

# South Texas 2

## 1Q/2010 Plant Inspection Findings

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### Initiating Events

**Significance:**  Dec 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Maintenance Procedure Degrades Cold Overpressure Mitigation System**

The inspectors reviewed a self-revealing noncited violation of 10CFR Part 50, Appendix B, Criterion V, "instructions, Procedures, and Drawings," for an inadequate maintenance procedure that failed to describe the steps for correctly restoring auxiliary process Cabinet D1. On September 21, 2009, instrumentation and controls personnel performed maintenance on auxiliary process Cabinet D1 but failed to reset the processor during restoration. As a result, the reactor coolant system temperature data output to the cold overpressure mitigation system was set to zero. On September 26, 2009, when Unit 2 was in the process of heating up in Mode 4, the automatic function of the cold overpressure mitigation system prematurely initiated and caused alarms in the control room. The actual conditions did not warrant overpressure mitigation; therefore, operations personnel isolated the pressurizer train A power operated relief valve to prevent the potential rapid depressurization of the reactor coolant system. The licensee captured this issue as Condition Report 09-14961.

The finding was more than minor because it affected the procedure quality attribute of the Initiating Events Cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations because it caused the operators to change the plant configuration by isolating one of two pressurizer power operated relief valves to prevent an initiating event. Using Inspection Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," this finding screened to a Phase 2 analysis because it was a primary system loss-of-coolant accident initiator contributor that assuming worst case degradation would have resulted in exceeding the technical specification limit for reactor coolant system leakage. The Phase 2 analysis identified that the most significant contribution to risk was a potential failure of the pressurizer power operated relief valve to open. Since the potential failure of the pressurizer power operated relief valve to open did not exist for greater than 3 days and the redundant power operated relief valve was unaffected, the finding was determined to be of very low safety significance. In addition, this finding had a crosscutting aspect associated with problem identification and resolution because the licensee did not incorporate operating experience, including the vendor recommendations for restoration of auxiliary process cabinets, into plant procedures to support plant safety [P.2(b)].

Inspection Report# : [2009005](#) (*pdf*)

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### Mitigating Systems

**Significance:**  Mar 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Follow Procedures Results in Repetitive Malfunction of Electrical Auxiliary Building Air Handling Unit 21B Smoke Purge Inlet Damper**

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

corrective action program.

The finding was more than minor because, if left uncorrected, it could have led to a more significant safety concern because incomplete and inaccurate corrective actions failed to ensure the damper would have actuated to the correct position when required. Using the Significance Determination Process Phase 1 worksheets from Inspection Manual Chapter 0609, the finding had very low safety significance because it was not a design or qualification deficiency, it did not result in the loss of system safety function, it did not result in the loss of safety function of a single train greater than its technical specification allowed outage time, it did not represent an actual loss of safety function of one or more nontechnical specification trains of equipment designated as risk significant for greater than 24 hours, and it was not risk significant due to a seismic, flooding, or severe weather initiating event. In addition, the finding had Problem Identification and Resolution crosscutting aspects associated with the corrective action program, in that, the licensee failed to accurately identify the smoke purge damper material deficiency in a timely manner because maintenance personnel did not have a low threshold for entering this issue into the corrective action program (P.1(a)).  
Inspection Report# : [2010002](#) (*pdf*)

**Significance:**  Mar 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Engineering Evaluation Causes an Inoperable Essential Chilled Water Train**

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

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

Inspection Report# : [2010002](#) (*pdf*)

**Significance:**  Dec 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Correctly Implement Emergency Operating Procedures**

A self-revealing non-cited violation of Technical Specification 6.8.1 was identified for failing to properly implement Emergency Operating Procedures required by section 6.8.1a. Specifically, four crews out of five did not take actions as directed in OPOP05-EO-FRC2, Response to Degraded Core Cooling, Step 2. Specifically, Step 2 directs the Operators to "Verify SI Flow in all trains." If flow in all High Head Safety Injection trains is not present, the Response Not Obtained column of the procedure directs a manual start of High Head Safety Injection pumps that are not running. If it is determined that flow has still not been established in all trains, the subsequent Response Not Obtained steps direct the operators to establish maximum charging flow. Three applicant crews failed to identify Safety

Injection flow did not exist in all trains and continued with the procedure without performing Response Not Obtained actions. One licensed crew recognized Safety Injection did not exist in all trains, but failed to establish maximum charging. The licensee has entered this issue into their corrective action program as Condition Report 09-20312.

