

# South Texas 1

## 2Q/2012 Plant Inspection Findings

---

### Initiating Events

---

### Mitigating Systems

**Significance:**  Jun 29, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Follow ASME Code Requirements**

The inspectors identified a non-cited violation of 10 CFR 50.55a(g)(4) for the failure to follow in-service inspection requirements of Section XI of the 2004 ASME Boiler and Pressure Vessel Code. Specifically, the inspectors determined that the licensee had not correctly applied Section XI, IWA-5250, to boric acid residues that were discovered under the base lip of the refueling water storage tank on September 20, 2011. The inspectors questioned the licensee's operability determination of fully operable and engineering disposition of "acceptable for use," because the degradation mechanism was not readily apparent and the licensee had not characterized the flaw. The licensee documented the issues in Condition Reports 12-20019 and 12-20026 and changed the operability determination to operable but degraded.

This finding is more than minor because it affected the Mitigating Systems Cornerstone attribute of Design Control and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, and if left uncorrected it would have the potential to become a more significant safety concern because the structural integrity of the safety injection system's primary source of cooling water could be compromised. The inspectors performed the significance determination using NRC Inspection Manual Chapter 0609, Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," dated January 10, 2008, because it affected the Mitigating Systems Cornerstone while the plant was at power. The finding was determined to be of very low safety significance because it was not a design or qualification deficiency; it did not result in the loss of a system safety function; it did not represent a loss of a single train for greater than technical specification allowed outage time; it did not represent a loss of one or more nontechnical specification risk-significant equipment for greater than 24 hours; and it did not screen as potentially risk significant due to seismic, flooding, or severe weather. In addition, this finding had a human performance cross-cutting aspect associated with decision making because the licensee did not make safety-significant decisions using a systematic process, especially when faced with uncertain or unexpected plant conditions, to ensure safety is maintained [H.1(a)].

Inspection Report# : [2012003](#) (*pdf*)

**Significance:**  Dec 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Design Change on Class 1E 4160 Vac ESF Transformers**

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criteria III, "Design Control," for the failure to ensure that design standards were correctly translated into drawings, procedures, and instructions.

Specifically, the design specifications of the Class 1E 4160 Vac buses were not maintained with the installation of a new transformer. The root cause investigation determined that the design change package that installed the new transformers on Units 1 and 2 in October 2009 and April 2010, respectively, was not modeled correctly. The licensee captured this event as Condition Report 11-10205 and implemented immediate compensatory measures of increased monitoring on the Class 1E 4160 Vac buses by implementing temporary logs to ensure that the Class 1E loads were within their technical specifications surveillance procedure acceptance criteria until the new design change package

could be implemented on each unit.

The finding was more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Design Control and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inadequate design change package resulted in the licensee declaring the Unit 2 Class 1E 4160 Vac E2B bus inoperable because it was outside of the technical specification surveillance procedure acceptance criteria for longer than allowed by technical specifications. The inspectors performed the significance determination using NRC Inspection Manual Chapter 0609, Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," dated January 10, 2008, because it affected the Mitigating Systems Cornerstone while the plant was at power. The finding was determined to be of very low safety significance because it was a design deficiency that did not result in a loss of functionality per Part 9900 Technical Guidance, "Operability Determinations & Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety," dated April 16, 2008. In addition, this finding had human performance cross-cutting aspects associated with work practices in that the licensee did not ensure supervisory and management oversight of work activities, including contractors, such that nuclear safety was supported [H.4(c)].

Inspection Report# : [2011005](#) (*pdf*)

**G**

**Significance:** Sep 30, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Failure to Follow Standby Diesel Generator Maintenance Procedures**

The inspectors reviewed a self-revealing noncited violation of Technical Specification 6.8.1.a, for the failure to follow maintenance work authorization number 416904. Specifically on January 27, 2011, mechanics incorrectly aligned the fuel oil delivery valve stop and spring on standby diesel generator 13 cylinder 1R. On July 17, 2011, the control room received an alarm for standby diesel generator 13 because the crankcase lubricating oil level was high out of band. After operability testing on July 15, 2011, fuel oil leaked through cylinder 1R into the crankcase because the spring broke creating foreign material that fouled the injector nozzle. The licensee corrected the error, replaced the spring, and restored operability of the diesel.

The finding was more than minor because it affected the Mitigating Systems Cornerstone attribute of Human Performance, and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences because it caused the diesel to be inoperable. The inspectors used NRC Inspection Manual Chapter 0609, Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," dated January 10, 2008, to determine the significance of the finding because it affected the Mitigating Systems Cornerstone while the plant was at power. The finding was determined to be of very low safety significance because it was not a design or qualification deficiency; it did not represent a loss of a system safety function; it did not represent the loss of a single train for greater than technical specification allowed outage time; it did not represent a loss of one or more nontechnical specification risk-significant equipment for greater than 24 hours; and it did not screen as potentially risk significant due to seismic, flooding, or severe weather. In addition, this finding had human performance cross-cutting aspects associated with work practices because the licensee did not communicate human error prevention techniques, such as self and peer checking, commensurate with the risk, such that the work activity was performed safely [H.4(a)].

