leak. The finding was based on problems associated with configuration controls, problem reporting, and significance determination. The drain valve downstream of Centrifugal Charging Pump 1B was not fully shut or capped following pump maintenance, and was not checked following pump start. Licensee management was not sensitive to the fact that this drain line provided single valve isolation to atmosphere, operated under the highest pressure in the plant, and was known to have seat leakage. Operators were very slow to recognize indications of the 2.3 gpm leak, even though it was in excess of Technical Specifications limits. After it was located and stopped, the problem was not properly reported to station management, documented in the corrective action process, or investigated (Section 4OA3).

  The inspectors concluded that there was no violation of Technical Specification requirements because the leak was stopped within the four hours allowed. Similarly, a violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," did not occur because the actual condition adverse to quality was identified and corrected. However, this event had a credible impact on safety and affected reactor coolant system integrity because a leak was created outside containment in an area not designed to detect, isolate, or treat reactor coolant system leakage. However, other indications and alarms were expected to alert operators to the condition well before it had more of a safety impact.

Report Details

Plant Status

Unit 1 began this inspection period at full power. On February 19, 2002, power was reduced to 60 percent at the request of the load dispatcher. Power was returned to 100 percent later the same day, and the plant remained at or near full power for the balance of the inspection period.

Unit 2 operated at or near full power throughout this inspection period.

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

1R04 Equipment Alignment (71111.04)

.1 Partial System Walkdown

a. Inspection Scope

The inspectors performed a partial system walkdown of the Unit 1 fuel handling building Train B emergency exhaust system on January 23, 2002, while Train A was out of service. The inspectors verified the proper standby equipment and control board lineup. The inspectors also examined component material condition.

The inspectors performed a partial system walkdown of the Unit 2 essential chilled water system Trains A and B on January 15, 2002, while Train C was out of service. The inspectors used Plant Operating Procedure 0POP02-CH-0001, "Essential Chilled Water System," Revision 26, and system drawings to verify the proper standby mechanical and electrical equipment lineup. The inspectors also examined component material condition.

The inspectors performed a partial system walkdown of the Unit 2 safety injection system Train A on February 6 and 7, 2002, while Train B was out of service. The inspectors used Plant Operating Procedure 0POP02-SI-0002, "Safety Injection System Initial Lineup," Revision 15, to verify that the required standby and support systems were in a proper standby lineup. The inspectors also examined component material condition.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Routine Fire Area Walkdowns

a. Inspection Scope

The inspectors used Inspection Procedure 71111.05 to evaluate the control of transient

combustibles and ignition sources. The licensee's individual plant examination, fire preplans, and Fire Hazards Analysis Report were used to identify important plant equipment, fire loading, detection and suppression equipment locations, and planned actions to respond to a fire in each of the plant areas selected. The inspection included observing the material condition and operational lineup of fire protection systems and fire barriers used to prevent fire damage or propagation. The following plant areas were inspected:

- Unit 2 electrical auxiliary building Train A switchgear room (Fire Zone Z004)
- Unit 2 essential chilled water Train A room (Fire Zone Z128)
- Unit 1 fuel handling building charcoal filter deluge system (Fire Zone Z303)
- Unit 2 control room ventilation makeup filter rooms (Fire Zones Z061, Z062 and Z063)
- Unit 2 Train A standby diesel generator room (Fire Zones Z502)
- Unit 2 essential chilled water Train B room (Fire Zone Z140)

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11)

a. Inspection Scope

The inspectors observed licensed operator requalification training on March 20, 2002. The inspectors observed crew performance during simulator sessions for clarity and formality of communications, correct use of procedures, high risk operator actions, and the oversight and direction provided by the shift supervisor. The inspectors also observed the licensee's use of emergency action levels for proper emergency classification. The inspectors reviewed the scenario sequence and objectives, observed the licensee's critique, and discussed crew performance with licensee monitors for the training.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Functional Failure Review (71111.12)

a. Inspection Scope

The inspectors independently verified that the licensee properly implemented 10 CFR 50.65, "Monitoring the Effectiveness of Maintenance at Nuclear Power Plants,"

for the following equipment performance problems:

