

## South Texas 2

### 2Q/2003 Plant Inspection Findings

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#### Initiating Events

**Significance:**  Apr 26, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to follow procedures to manage the associated risk consequences of performing on-line maintenance on medium risk ranked plant equipment results in tripping a main FWP**

A noncited violation was identified for the failure to manage the associated risk consequences of performing on-line maintenance on medium risk ranked plant equipment without following station procedures for mitigating the risk as prescribed in 10 CFR 50.65(a)(4), maintenance rule. Steam Generator Feedwater Pump 22 tripped while performing minor maintenance to replace a redundant power supply while at power. Weekend shift maintenance and operations crews did not recognize this work as being a medium trip risk evolution and treat it accordingly, resulting in relying on standby equipment and tripping a main feedwater pump. This work should have been characterized as a Medium Risk Evolution and treated in accordance with station procedures. This finding is in the licensee's corrective action program as Condition Report 03-7221. This finding is greater than minor because it affects the initiating events cornerstone by increasing the likelihood of an initiating event (plant transient). If the startup feedwater pump had not started, it may have caused a turbine/reactor trip. The finding is of very low safety significance because other standby equipment operated as required.

Inspection Report# : [2003002\(pdf\)](#)

**Significance:**  Mar 09, 2003

Identified By: NRC

Item Type: FIN Finding

#### **Operators failed to control reactor coolant system pressure, causing the lifting of a pressurizer power operated relief valve.**

A finding was identified relating to operator performance during the safety injection event. Operators became distracted and failed to control reactor coolant system pressure while operating the system in the manual mode, causing the lifting of a pressurizer power-operated relief valve. A human performance problem was identified for inattention to detail in monitoring primary plant pressure and understanding the operation of the master pressure controller, which led to challenging the reactor coolant system barrier integrity. This issue was more than minor because it affected the Initiating Events and Barrier Integrity Cornerstone objectives, which required a Phase 2 evaluation. The human performance issue was determined to have very low safety significance using a Phase 2 Significance Determination Process evaluation by assuming all mitigation equipment remained available, but the initiating event frequency for events which could challenge pressurizer power-operated relief valves increased by a factor of 10, in accordance with Manual Chapter 0609 guidance.

Inspection Report# : [2002006\(pdf\)](#)

**Significance:**  Mar 09, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate procedures permitting maintaining hot standby plant conditions with the main steam lines isolated without establishing precautions to drain accumulated condensate contributed to an inadvertent safety injection actuation while initiating decay heat removal from an idle steam line.**

A noncited violation with three examples was identified for three inadequate procedures required by Technical Specification 6.8.1.a and Regulatory Guide 1.33 that permitted maintaining hot standby plant conditions with the main steam lines isolated without establishing precautions to drain accumulated condensate. This contributed to an inadvertent safety injection actuation while initiating decay heat removal from an idle steam line. This violation is being treated as a noncited violation consistent with Section VI.A of the NRC Enforcement Policy (NCV 50-499/2002006-01). This issue was entered in the licensee's corrective action program under Condition Report 03-3694. This violation was more than minor because it affected the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions through configuration control of the shutdown equipment alignment. This issue was determined to be of very low safety significance using Appendix G of the Significance Determination Process because it did not challenge defense in depth measures or equipment. Inspection Report# : [2002006\(pdf\)](#)

**Significance:**  Mar 01, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

**Condensate polisher system not within the scope of the Maintenance Rule Program as a system whose failure could cause a reactor trip.**