This finding was more than minor because it affected the mitigating systems cornerstone attributes of procedure quality and human performance of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Also, using Inspection Manual Chapter 0612, "Power Reactor Inspection Reports," Appendix B, Section 1-3, "Screen for More than Minor - ROP," question 2, the finding is more than minor because if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern. Using the Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, the finding was determined to have very low safety significance (Green) because it was not a design issue resulting in loss of function, did not represent an actual loss of a system safety function, did not result in exceeding a Technical Specification allowed outage time, and did not affect external event mitigation. The finding had a crosscutting aspect in the area of Problem Identification and Resolution associated with the corrective action program because the licensee failed to identify and correct deficiencies associated with the training program and procedures for degraded and inadequate core cooling at a threshold commensurate with the safety significance [P.1 (a)].

Inspection Report# : [2009301](#) (pdf)

**Significance:**  Jul 04, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Identify Maintenance Rule A1 Condition**

The inspectors identified a noncited violation of 10 CFR 50.65(a)(2) for the licensee's failure to effectively monitor the performance of the Unit 2 4160Vac Class 1E system. On August 30, 2007, an undervoltage Agastat relay on the Unit 2 4160Vac Train A bus failed. The inspectors determined that this failure should have been recorded as a maintenance preventable functional failure, which would have caused the system to be placed into the Maintenance Rule A1 category. The reason for not recording this failure as a maintenance preventable functional failure was the improper use of the as-found condition codes. The licensee has captured this event under Condition Report 09-2891.

This finding was more than minor because it affected the equipment performance attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. Using the Significance Determination Process Phase 1 worksheet, this finding was determined to have very low safety significance because it did not result in the actual loss of safety function of one or more trains and did not screen as risk-significant due to seismic, flooding, or severe weather. This finding had a human performance crosscutting aspect associated with work practices because workers failed to ensure proper documentation of activities [H.4(a)].

Inspection Report# : [2009003](#) (pdf)

**Significance:**  Jul 04, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Potential Loss of Centrifugal Charging Pump Suction Due to Fire Damage**

The inspectors identified a noncited violation of License Condition 2.E, "Fire Protection," for failure to ensure that equipment required for post-fire safe shutdown system remains free of fire damage. Specifically, the licensee credited manual actions to mitigate the effects of fire damage in lieu of providing the physical protection required by 10 CFR Part 50, Appendix R, Section III.G for the two series-connected volume control tank outlet valves (motor-operated Valve 112B and motor-operated Valve 113A).

Failure to ensure that the volume control tank outlet valves relied upon for achieving post-fire safe shutdown were protected from fire damage was a performance deficiency. This finding is of greater than minor safety significance because it impacted the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to external events (such as fire) to prevent undesirable consequences. Specifically, 13 fire areas contain unprotected cables that had the potential to spuriously close at least one of the volume control tank

outlet valves which could result in a loss of suction and damage to the only charging pump credited for post-fire safe shutdown. Based on the senior reactor analyst Phase 3 analysis of the Significance Determination Process, this finding was determined to have very low safety significance.

Inspection Report# : [2009003](#) (*pdf*)

**Significance:**  Apr 09, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Failure to Assess and Manage Outage Maintenance Risk Activities Resulting in the Loss of the Residual Heat Removal System**

The inspectors reviewed a self-revealing noncited violation of 10 CFR 50.65(a)(4), for the failure to assess and manage risk from an emergent maintenance work activity on the solid state protection system during the Unit 2 refueling outage that resulted in a loss of the residual heat removal system. Specifically, on October 25, 2008, the licensee planned an emergent maintenance activity to replace a general logic card on the solid state protection system without adequately assessing the risk to the plant. Consequently, when the logic card was removed, the low steam pressure safety injection actuation signal became unblocked and resulted in the loss of the operating residual heat removal system pumps. The licensee's immediate corrective action was to restore the residual heat removal system to operation and enter the issue into their corrective action program.

The finding was more than minor because it was associated with the Mitigating Systems cornerstone attribute of equipment performance and adversely affected the cornerstone objective of availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Phase 1 screening criteria of Inspection Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process," Attachment 1, Checklist 4, the finding screened to a Phase 2 quantitative analysis because no residual heat removal loops were in operation. The finding was determined to be of very low safety significance because the Phase 2 screening by the senior reactor analyst concluded that the conditional core damage probability from this event was approximately 1E-08. In addition, this finding had human performance crosscutting aspects associated with decision making [H.1(a)] because the licensee failed to make risk-significant decisions using a systematic process to ensure safety is maintained, and did not formally define authority and roles for key personnel responsible for implementing these risk-significant decisions.