- Main turbine throttle Valve 3L did not meet surveillance stroke time (Work Authorization Number (WAN) 217510, Condition Report (CR) 01-17277)
- Essential cooling water pump differential pressure below required action range (WAN 218268, CR 01-18004)
- Standby Diesel Generator 12 failed to complete cooldown cycle (WAN 223734, CR 02-1684)
- Class 1E battery charger relays defective (WAN 224330, CR 02-2250)
- Essential chiller failed to start due to prerotation vanes not aligned (WAN 209782, CR 02-567)
- Repetitive failures on qualified data processing system power supplies (CR 02-3277)

The inspectors focused the review on whether the structures, systems, or components (SSCs) that experienced problems were properly characterized in the scope of the program. They also reviewed whether the SSC failure or performance problem was properly characterized. The inspectors assessed the adequacy of the licensee's significance classification for the SSC. This included the appropriateness of the performance criteria established for the SSC (if applicable) and the adequacy of corrective actions for SSCs classified in accordance with 10 CFR 50.65 a(1) as applicable.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors reviewed selected activities regarding risk evaluations and overall plant configuration control. The inspectors discussed emergent work issues with work control personnel and reviewed the potential risk impact of these activities to verify that the work was adequately planned, controlled, and executed. The activities reviewed were associated with:

- (Unit 2) Electrical auxiliary building ventilation system smoke purge damper failure (CR 02-855)
- (Unit 2) Essential chilled water flow balancing to support partial system abandonment (CR 02-143-1)

- (Unit 1) Main Feedwater Pump 11 work on oil pressure switch (WAN 407714)
- (Unit 1) Configuration risk management associated with the Train A essential cooling water extended allowed outage work the week of January 22, 2002
- (Unit 1) Main generator hydrogen cooling line repairs (CR 02-3948)
- (Unit 1) Control room ventilation rendered inoperable by failure of electrical building ventilation system fire damper (CR 02-3106)

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

.1 Inspection Activities

a. Inspection Scope

The inspectors used Inspection Procedure 71111.15 to review selected operability evaluations conducted by the licensee during the report period involving risk-significant systems or components. The inspectors evaluated the technical adequacy of the licensee's operability determination, reviewed any compensatory measures, and checked to see that the licensee considered the impact of other preexisting conditions, as applicable. Additionally, the inspectors evaluated the adequacy of the licensee's problem identification and resolution program as it applied to operability evaluations. Specific operability evaluations reviewed are listed below.

- (Unit 1) Centrifugal Charging Pump 1B auxiliary oil pump (Condition Report Operability Evaluation 02-1569-04)
- (Unit 1) Fire protection containment isolation Valve MOV-756 low electrical resistance reading (CR 02-644)
- (Unit 1) Failure of return air fire damper in electrical auxiliary building ventilation (CR 02-3183)
- (Unit 1) Electrical separation questioned in a control room cable chase area (CR 02-1632-01)
- (Common) Offsite power functionality following a fault in the W.A. Parish Generating Station line (CR 02-2691)
- (Unit 2) Discrepancy between two test methods for fuel handling building emergency exhaust heater capacity (CR 02-2053-01)

b. Findings

The failure of a return air fire damper in the electrical auxiliary building ventilation system is discussed below. No other findings of significance were identified.

.2 Failure of Return Air Fire Damper in Electrical Auxiliary Building Ventilation

a. Inspection Scope

The inspectors reviewed the technical issues and sequence of events surrounding the failure and closing of a return air fire damper (FF 314) in the electrical auxiliary building ventilation system. In particular, the inspectors questioned the initial conclusion that the failure had no impact on the operability of the adjacent control room. The inspectors interviewed the shift supervisor and system engineer to assess the scope and conclusions of the initial operability review. The inspectors also reviewed the licensee's compensatory actions and system flow balancing efforts. The results of Plant Surveillance Procedure 0PSP11-HE-0002, "Control Room Emergency Air Cleanup System Functional Test," Revision 12, were reviewed.

b. Findings

A Green noncited violation was identified involving an inadequate operability evaluation regarding a fire damper that failed closed in the electrical auxiliary building ventilation system adjacent to the control room. The improper conclusion that there was no impact to operability resulted in all three trains of control room envelope ventilation being inoperable as a radiological barrier in excess of the time allowed by Technical Specifications.

On February 26, 2002, at about 10:30 a.m., operators identified unusual air flow in the electrical auxiliary building (EAB) and control room. After investigating with the help of the system engineer, the licensee found a return air fire damper (FF 314) in the EAB ventilation system (Train B) had failed shut.