Inspection Report# : [2011004](#) (*pdf*)

**G**

**Significance:** Sep 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Corrective Actions from an Inadequate Extent of Condition Review**

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criteria XVI, "Corrective Action," for the failure to assure that conditions adverse to quality were promptly identified and corrected. Specifically, the licensee did not promptly identify and correct improperly installed temperature switches. On October 28, 2010, the Unit 2 essential cooling water vent fan 21A failed because the control power fuse blew due to an unused uninsulated wire. The root cause investigation determined that the unused wire had been installed when the switch was replaced in February 2005. The extent of condition review identified that a total of 60 switches had been replaced, but only one

additional switch was verified and it also had an unused uninsulated wire. After inspector questioning, the licensee inspected the 12 actuation switches and determined that only the Unit 2 essential cooling water vent fans for trains A and C were affected. The licensee's corrective actions included: performing an immediate and prompt operability, performing training with the maintenance personnel on the procedural requirements for unused wires, and scheduling the inspection of the 48 high/high temperature switches commensurate with risk significance.

This finding was more than minor because it was associated with the Mitigating Systems Cornerstone attributes of Design Control, Equipment Performance, and Human Performance and it affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The deficiency resulted in a potential inoperability of Unit 2 essential cooling water trains A and C since 2005. The senior resident inspector performed the initial significance determination for the essential cooling water issue using the NRC Inspection Manual Chapter 0609, Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Findings." The finding screened to a Phase 2 significance determination because it involved an actual loss of safety function of two single trains of equipment for greater than the technical specification allowed outage time. A Region IV senior reactor analyst attempted to perform a Phase 2 significance determination using the pre-solved worksheets, but the Phase 2 process was not well suited for this issue. Therefore, the senior reactor analyst performed a bounding Phase 3 significance determination and found the finding to be of very low safety significance. The dominant core damage sequence included: seismic initiated loss of offsite power, failure of the essential cooling water trains A and C, failure of the train B emergency diesel generator, and failure to recover the diesel or offsite power in 4 hours. The low frequency of seismic induced loss of offsite power events at South Texas Project and the unaffected train B essential cooling water train helped to mitigate the finding's significance. In addition, this finding had human performance cross-cutting aspects associated with decision-making, in that, the licensee failed to use conservative assumptions and verify the validity of the underlying assumptions [H.1(b)].

Inspection Report# : [2011004](#) (pdf)

G

**Significance:** Sep 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Untimely Corrective Action to Correct an Inadequate Procedure**

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criteria XVI, "Corrective Action," for the failure to assure that conditions adverse to quality were promptly identified and corrected. Specifically, the inspectors determined that operations had no instructions for manual control of the 4160 Vac load tap changing transformers. Procedure OPOP02-AE-0002, "Transformer Normal Breaker and Switch Lineup," was not revised providing these instructions. In December 2010, Unit 2 experienced a material issue with the load tap changer, which required operations to take manual control of the load tap changer without procedure guidance. Subsequently, the licensee issued an operation's standing order to allow for manual operations, but did not revise the procedure. In May 2011, the licensee experienced another material condition issue with the Unit 2 load tap changer that required operations to take manual control of the load tap changer, but since the procedure was never revised, operations found themselves operating the plant outside of procedures again. Corrective actions included revising Procedure OPOP02-AE-0002, to include manual operation of the load tap changer, and training all the operations personnel on the new procedure.

This finding was more than minor because it was associated with the Mitigating Systems Cornerstone attributes of Design Control and Procedure Quality, and it affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The deficiency resulted in operations not having any guidance on how to control the Units 1 and 2 train B 4160 Vac transformer load tap changer to ensure that the bus remained within technical specification surveillance requirement voltage limits. The inspectors performed the significance determination using NRC Inspection Manual Chapter 0609, Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," dated January 10, 2008, because it affected the Mitigating Systems Cornerstone while the plant was at power. The finding was determined to be of very low safety significance because it was not a design or qualification deficiency; it did not represent a loss of safety system function; it did not represent the loss of a single train for greater than technical specification allowed outage time; it did not represent a loss of one or more non-technical specification risk-significant equipment for greater than 24 hours; and it did not screen as potentially risk significant due to seismic, flooding, or severe weather. In addition, this finding had human performance cross-cutting aspects associated with decision making, in that, the licensee failed to

communicate decisions and the basis for decisions to personnel who have a need to know the information to perform work safely [H.1(c)].