Inspection Report# : [2009002](#) (*pdf*)

**Significance:**  Apr 09, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Reportability Misses an Inoperable Component Cooling Water Train**

The inspectors identified a noncited violation of Technical Specification 3.7.3 for an inadequate reportability review on the Train A component cooling water low-level actuation switch which failed during surveillance testing. On October 14, 2008, during the 18-month surveillance test, Unit 2 component cooling water Train A was determined to be inoperable due to the failure of system valves to actuate to their designated positions. The inspectors continued to ask questions related to the event and discovered that the last time the switch was manipulated was January 22, 2008, during a calibration procedure. After the inspectors questioned the reportability, engineering reviewed it and determined that the calibration procedure did not have a functional check of the switch internal contacts before restoration. Engineering concluded that, as a result of the switch not being functionally checked after the calibration, that the wire must have become disconnected during the restoration section of the procedure. Consequently, from January 22, 2008 through October 16, 2008, the Train A component cooling water low-low level switch was inoperable and therefore reportable. The licensee performed a root cause of the event itself and an apparent cause for operations inappropriately applying time of discovery for the initial reportability review under Condition Reports 08-15541 and 08-19420, respectively.

The finding was more than minor because, if left uncorrected, it would have the potential to lead to a more significant safety concern in that inadequate operability/reportability reviews could result in a degraded system being returned to service, and it affected the Mitigating Systems cornerstone attribute of human performance and the objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable

consequences. Using the Significance Determination Process Phase 1 worksheets from Inspection Manual Chapter 0609, the finding was determined to have very low safety significance because it did not result in the actual loss of safety function of one or more trains and it did not screen as risk significant due to seismic, flooding, fire, or severe weather. In addition, this finding had Problem Identification and Resolution crosscutting aspects associated with the corrective action program [P.1(c)] because the licensee failed to thoroughly evaluate for operability and reportability conditions adverse to quality.

Inspection Report# : [2009002](#) (pdf)

**Significance:**  Apr 09, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Surveillance Test for Component Cooling Water**

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criteria V, “Instructions, Procedures, and Drawings,” for the inadequate surveillance Procedure 0PSP05-CC-0001, “FCI CCW Surge Tank Compartment Level Switch Calibration,” Revision 7. On October 14, 2008, during the 18-month surveillance test, Unit 2 component cooling water Train A was determined to be inoperable due to the failure of system valves to actuate to their designated positions. Troubleshooting determined that a loose wire was the reason for the inoperability. The wire was restored and the train returned to operable status on October 16, 2008. From January 22 through October 16, 2008, the Train A component cooling water low-low level switch was inoperable. Since this procedure is applicable to all trains of both units, the licensee verified that all other trains low-low level switches on both units were either surveillance tested after the last calibration procedure or were functionally checked using a temporary procedure to ensure operability.

The finding was more than minor because it was similar to several examples in Inspection Manual Chapter 0612, Appendix E, where the system was returned to service without being fully operable, and it affected the Mitigating Systems cornerstone attribute of procedure quality and the objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Significance Determination Process Phase 1 worksheets from Inspection Manual Chapter 0609, the finding was determined to have very low safety significance because it did not result in the actual loss of safety function of one or more trains and it did not screen as risk significant due to seismic, flooding, fire, or severe weather. This issue had no crosscutting aspects because the last revision to the procedure was too long ago (2005) to be indicative of current performance.

Inspection Report# : [2009002](#) (pdf)

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## **Barrier Integrity**

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## **Emergency Preparedness**

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## **Occupational Radiation Safety**

**Significance:**  Jul 04, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Failure to Perform Radiation Surveys**

A self-revealing noncited violation of 10 CFR 20.1501(a) was identified for failure to perform a radiological survey to determine the potential radiological hazards present when deposing a high contamination area. On October 25, 2008, decontamination technicians were sent into the reactor containment building to remove the decontamination tent from steam generator eddy current testing which was posted as a high contamination area. The technicians were not

informed of the expectation to decontaminate the scaffolding and health physics personnel did not follow-up and perform surveys of the deposited area. Subsequently, carpenters were sent in to remove the scaffolding which was still highly contaminated. The licensee was made aware of the situation when one of the carpenters alarmed the personnel contamination monitor and a whole body count revealed approximately 3 millirem intake. The issue was entered into the licensee's corrective action program as Condition Report 08-16599.

The failure to perform surveys necessary to support deposing a contamination area is a performance deficiency. The finding was greater than minor because it was associated with the Occupational Radiation Safety cornerstone attribute (exposure control) of program and process and affected the cornerstone objective, in that, failure to conduct a radiation survey resulted in unplanned and unintended dose to personnel. Using the Occupational Radiation Safety Significance Determination Process, the finding was determined to be of very low safety significance because it was not an as low as is reasonably achievable finding, there was no overexposure or substantial potential for an overexposure, and the ability to assess dose was not compromised. The finding was self-revealing because the licensee was alerted to the situation when the worker could not pass the personnel contamination monitor. Additionally, this finding had human performance crosscutting aspects associated with work control, in that, the work planning did not appropriately plan work activities by incorporating risk insights and radiological safety [H.3(a)].

Inspection Report# : [2009003](#) (*pdf*)

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## Public Radiation Safety

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### Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

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### Miscellaneous

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