The shift supervisor discussed this issue with the system engineer, focusing on the repair and the priority that should be assigned. The problem was in the EAB ventilation train that was already out of service for planned maintenance, so the shift supervisor concluded that no operability problem existed. The system engineer concluded that the control room envelope was inoperable because the failed damper was redirecting air outside the control room envelope so as to make the outside at a higher pressure than the inside. He assumed the shift supervisor also realized this because of the high priority the repair was being given, although operability was not directly discussed.

The control room ventilation system was required to build up a positive pressure (1/8 inch water gage) to prevent inleakage of radioactivity during an accident. The system operated in a different mode during an accident than during normal conditions, such that normally the control room was maintained at a smaller positive pressure. The EAB ventilation system operated in the rooms immediately outside the control room and

was intended to maintain those rooms at essentially the same pressure as outside the building.

On the morning of February 27, 2002, the inspectors became aware of the damper failure, walked down the areas around the control room, and noted that the EAB immediately outside the control room was at a higher pressure than the control room. They questioned the shift supervisor about the ability of the control room ventilation to attain the required 1/8 inch water gage pressure during an accident. At about the same time, the system engineer learned that the damper had not been repaired and raised the same concerns. The licensee decided to run the surveillance test which would demonstrate this capability, but it failed. All three trains of the control room ventilation system were declared inoperable and the 12-hour action statement of Technical Specification 3.7.7 was entered approximately 24 hours after the damper failure was recognized. After propping open the failed damper and performing some minor flow balancing, the surveillance test was successfully completed. Trains A and C of the control room envelope makeup system were declared operable at 8:45 p.m., on February 27, 2002, approximately 34 hours after the fire damper failure.

The licensee's initial operability evaluation for the failed fire damper was considered to be inadequate because it considered only the impact on the EAB system, and not the potential impact on the adjacent control room ventilation system. While the system engineer was involved in assessing the problem, and had formed an opinion on the impact, no direct operability discussion took place. As a result, the control room envelope ventilation system was inoperable for 34 hours, which was longer than the 12 hours permitted by Technical Specifications. The inspectors determined this to be a violation of Technical Specification 3.7.7. This issue affecting the mitigation cornerstone involved a degraded control room radiological barrier and was more than minor due to the potential impact on the mitigation capability provided by control room operators. A Phase 1 Significance Determination Process evaluation determined this issue to be of very low risk significance (Green). This violation is being treaded as a noncited violation, consistent with Section VI.A.1 of the NRC Enforcement Policy. This issue is in the licensee's corrective action program as CR 02-3183 (NCV 498/200108-01).

1R16 Operator Workarounds (71111.16)

a. Inspection Scope

The inspectors reviewed licensee identified operator workarounds, and other existing equipment conditions with potential to be workarounds, to determine the overall potential impact on human performance during event response. The inspectors specifically focused on identifying equipment conditions that would affect the functionality of mitigating systems.

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 maintenance activities:

- (Unit 1) Qualified data processing system APC A2 failure (WAN 224197)
- (Unit 1) Essential Cooling Water Pump 1A vent and fill pump start (WAN 219272)
- (Unit 1) Centrifugal Charging Pump 1B seal and vibration improvement work (WAN 220839)
- (Unit 1) Technical support center diesel generator work (WAN 200052)
- (Unit 1) Reactor trip breaker failed to reset during surveillance testing (WAN 225667)
- (Unit 2) Auxiliary Feedwater Pump 24 work (WAN 224827)

In each case, the associated work orders and test procedures were reviewed to determine the scope of the maintenance activity and determine if the test adequately tested components affected by the maintenance. The Updated Final Safety Analysis Report, Technical Specifications, and design-basis documents were also reviewed to determine the adequacy of the acceptance criteria listed in the test procedures.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

.1 Surveillance Test Observations

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 impacts 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 observed or reviewed the following tests:

- (Unit 2) 0PSP03-RS-0001, "Monthly Control Rod Operability," Revision 13, and 0PEP03-RS-0001, "Full Out Position Repositioning," Revision 3

- (Unit 1) 0PSP03-EW-0008, “Essential Cooling Water Pump 1A Reference Values Measurement,” Revision 7
- (Unit 2) 0PSP03-SP-0008B, “Solid State Protection System Actuation Train B Slave Relay Test,” Revision 14
- (Unit 1) 0PSP11-HE-0002, “Control Room Emergency Air Cleanup System Function Test,” Revision 12
- (Unit 1) 0PSP06-PK-0007, “4.16 KV Class 1E Degraded Voltage Relay Channel Calibration,” Revision 12
- (Unit 2) 0PSP03-NI-0001, “Power Range Nuclear Instrument Channel Calibration,” Revision 14

b. Findings

No findings of significance were identified.

