

South Texas 2

4Q/2010 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance:  Dec 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Design Review Removes Safety Injection Flush Line Valves from Locked Valve Program

On October 21, 2010, the inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criteria III, "Design Control," for the failure to properly ensure that design standards were correctly translated into drawings; procedures; and instructions. Specifically, the failure to ensure that the safety injection flush line valves were tracked in accordance with the locked valve program. The inspectors questioned the licensee about the lack of a lock on these isolation valves, because these valves are a single failure away from reducing the amount of flow that would be available for core cooling in the event of a safety injection. The licensee performed an engineering evaluation as part of Condition Report 10-22911 and concluded that the original 1993 evaluation was not adequately performed and that the valves are currently operable but nonconforming since they were not in the locked valve program. The licensee is updating their locked valve program to include the safety injection flush line valves as locked valves.

The finding was more than minor because it was associated with the Mitigating Systems Cornerstone attributes of Design Control and 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. If one of the valves was out of position, it could have resulted in approximately an 11 percent reduction in safety injection pump flow. The inspectors performed the significance determination using NRC Inspection Manual 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 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. This finding did not have crosscutting aspects because the design modification which removed the valves from the locked valve program was performed in 1993.

Inspection Report# : [2010005](#) (pdf)

Significance:  Dec 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Install the Required Number of Smoke Detectors (4) in the Auxiliary Shutdown Rooms

The inspectors identified a noncited violation of license condition 2.E, Fire Protection Program, for the failure to install the required number of smoke detectors (four) in the auxiliary shutdown room per the National Fire Protection Association Standard 72E-1978 on automatic fire detection. On October 5, 2010, during a quarterly fire inspection walkdown of the auxiliary shutdown room, the inspectors identified that the room only had three smoke detectors. The inspectors questioned whether three smoke detectors were sufficient for the size of the room (950 square feet). After further evaluation, the licensee concluded that an additional smoke detector needed to be installed. The licensee's corrective action is to install another smoke detector in each unit's auxiliary shutdown room.

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 because a fire may not be detected in time to prevent damage to the auxiliary shutdown panel rendering it unavailable or unreliable. The inspectors performed the significance determination using NRC Inspection Manual Chapter 0609, Appendix F, dated February 28, 2005, because the finding affected fire protection defense-in-depth strategies, as described in NRC Inspection Manual Chapter 0609, Attachment 0609.04, Table 3b, "Phase 1 – Initial Screening and Characterization of Findings," dated January 10, 2008. The finding was assigned to the fixed fire protection systems category with a degradation rating of moderate because the room was missing 25 percent of the required smoke detection equipment. The finding was determined to be of very low safety significance because the delta-core damage frequency of $2.34E-7$ was less than the $1.0E-5$ value in Table 1.4.3, Phase 1 Quantitative Screening Criteria, of NRC Inspection Manual Chapter 0609, Appendix F. This finding did not have crosscutting aspects because the condition existed since initial plant start up.

Inspection Report# : [2010005](#) (pdf)

Significance:  Dec 31, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Follow Procedure Results in Protective Relay Trip of Residual Heat Removal Pump

On October 17, 2010, the inspectors reviewed a self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criteria V, "Instructions, Procedures, and Drawings," for the failure to follow Procedure 0PSP03-RH-0003, "Residual Heat Removal Pump 1C(2C) Inservice Test," Revision 16. The procedure directs the operator to establish the proper lineup for the test in step 5.2.2 and is followed by a table with various valves and breakers to be aligned by one individual and then verified by a second individual. This table lists mini flow isolation valve MOV-0067C as being required to be open. The first operator failed to perform an adequate self-check to ensure that he was following the procedure and the second operator also failed to perform an adequate self-check to ensure that the valve was in the correct position prior to starting the pump. Consequently, when the first operator started the pump, it tripped on low flow approximately 5 seconds later. The shift manager then refocused the control room operators, ensured that everyone was engaged, re-performed the procedure, and successfully completed the surveillance test. Corrective actions that the licensee implemented included remediating the individuals involved on the use of human performance tools and revising the surveillance test procedures to list the mini flow isolation valves as a separate stand alone step.