A noncited violation of 10 CFR 50.65 was identified for not including the condensate polisher system within the scope of the Maintenance Rule Program as a system whose failure could cause a reactor trip. Unit 1 tripped on March 1, 2003, when a power supply that was original equipment failed. The power supply had no preventive maintenance item to periodically replace it, even though it controlled condensate flow through the condensate polishers and the condensate system function to automatically bypass the condensate polishers in the event of a high differential pressure condition. This violation is being treated as a noncited violation consistent with Section VI.A of the NRC Enforcement Policy (NCV 50-498/2002006-05). This issue was entered into the licensee's corrective action program under Condition Report 03-1837. This issue screened as Green using Phase 1 of the Significance Determination Process because it affected only one cornerstone and did not reduce the availability of mitigation equipment. This issue was more than minor because it affected the initiating events cornerstone objective to limit the likelihood of events that upset plant stability due to equipment reliability. Inspection Report# : [2002006\(pdf\)](#)

**Significance:**  Feb 20, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to follow procedure contributed to collecting enough nitrogen in the reactor head to displace about 4000 gallons of reactor coolant during shutdown maintenance.**

A noncited violation was identified for failure to follow a plant procedure, which contributed to collecting enough nitrogen in the reactor head to displace about 4000 gallons of reactor coolant during shutdown maintenance activities before it was recognized. Plant Operating Procedure 0POP03-ZG-0007, "Plant Cooldown," Revision 36, required the head vent valves to be open in this plant condition to vent gases and prevent them from collecting in the reactor head area. The operators did not fully assess this unusual evolution or apply increased controls, in part because a similar evolution had been successfully performed 2 months earlier. However, the earlier work had not required the head vent path to be isolated. This issue was entered in the licensee's corrective action program under Condition Reports 03-2751 and 03-3443. This issue is greater than minor because it affected the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions (inventory control) during shutdown operations due to human performance. This issue is of very low safety significance because operators were monitoring backup level indications which were less sensitive but unaffected by the gas accumulation and because the

gas accumulation would have been self-limiting if it had progressed to the pressurizer surge line (a vent path).

Inspection Report# : [2003002\(pdf\)](#)

**Significance:**  Dec 28, 2002

Identified By: NRC

Item Type: FIN Finding

**Licensee was not Monitoring or Addressing Declining Performance in Circulating Water System, Resulting in Catastrophic Pump Failure and Plant Trip**

A finding was identified for PI&R selected issue followup. The licensee was not adequately monitoring the declining performance of the circulating water system and treated problems with this system symptomatically rather than finding the cause. Several near-miss failures were experienced which could have resulted in plant trips. Failing to assess the cause of system problems contributed to a pump discharge valve becoming separated from the operator and slamming shut, catastrophic failure of the pump, and a plant trip. The safety significance associated with this issue was very low because it resulted in a manual plant trip with all safety-related equipment available to provide mitigation capability. The issue affected the performance objectives of the initiating events cornerstone for design control, and screened as Green during a Phase 1 SDP evaluation.

Inspection Report# : [2002005\(pdf\)](#)

**Significance:**  Jul 07, 2002

Identified By: NRC

Item Type: FIN Finding

**Licensee Did Not Align Safety-related Instrumentation to Diverse Power Sources, Contributing to a Reactor Trip When an Inverter Fuse Blew**

On July 7, 2002, power was lost to the Train D instrumentation channel when the associated inverter blew a fuse. Because it was the licensee's practice to operate with all four controlling steam generator water level channels powered from that channel, the level instruments all failed low, causing the control system to increase feedwater flow to maximum. Operators were unable to gain manual control of four channels fast enough to control level and the unit tripped on high steam generator water level. The inspectors concluded that the licensee had not maintained an operating equipment lineup that would minimize events that upset plant stability and challenged safety functions. This performance deficiency was considered to be of more than minor significance because it affected the performance objective of the initiating events cornerstone by increasing the likelihood of a plant trip or transient. The issue was screened as Green using Phase 1 of the Significance Determination Process.