.2 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed the licensee’s identification, classification, assessment, and corrective actions related to issues with surveillance testing. Technical issues were assessed by discussing them with engineering, operations, and maintenance personnel and reviewing design and license-basis documents. Corrective action process issues were discussed with senior managers with primary responsibility for the issue. The following specific issues were reviewed:

- Daily power range nuclear instrument channel calibration surveillance was missed (CR 02-2295)
- Nuclear instrumentation system axial flux difference performed without first updating computer constants, rendering axial flux difference and quadrant power tilt monitors inoperable (CR 02-2756)

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed the following temporary modifications, using the guidance contained in Inspection Procedure 71111.23 with respect to design bases, approvals, and tracking. The inspectors reviewed the 10 CFR 50.59 screening, updated

procedures, and drawings. The inspectors also walked down the temporary modifications.

- Temporary Modification TL2-01-19348-2, "Auxiliary Feedwater Pump 24 Main Steam to Turbine Throttle Valve Leak Repair," Revision 0 (Work Order 224125)

- Temporary Modification T2-01-9885-3, "Unit 2 Reactor Containment Building Pressure Gage," Revision 0 (Work Order 325342)

b. Findings

No findings of significance were identified.

1EP1 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors evaluated an emergency preparedness drill conducted on March 20, 2002, using Inspection Procedure 71114, Attachment 6. This evaluation included reviewing the scenario and drill objectives, observing licensee performance in the control room simulator, observing the licensee's critique, and discussing observations and the licensee's findings with the emergency preparedness evaluator. Emphasis was placed on confirming proper event classification and timely reporting.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspector performed an in-office review of Revision ICN 19-4 to the South Texas Project Emergency Plan against 10 CFR 50.54(q) to determine if the revision decreased the effectiveness of the emergency plan.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY
Cornerstone: Occupational Radiation Safety [OS]

2OS2 ALARA Planning and Controls (71121.02)

a. Inspection Scope

The inspector interviewed radiation workers and radiation protection personnel throughout the radiologically controlled area of both units and conducted independent radiation surveys of selected work areas. The following items were reviewed and compared with regulatory requirements to assess the licensee's program to maintain occupational exposure as low as is reasonably achievable (ALARA):

- ALARA program procedures and ALARA committee meeting minutes from September 2001
- Quality Audit Report 01-03(RC), "Radiological Controls/Radwaste"
- Radiation protection department self-assessment (CR 01-8175)
- Processes used to estimate and track exposures
- Plant collective exposure history for the past 3 years, current exposure trends, and 3-year rolling average dose information
- Individual exposures of selected work groups (health physics, operations, and plant modification project implementation)
- Four radiation work permit packages from Refueling Outage 1RE10 work activities that resulted in the highest personnel collective exposures (Steam Generator Eddy Current Testing (2001-1-0243), Installation/Removal of Steam Generator Nozzle Dams (2001-1-0247), Steam Generator Primary Side Work (2001-1-0244), and Reactor Coolant Pump 1B Platform Modifications (2001-10344))
- Use of radiological engineering controls, including all temporary shielding installations
- Hot spot tracking and reduction program
- Calendar Years 2002 - 2006 Long Range ALARA Plan
- 1RE10 Post Outage Report
- A summary of ALARA and radiological worker performance related corrective action reports written since September 1, 2001, and 10 specific CRs (01-14869, 01-15065, 01-15763, 01-16009, 01-16521, 01-16546, 01-16719, 01-16801, 01-18245, and 01-18944)

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES (OA)

4OA3 Event Followup

.1 Reactor Coolant System (RCS) Leak in Excess of Technical Specification Limits for Unidentified Leakage - Problems with Reporting and Configuration Control

a. Inspection Scope (71153)

The inspectors reviewed an event in which a leak started from a drain valve when a centrifugal charging pump (CCP) was started for postmaintenance testing which was not initially recognized. The inspectors reviewed control room logs and interviewed operators and a health physics technician in order to determine the sequence of events. Operating practices and configuration control practices were discussed with operations personnel, including the operations manager. The following documents were reviewed:

- 0POP02-CV-0005, "Chemical and Volume Control System Pre-Start System Alignment," Revision 17
- 0POP04-RC-0003, "Excessive RCS Leakage," Revision 6
- Equipment Clearance Order A19811, Revisions 0, 1, and 2
- Unit 1 control room logs for February 22-23, 2002
- Condition Report 02-2971

b. Findings

A Green finding was identified for configuration control problems and weak problem reporting and significance determination issues associated with an RCS leak from a charging pump drain valve that was not properly shut following maintenance. Operators were slow to recognize indications of the 2.3 gpm leak, even though it was in excess of Technical Specifications limits. When the leak was recognized and stopped, the event was not properly reported to management, documented in the corrective action process, or investigated.

On the day shift of Friday, February 22, 2002, tags were cleared in preparation for performing a postmaintenance test on CCP 1B. The operators noticed a deficiency tag that indicated the pump discharge drain Valve (CV-0489) had seat leakage. The tagout restoration directed returning this valve to its normally closed position. After shutting the valve, the operators decided to leave the drain line pipe cap off so they could quantify the leakage after the pump start. However, the pump start was delayed until the following shift and the operators did not turn over their plan or the unusual configuration

to their reliefs. The pump was later started without checking the valve, and the valve leaked past the seat at 2.3 gpm.

Control room operators were slow to recognize that volume control tank (VCT) water level was dropping due to the leak and to enter the abnormal operating procedure for excessive RCS leakage, despite the fact that the leak rate was greater than the Technical Specification limit of 1.0 gpm for unidentified leakage. Operators recognized the VCT level trend 2 hours 22 minutes after the pump was started and the leak was located and stopped 30 minutes later. After the leak was recognized, operator response was appropriate.

While the event was logged in the control room log, it was not reported to station management and was not properly documented in the corrective action process. A trend-only CR (condition not adverse to quality which did not make it onto the summary report seen by management) was written two nights after the leak. When the inspectors raised the issue after reviewing the weekend logs on Monday, the licensee upgraded the CR to a station-level condition adverse to quality and initiated a full investigation. The inspectors considered that the issue was initially underclassified because a condition requiring prompt actions to comply with Technical Specifications was not quickly recognized and the resulting leak was outside containment.

The inspectors noted that system drawings required that the drain line normally have a pipe cap installed. This configuration was not reflected in the system lineup in Plant Operation Procedure 0POP02-CV-0005, “Chemical and Volume Control System Pre-Start System Alignment,” Revision 17, nor did the tagout restoration sheet cause the cap to be reinstalled, contrary to the licensee’s normal configuration control practices. This valve was subject to the highest pressure in the plant, approximately 2650 psig, during normal operation. The drain line had a single valve to provide isolation to atmosphere, and that valve was known to have seat leakage. The pipe cap and piping downstream of the valve, while effectively a second barrier, were non-ASME components which were not intended to be relied upon. The inspectors concluded that the licensee was not sensitive to this combination of conditions which would have made it appropriate to verify that the drain valve was leak-tight before capping the drain line after system pressure was applied.

The inspectors concluded that there was no violation of Technical Specification requirements because the leak was stopped within the four hours allowed. Similarly, a violation of 10 CFR 50, Appendix B, Criterion XVI, “Corrective Action,” did not occur because the actual condition adverse to quality was identified and corrected. However, the problem identification and resolution process did not function effectively. The event was initially minimized, and as a result it was not promptly documented, reported, or investigated.

This event had a credible impact on safety and affected RCS integrity because a leak was created outside containment in an area not designed to detect, isolate, or treat RCS leakage. However, other indications and alarms were expected to alert operators to the condition well before it had more of a safety impact.

.2 (Closed) Unresolved Item (URI) 50-498/2001-06-01; EA-02-007; NOED 01-4-002: Apparent violation of Appendix B, Criterion V, for procedures inappropriate to the circumstances that led to failure of essential cooling water (ECW) Pump 1C. The URI was opened to evaluate the risk significance of the additional out-of-service time associated with the violation.

