



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION IV
612 EAST LAMAR BLVD, SUITE 400
ARLINGTON, TEXAS 76011-4125

September 26, 2008

Mr. Edward D. Halpin
Chief Nuclear Officer
STP Nuclear Operating Company
South Texas Project
P.O. Box 289
Wadsworth, TX 77483

SUBJECT: SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION – NRC
IDENTIFICATION AND RESOLUTION OF PROBLEMS INSPECTION
REPORT 05000498/2008009; 05000499/2008009

Dear Mr. Halpin:

On August 14, 2008, the U.S. Nuclear Regulatory Commission (NRC) completed the onsite portion of a team inspection at your South Texas Project Electric Generating Station. The enclosed inspection report documents the inspection findings, which were discussed on August 14, 2008, with Mr. Sheppard and members of your staff.

This inspection reviewed activities conducted under your license as they relate to the identification and resolution of problems, compliance with the Commission's rules and regulations and the conditions of your operating license. Within these areas, the inspection involved examination of selected procedures and representative records, observations of activities, and interviews with personnel. The team also interviewed a representative sample of personnel regarding the condition of your safety conscious work environment at the South Texas Project.

The inspection team reviewed approximately 360 condition reports, work orders, associated root and apparent cause evaluations, and other supporting documentation to assess the problem identification and resolution process. Based on the results of our reviews, the team concluded that the South Texas Project has a comprehensive and effective corrective action program. Problems are being identified at an appropriately low threshold, assessed, and ultimately corrected. The team determined that the procedures and program controls that implement the various aspects of the corrective action program were well established. However, these processes were not consistently followed at the South Texas Project. The team also identified samples of corrective actions that were limited in scope and not always carried through to completion.

The report documents one NRC identified finding. This finding was evaluated under the risk significance determination process as having very low safety significance (Green). The finding was not a violation of NRC requirements and was entered into your corrective action program.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Gregory Werner, Chief
Plant Support Branch 2
Division of Reactor Safety

Docket: 50-498, 499
License: NPF-76, NFP-80

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NRC Inspection Report 05000498/2008009;
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2. Information Request

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- 3 -

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- 4 -

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SUNSI Review Completed: Y ADAMS: Yes No Initials: BOB
 Publicly Available Non-Publicly Available Sensitive Non-Sensitive

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**U.S. NUCLEAR REGULATORY COMMISSION
REGION IV**

Dockets: 05000498, 05000499

Licenses: NPF-76, NPF-80

Report: 05000498/2008009 and 05000499/2008009

Licensee: STP Nuclear Operating Company

Facility: South Texas Project Electric Generating Station, Units 1 and 2

Location: FM521 - 8 miles west of Wadsworth
Wadsworth, Texas 77483

Dates: July 28 through August 14, 2008

Inspectors: R. Latta, Senior Reactor Inspector (Team Leader)
B. Correll, Reactor Inspector, Plant Support Branch 2
J. Dixon, Senior Resident Inspector, Projects Branch A
P. Goldberg, Reactor Inspector, Plant Support Branch 2

Accompanying
Personnel: W. Schaup, Project Engineer

Approved By: Gregory Werner, Chief
Plant Support Branch 2
Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000498/2008009; 05000499/2008009; 07/28/08 - 08/14/08; South Texas Project: Identification and Resolution of Problems.

This report covered a 2-week period of inspection performed by a senior resident inspector and three region-based reactor inspectors. One Green finding of very low safety significance was identified during the inspection that was identified as a finding. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609, "Significance Determination Process." Findings for which the significance determination process does not apply may be Green or be assigned a severity level after NRC management's review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

Identification and Resolution of Problems

The team reviewed approximately 360 condition reports, work orders, associated root and apparent cause evaluations, and other supporting documentation to assess the problem identification and resolution process. The team also performed a five year review of the essential cooling water system to determine whether problems were being effectively addressed. As a result of these reviews, the team concluded that the licensee was generally effective in identifying, evaluating, and ultimately correcting problems. The team also determined that the procedures and program controls associated with the corrective action program were well established. However, these implementing processes were not consistently followed and corrective actions were not always completed in a timely manner.

The team reviewed a sample of condition reports that involved operability issues to assess the adequacy and timeliness of the operability assessment process. The team noted that problems with operability review have existed throughout the period. Specifically, the station has repeatedly documented operability review issues in condition reports, in audits, and during Executive Oversight Review Board reports. However, changes to address these issues were not implemented until April 2008, and insufficient time has elapsed to adequately evaluate the effectiveness of these changes.

Overall, the team determined that the licensee had appropriately evaluated industry operating experience for relevance to the facility, and had entered applicable items in the corrective action program. However, once this information was disseminated, the reviews and other actions associated with or generated as part of the condition report actions were not being completed in a timely manner. The team noted improvement in the use of internal and external operating experience during the planning of work evolutions. The team also determined that the licensee was evaluating industry operating experience when performing root cause and apparent cause evaluations.

Although quality assurance audits have been effective in identifying substantive issues and areas for improvement, some of the associated actions have not been acted upon in a timely manner. Other self-assessment activities were narrowly focused and often did not identify any insightful issues concerning performance which limited the value of the assessment.