Inspection Report# : [2002004\(pdf\)](#)

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## Mitigating Systems

**Significance:**  Jan 19, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

**Improper maintenance to mechanism operated cell switch prevented the sequencer to initiate loading.**

A noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified for failure to have adequate maintenance procedures for mechanism-operated cell switches in circuit breakers. A fault affecting one switchyard bus caused a partial loss of offsite power in each unit. The Unit 1 Train B standby diesel generator started but failed to automatically sequence loads as designed. Maintenance personnel

identified that the operating mechanism for the cell switch was out of adjustment, preventing the switch from rotating fully and making full electrical contact that would cause the sequencer to initiate loading. The operating mechanism adjustment was not checked when the breaker was swapped a year earlier, and the misadjustment was sufficiently small that the switch functioned until this actual demand. The inspectors noted that the licensee did not have a maintenance procedure or preventive maintenance item to adjust, lubricate, clean, or fully test any of the mechanism operated cell switches onsite. Failure to procedurally verify the proper adjustment and operation of the motor-operated cell switch following breaker replacement was a violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings." This violation is being treated as a noncited violation consistent with Section VI.A of the NRC Enforcement Policy (NCV 50-498/2002006-03). This issue was entered into the licensee's corrective action program under Condition Report 03-928.

Inspection Report# : [2002006\(pdf\)](#)

**Significance:**  Dec 28, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

### **Noncited Violation for Improper Design Control due to Undersized Overload Heaters Being installed in SG PORVs During Breaker Replacement**

The licensee did not properly control or review vendor design work when upgrading safety related 480V motor control center breaker units. As a result, the breakers for the hydraulic pumps for Steam Generator Power Operated Relief Valves 1B, 2B and 2C had undersized overload heaters installed, such that the valves would not have functioned as designed during periods of prolonged use or under degraded voltage conditions. Failure to assure that the design change for installing replacement 480V breaker units satisfied design requirements was a violation of 10 CFR 50, Appendix B, Criterion III, "Design Control." This violation is being treated as a noncited violation (NCV), consistent with Section VI.A of the Enforcement Policy. The safety significance of this issue was determined to be very low safety significance since this issue screened as Green during a Phase 1 significance determination process (SDP) assessment. The issue was considered more than minor because it affected the mitigating system cornerstone objective for design control and plant modifications by affecting the reliability of a system that responds to initiating events to prevent undesirable consequences

Inspection Report# : [2002005\(pdf\)](#)

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## **Barrier Integrity**

**Significance:**  Mar 22, 2003

Identified By: NRC

Item Type: FIN Finding

### **Poor maintenance practices associated with foreign material exclusion caused two main steam isolation valves to not fully close as designed.**

A finding was identified for poor maintenance practices that caused main steam isolation valves to not fully close as designed. The inspectors determined that the maintenance personnel demonstrated a problem with maintenance effectiveness in that poor system cleanliness practices during maintenance contributed to two main steam isolation valves' inability to operate/isolate as designed. Even though the licensee engineers determined that the valve design limited the amount of possible steam leakage to within analyzed limits for accident analyses, this issue caused the plant to experience a cooldown cycle twice to effect repairs. This issue was considered more than minor because the human performance issue of poor maintenance performance in foreign material control while rebuilding main steam isolation valves affected the barrier integrity cornerstone. The safety significance of this issue was determined to be very low

since the valves were capable of limiting steam flow within design requirements and since it screened as Green using a Phase 1 assessment of the Significance Determination Process. This issue is in the licensee's corrective action program under Condition Reports 02-19118, 02-19149, and 03-1325.

Inspection Report# : [2002006\(pdf\)](#)

**Significance:**  Jan 19, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate procedure for restoring reactor coolant pumps caused a pressurizer power operated relief valve to lift.**