Inspection Report# : [2011004](#) (pdf)

**G**

**Significance:** Jul 01, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Timely Correct Conditions Adverse to Fire Protection**

The team identified a noncited violation of License Condition 2.E for the failure to implement and maintain in effect all provisions of the approved fire protection program. Specifically, the team identified two examples of failure to implement timely corrective actions to correct conditions adverse to fire protection. The first example related to making Procedure OPOP04-ZO-0001, "Control Room Evacuation," Revision 33, consistent with the post-fire safe shutdown analysis in order to ensure the actions met critical time requirements. The second example related to not correcting a condition that could disable all three fire pumps simultaneously as a result of fire damage.

Failure to implement timely corrective actions in two instances for conditions adverse to fire protection is a performance deficiency. Both examples of this finding are of greater than minor significance because they impacted the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events (fire) to prevent undesirable consequences. A senior reactor analyst performed Phase 3 significance determination for both examples. The analyst calculated the risk associated with the first example for the actions taken outside the control room as  $2.702E-7$ . For the second example, the analyst assumed that a fire in Fire Area 67 would damage the electrical control cables for all three fire pumps and require manually starting a fire pump at the fire pump house. However, it was determined that a delay in fire suppression because of the need to use a fire hose would not result in a plant transient, require evacuation of the control room, or result in damage to any systems and components required for post-fire safe shutdown. Therefore, the senior reactor analyst determined that both examples of this finding are of very low safety significance (Green). The licensee entered this deficiency into the corrective action program as Condition Record 11-10905.

These examples of the performance deficiency had a crosscutting aspect in the area of human performance associated with resources because the licensee did not ensure that resources assigned to correct these deficiencies were adequate to assure nuclear safety. Specifically, the licensee failed to ensure adequate design margins by (1) failing to ensure that operators could perform all necessary manual actions prior to exceeding the regulatory requirements and (2) failing to modify the control circuits for the fire pumps to protect them against fire damage [H.2(a)].

Inspection Report# : [2011006](#) (pdf)

---

## **Barrier Integrity**

**G**

**Significance:** Jun 29, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Promptly Identify Conditions Adverse to Quality**

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, for the failure to promptly identify conditions adverse to quality. Specifically, on May 21, 2012, the inspectors observed water was dripping from the isolation valve cubicle roof at several drops per minute and informed Unit 1 and 2 operations personnel to investigate further. The licensee confirmed that train C and D steam generator power operated relief valves in each unit were leaking steam directly to the atmosphere. The licensee entered the conditions into the corrective action program and plans to repair the valves at the next available opportunity.

The finding is more than minor because it is associated with the Barrier Integrity Cornerstone attribute of barrier performance and affected the cornerstone objective to protect the public from radionuclide releases caused by accidents or events because steam generator tube leakage events would release radionuclides directly to the

atmosphere. The inspectors performed the significance determination using NRC Inspection Manual Chapter 0609, Appendix H, dated May 6, 2004. The finding was determined to be of very low safety significance because it did not affect core damage frequency and the components involved were not identified as being important to large early release frequency. In addition, this finding has a human performance cross-cutting aspect associated with decision making because the licensee did not use conservative assumptions and adopt a requirement to demonstrate that the proposed action is safe in order to proceed [H.1(b)].

Inspection Report# : [2012003](#) (*pdf*)

---

## Emergency Preparedness

---

## Occupational Radiation Safety

**Significance:**  Dec 31, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Failure to Follow Radiation Protection Procedural Requirements (Section 2RS01)**

The inspectors reviewed a self-revealing non-cited violation of Technical Specification 6.8.1.a, for the failure to follow procedural and radiation work permit requirements. On April 22, 2011, work was performed in the Unit 1 reactor cavity and the health physics technician providing job coverage failed to verify dose and dose rate setpoints, and incorrectly assumed that removal of equipment measuring greater than 100 mrem per hour from the reactor cavity could proceed. Consequently, a contract radiation worker failed to comply with special instructions to not remove such equipment from the reactor cavity without the concurrence of a radiation protection supervisor or designee. As a result, the worker received two dose rate alarms. The licensee's corrective actions were to counsel the worker and technician to ensure a complete understanding of worker's radiation work permit instructions. In addition, licensee procedures were revised to require telemetry when removing items from the water. This issue was entered into the corrective action program as Condition Report 11-7217.

The finding was more than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of Program and Process and affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation during routine operations. The finding resulted in the worker being exposed to higher radiation levels and potentially unintended dose. When processed through the Occupational Radiation Safety Significance Determination Process, the inspectors determined the finding to be of very low safety significance because it was not: (1) an ALARA finding, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an inability to assess dose. The finding had a cross-cutting aspect in the area of human performance, work practices component because the health physics technician, providing coverage, failed to define and effectively communicate expectations regarding procedural compliance [H.4(b)].

Inspection Report# : [2011005](#) (*pdf*)

---

## Public Radiation Safety

---

## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary.

Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

---

## Miscellaneous

Last modified : September 12, 2012