The finding was more than minor because it affected the Mitigating Systems Cornerstone attributes of Procedure Quality and 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. This deficiency directly challenged the residual heat removal system by relying on the low flow trip to secure the pump before pump damage occurred. 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 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 crosscutting aspects associated with work practices in that the licensee did not communicate human error prevention techniques, such as self checking, commensurate with the risk [H.4(a)].

Inspection Report# : [2010005](#) (pdf)

Significance:  Sep 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Repair Essential Cooling Water System Leak within the Technical Specification Allowed Outage Time

The inspectors identified a Green noncited violation of Technical Specification 3.7.4 because the licensee had one independent loop of essential cooling water inoperable for longer than the allowed outage time of 7 days. Specifically,

on October 27, 2009, the licensee failed to initiate actions to evaluate and repair a through-wall leak in the 30-inch essential cooling water return line from the Unit 2 train C component cooling water heat exchanger, as required by American Society of Mechanical Engineers Boiler and Pressure Vessel Code, and in accordance with guidance contained in NRC Generic Letter 90-05, "Guidance for Performing Temporary Non-Code Repair of ASME Code Class 1, 2, and 3 Piping." The inspectors questioned the licensee's reportability review and determined there was firm evidence that the through-wall leak caused the Unit 2 train C essential cooling water system to be inoperable for a period of 11 days instead of 8 days as initially concluded by the licensee. The licensee's corrective actions were: (1) the leak was repaired, (2) a revised licensee event report was submitted, (3) training was provided to personnel performing these evaluations, and (4) procedures were updated to require that these types of evaluations must be performed.

The finding was more than minor because the through-wall leak could have challenged the structural integrity of the piping and 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. The inspectors performed the initial significance determination using NRC Inspection Manual 0609, Attachment 0609.04, dated January 10, 2008, "Phase 1– Initial Screening and Characterization of Findings," because it affected the Mitigating Systems Cornerstone while the plant was at power, and determined a Phase 2 was required because it involved an actual loss of safety function of a single train. A Region IV senior reactor analyst performed a Phase 2 significance determination and found that the finding was potentially greater than Green. The senior reactor analyst then performed a bounding Phase 3 significance determination and found the finding to be of very low safety significance. The dominant core damage sequences included: seismic initiated loss of offsite power, failure of the essential cooling water train C, failure of the train A and B standby diesel generators, failure to recover offsite power and a standby diesel generator in 4 hours, and an event initiated reactor coolant pump seal loss-of-coolant accident. Remaining mitigation equipment that helped to limit the significance of the finding included the remaining functional essential cooling water trains 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 training of personnel about the requirements for properly characterizing Class 3 piping leaks was adequate to assure nuclear safety [H.2(b)].

Inspection Report# : [2010004](#) (pdf)

G

Significance: Sep 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Perform Adequate Operability Review of High Temperatures in Isolation Valve Cubicle Room

The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criteria V, "Instructions, Procedures, and Drawings," for the failure to follow Procedure OPGP03-ZO-9900, "Operability Determinations and Functionality Assessments," Revision 1. On August 4, 2010, the Unit 2 isolation valve cubicle room temperature exceeded 104°F for longer than 8 hours, reached a peak recorded temperature of 109°F. Per Technical Requirements Manual Specification 3.7.13, when the temperature of the isolation valve cubicle exceeds 104°F for longer than 8 hours then an evaluation must be performed to determine continued operability of the affected equipment. The inspectors determined that the previous prompt operability determinations concluded that the maximum recorded temperature had been 108°F and that the time allowed at this temperature was roughly 150 hours. The inspectors' review of the control room logs determined that both of these conditions were exceeded, 109°F and over 250 hours, therefore, a new prompt operability determination needed to be performed to ensure continued operability of the equipment, not only from an environmental qualification standpoint, but also from a high energy line break accident scenario. The licensee's corrective actions included performing a new prompt operability determination to ensure continued operability of the affected equipment.