The Region IV senior reactor analyst performed a Phase 3 Significance Determination Process evaluation for this issue. The analyst used the results from the zero maintenance probabilistic risk-assessment model for the period affected by the unavailability of ECW Pump 1C caused by the induced failure (i.e. the period of planned maintenance was not included). The analyst determined that the use of the average test and maintenance model would be inappropriate since the licensee had preplanned the maintenance activity in accordance with the Technical Specification required Configuration Risk Management Program. The preplan limited the unavailability of additional risk-significant equipment.

The unavailability of the Train C ECW pump was determined to be of very low safety significance (Green). The calculated risk using the zero maintenance model resulted in a delta core damage frequency of 5.05E-7/year and a delta large early release frequency of 3.75E-8/year for the period between the failure due to foreign material and when the pump was restored to operable status.

As discussed in NRC Inspection Report 50-498/2001-06, a violation of 10 CFR 50, Appendix B, Criterion V, was identified for operating and maintenance procedures that were inappropriate to the circumstances which resulted in the failure of the essential cooling water pump. This violation is being treaded as a noncited violation, consistent with Section VI.A.1 of the NRC Enforcement Policy. This issue is in the licensee's corrective action program as CR 01-14883 (NCV 498/200108-02).

4OA6 Meetings, including Exit

Exit Meeting Summary

The inspector presented the inspection results of the in-office review of changes to the emergency plan and implementing procedures to Mr. C. Morgan, Supervisor, Emergency Preparedness, and other members of licensee management during a telephonic exit interview conducted on January 7, 2002.

The results of the radiation safety inspection were presented to Mr. G. Parkey, Vice President, Generation, and other members of licensee management at the conclusion of the inspection on February 14, 2002.

The results of the resident inspection were presented to Mr. W. Cottle, President and Chief Executive Officer, and other members of licensee management at the conclusion of the inspection on March 28, 2002.

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

ATTACHMENT

Supplemental Information

PARTIAL LIST OF PERSONS CONTACTED

Licensee

R. Aguilera, Supervisor, Radiation Protection
M. Berg, Manager, Operating Experience Group
K. Coates, Manager, Maintenance
W. Cottle, President and Chief Executive Officer
L. Earls, Health Physicist
R. Gangluff, Manager, Chemistry
R. Grantom, Manager, Risk Management
E. Halpin, Plant Manager
S. Head, Manager, Licensing
T. Jordan, Manager, Engineering
D. Leazar, Director, Nuclear Fuel Analysis
R. Lovell, Manager, Training
R. Maier, Supervisor, Security
M. McBurnett, Director, Quality/Licensing
W. Mookhoek, Licensing Engineer
C. Morgan, Supervisor, Emergency Preparedness
G. Parkey, Vice President, Generation
J. Phelps, Division Manager, Operations
G. Powell, Manager, Health Physics
D. Rencurral, Manager, Operations
P. Serra, Manager, Plant Protection
C. Stone, Supervisor, Radiation Protection
D. Towler, Manager, Generation Quality
S. Thomas, Manager, Plant Design Engineering
T. Walker, Manager, Engineering and Support

NRC

T. Pruett, Senior Reactor Analyst, Region IV

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

498/200108-01	NCV	Control room ventilation unable to maintain required pressure not recognized within time allowed by Technical Specification 3.7.7. (Section 1R15.2)
498/200108-02	NCV	Operating and maintenance procedures inappropriate to the circumstances contributed to failure of Essential Cooling Water Pump 1C, in violation of 10 CFR 50, Appendix B, Criterion V (Section 4OA3.2)

Closed

498/200108-01	NCV	Control room ventilation unable to maintain required pressure not recognized within time allowed by Technical Specification 3.7.7. (Section 1R15.2)
498/200108-02	NCV	Operating and maintenance procedures inappropriate to the circumstances contributed to failure of Essential Cooling Water Pump 1C, in violation of 10 CFR 50, Appendix B, Criterion V (Section 4OA3.2)
498/200106-01	URI	Failure of Essential Cooling Water Pump 1C (Section 4OA3)

LIST OF ACRONYMS USED

ALARA	as low as is reasonably acheivable
CCP	centrifugal charging pump
CR	condition report
EA	enforcement action
EAB	electrical auxiliary building
ECW	essential cooling water
NCVs	noncited violations
NOED	Notice of Enforcement Discretion
RCS	reactor coolant system
SDP	Significance Determination Process
SSCs	structures, systems, or components
URI	unresolved item
VCT	volume control tank
WAN	Work Authorization Number