A noncited violation was identified for an inadequate procedure. A fault affecting one switchyard bus caused a partial loss of offsite power in each unit. Unit 2 lost power to both running reactor coolant pumps, and when operators attempted to restore them, a pressurizer power operated relief valve lifted. Plant Operating Procedure OPOP02-RC-0004, "Operation of Reactor Coolant Pump," Revision 19, was determined to be inadequate because it contained prerequisites for starting an initial reactor coolant pump which conflicted with (and caused operators to disregard) precautions to be aware of and limit pressure transients during reactor coolant pump starts. This was considered to be a violation of Technical Specification 6.8.1 and Regulatory Guide 1.33 for an inadequate procedure. Additionally, weaknesses were identified in operator understanding of the impact of their actions on the existing plant conditions and the operation of the pressurizer pressure control system. This violation is being treated as a noncited violation consistent with Section VI.A of the NRC Enforcement Policy (NCV 50-499/2002006-04). This issue was entered into the licensee's corrective action program under Condition Report 03-949. This issue was more than minor because it affected objectives of the barrier integrity and initiating events cornerstones, which required a Phase 2 evaluation. This issue was determined to be of very low safety significance using a Significance Determination Process Phase 2 evaluation. The inspectors assumed that all mitigation equipment remained available, but the initiating events that could challenge a pressurizer power operated relief valve had the frequency of occurrence increased by a factor of 10, in accordance with Manual Chapter 0609 guidance.

Inspection Report# : [2002006\(pdf\)](#)

**Significance:**  Dec 21, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

**Steam Generator Replacement**

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.

Inspection Report# : [2002009\(pdf\)](#)

**Significance:**  Aug 29, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Follow a Procedure to Update AFD Computer Constants as Required by TS 6.8.1 and Reg. Guide 1.33**

Instrumentation and controls technicians did not ensure that computer constants needed to calculate axial flux



difference were updated during calibrations of the nuclear instruments as required by the calibration procedures. The plant computer was the only method used to calculate core axial flux difference, and to alarm if limits were approached. This failure to follow procedures was a non-cited violation of Technical Specification 6.8.1 and Regulatory Guide 1.33. The axial flux difference function was still operable with the old constants not properly updated for two channels, since the computer constants had changed by a small amount. However, this issue was considered to be more than minor because, if left uncorrected, it would be of greater safety concern because instrument inaccuracies could increase over time as the core burned up and detectors aged. The error affected operators' ability to maintain reactor power distribution within limits in order to protect the fuel clad barrier. This issue screened as a Green issue using Phase 1 of the Significance Determination Process because only the fuel clad barrier was potentially affected. Inspection Report# : [2002004\(pdf\)](#)

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## Emergency Preparedness

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## Occupational Radiation Safety

**Significance:**  Apr 04, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to perform an adequate airborne survey.**

An NRC identified noncited violation of 10 CFR 20.1501a was identified because the licensee failed to perform an adequate airborne survey during decontamination activities. Specifically, during a review of surveys, the inspectors identified two examples in which air samplers were not properly positioned to ensure work area airborne radiological conditions were monitored. The failure to appropriately position air samplers to perform a representative airborne survey of a work area is a performance deficiency. The issue was more than minor because it was associated with a cornerstone attribute (program and process) and affected the occupational radiation safety cornerstone objective (to ensure the adequate protection of the worker's health and safety from radiation and radioactive material). The finding involved the failure to control radiological work that was contrary to regulatory requirements. When processed through the Occupational Radiation Safety Significance Determination Process, the finding was found to have very low safety significance because it was not an ALARA issue, there was no overexposure or substantial potential for an overexposure, and the ability to assess dose was not compromised.

Inspection Report# : [2003002\(pdf\)](#)

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## Public Radiation Safety

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## Physical Protection

**Significance:** N/A Mar 13, 2003

Identified By: NRC

Item Type: FIN Finding

**Verification of Compliance With Interim Compensatory Measures Order**

On February 25, 2002, the NRC imposed by Order, Interim Compensatory Measures to enhance physical security. The inspectors determined that, overall, the licensee appropriately incorporated the Interim Compensatory Measures into the site protective strategy and access authorization program; developed and implemented relevant procedures; ensured that the emergency plan could be implemented; and established and effectively coordinated interface agreements with offsite organizations.

Inspection Report# : [2003005\(pdf\)](#)

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**Miscellaneous**

Last modified : September 04, 2003