The finding was more than minor because, if left uncorrected, it could have led to a more significant safety concern because systems that may be inoperable may not be recognized and 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. The inspectors performed the significance determination using the NRC Inspection Manual 0609, Attachment 0609.04, dated January 10, 2008, "Phase 1 – Initial Screening and Characterization of Findings," 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 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 crosscutting aspects associated with decision-making in that the licensee did not make safety-significant decisions using a systematic process, specifically, not implementing roles and authorities as designed and obtaining interdisciplinary input and reviews [H.1(a)].

Inspection Report# : [2010004](#) (pdf)

Significance: SL-IV Jun 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to submit a Licensee Event Report for an Unanalyzed Condition Associated with Fire Water

The inspectors identified a Severity Level IV noncited violation of 10 CFR 50.73(a)(1) for not submitting the required licensee event reports within 60 days after discovery that the fire water supply header was isolated to fire areas in Unit 2 where the fire hazard analysis credits water suppression for the achievement of safe shutdown in the event of a fire. Following prompting by the inspectors, the licensee determined that the impact to the safe shutdown equipment should have been reported as an unanalyzed condition per 10 CFR 50.73(a)(2)(ii)(B). As a corrective action the licensee established a reportability review board, plans to conduct training, and plans to update station procedures to better ensure events are reviewed against all reporting requirements. This issue was entered into the licensee's corrective action program as Condition Reports 09-20106 and 09-20125.

This finding is more than minor because the NRC relies on licensees to identify and report conditions or events meeting the criteria specified in the regulations in order to perform its regulatory function. Because this issue affected the NRC's ability to perform its regulatory function, it was evaluated using the traditional enforcement process. Traditional enforcement violations are not screened for crosscutting aspects. The inspectors concluded that the failure to make a required licensee event report was a Severity Level IV violation using Section IV.A.3 and Supplement I Paragraph D.4, of the NRC Enforcement Policy, dated March 16, 2005.

Inspection Report# : [2010003](#) (pdf)

Significance:  Jun 30, 2010

Identified By: NRC

Item Type: FIN Finding

Inadequate Design Change Review of AMSAC

The inspectors identified a Green finding for the failure to identify specific design parameters and the impact of changes on the anticipated transient without scram mitigation system actuation circuitry (AMSAC) in accordance with station Procedure OPGP04-ZE-0309, "Design Change Package," Revision 6. In 1999, the licensee performed a design change review to replace steam generators in Unit 1 and 2. In conjunction with steam generator replacement, the licensee switched from using Logic 2 (low main feedwater flow) of the generic AMSAC design to Logic 1 (low steam generator water level) of the generic AMSAC design. However, the licensee failed to identify and evaluate the impacts to the C-20 permissive disarming time delay setting, which was required to be changed from 260 seconds to 360 seconds for Logic 1 (low steam generator water level). The licensee's corrective action plan is to update the C-20 permissive disarming time delay setting with a site specific value. This issue was entered into the licensee's corrective action program as Condition Report 10-3630.

The finding is more than minor because the reduced time delay may have affected the availability of AMSAC to perform its function to initiate auxiliary feedwater when necessary and therefore affected the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Phase 1 of the Significance Determination Process as described in Inspection Manual Chapter 0609, Attachment 4, dated January 10, 2008, the finding was determined to be of very low safety significance because it was a design deficiency that did not result in the loss of functionality. The finding did not have any crosscutting aspects because it occurred more than three years ago and is not indicative of current licensee performance in that the licensee has significantly improved their design review process since the performance deficiency occurred.

Inspection Report# : [2010003](#) (pdf)

Significance: **G** Mar 31, 2010

Identified By: Self-Revealing

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: **G** Mar 31, 2010

Identified By: Self-Revealing

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)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

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.

Miscellaneous

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