Overall, the team concluded that there was a safety conscious work environment in place at South Texas Project. In particular, the team also determined that a number of improvements have been implemented to address communication challenges and cultural issues related to the security organization. Despite these improvements, the team did encounter instances where personnel did not feel that their concerns were being adequately addressed. Subsequent to the completion of extensive safety conscious work environment interviews involving 60 personnel, the team determined that many of the individuals questioned lacked confidence in the effectiveness of the Employee Concerns Program.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Initiating Events

- Green. The team identified a finding involving ineffective corrective actions for the equipment clearance order process. Despite the identification of numerous related failures of the equipment clearance order process in various significant conditions adverse to quality condition reports and recent audit reports, the licensee had not performed an effective overall assessment of the equipment clearance order/work process control to determine the extent of the condition and therefore, had not implemented effective corrective actions to address the underlying causes.

The team determined that the ineffective corrective actions associated with the equipment clearance order process, which continues to result in equipment clearance order errors affecting personnel and equipment safety, was a performance deficiency. The team determined that the finding was more than minor because it affected the Initiating Events cornerstone objective to limit those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The team evaluated the finding using the Phase 1 worksheet in Inspection Manual Chapter 0609, "Significance Determination Process," and determined the finding to have very low safety significance because: it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would be unavailable; it did not contribute to the likelihood of a loss-of-coolant accident; and it did not increase the likelihood of a fire or flooding. This issue has a crosscutting aspect in the area of human performance, specifically, the work practices aspect, in that, the licensee failed to adequately define and communicate expectations regarding procedural compliance and personnel following procedures. [H.4(b)]
(Section 4OA2.e)

B. Licensee-Identified Violations

None

REPORT DETAILS

4 OTHER ACTIVITIES (OA)

4OA2 Problem Identification and Resolution (71152B)

The team based the following conclusions, in part, on a review of issues that were identified in the assessment period, which ranged from October 5, 2006, (the last biennial problem identification and resolution inspection) to the end of the on-site portion of the inspection on August 14, 2008. The issues discussed in this report are divided into two groups. The first group (current issues) included problems identified during the assessment period where at least one performance deficiency occurred during the assessment period. The second group (historical issues) included issues that were identified during the assessment period where all the performance deficiencies occurred prior to the assessment period.

a. Assessment of Corrective Action Program Effectiveness

Inspection Scope

The team reviewed items selected across the seven cornerstones of safety to determine if problems were being properly identified, characterized, and entered into the corrective action program for evaluation and resolution. Specifically, the team selected and reviewed approximately 360 condition reports from approximately 30,000 conditions that had been issued between September 2006 and August 2008. The team also performed field walkdowns of selected systems and equipment. Additionally, the team reviewed a sample of self assessments, trending reports and metrics, system health reports, and various other documents related to the corrective action program.

The team evaluated condition reports, work orders, and operability evaluations to assess the licensee's threshold for identifying problems, entering them into the corrective action program, and the ability to evaluate the importance of adverse conditions. Also, the licensee's efforts in establishing the scope of problems were evaluated by reviewing selected logs, work requests, self-assessments results, audits, system health reports, action plans, and results from surveillance tests and preventive maintenance tasks. The team also reviewed work requests and attended the licensee's daily Condition Review Group meetings to assess the reporting threshold, prioritization efforts, and significance, as well as observing the interfaces with the operability assessment and work control processes.

The team reviewed a sample of condition reports, apparent cause evaluations, and root cause evaluations performed during this period to ascertain whether the licensee properly considered the extent of cause and extent of condition for problems, as well as, assessing generic implications and previous occurrences. The team assessed the

timeliness and effectiveness of corrective actions, completed or planned, and looked for additional examples of similar problems.

The team also conducted interviews with plant personnel to identify other processes that exist where problems may be identified and addressed outside the search on corrective action program and replace with corrective action program.

A review of the essential cooling water system was performed for a 5-year period to determine whether problems were being effectively addressed. The team also conducted a walkdown of this system to assess the physical condition of equipment and to determine if problems were identified and entered into the work order process.

(2) Assessment

Assessment - Effectiveness of Problem Identification

The team concluded that problems were identified and documented in accordance with the requirements of the licensee's corrective action program. The team also determined that the licensee was identifying problems at an appropriately low threshold, and that these conditions were assessed and ultimately corrected. The team determined that the procedures and program documents that implement the various aspects of the corrective action program were well established; however, the procedural requirements associated with this program were not always followed.

The team also identified an issue related to the implementation of corrective actions that have not always been completed in a timely manner or carried through to completion. Specifically, the team identified numerous conditions reports, including significant conditions adverse to quality that documented instances of site personnel failing to follow corrective action program procedures, inadequate corrective actions, and ineffective corrective actions to prevent recurrence. During this assessment process the team noted that these conditions had also been identified by the licensee's quality assurance organization and the station's Executive Oversight Board. Although the examples reviewed by the team did not rise to the level of a violation of NRC requirements, it was noted that the behaviors that resulted in these examples could lead to more significant problems if not corrected. The team also determined that the licensee's corrective action process typically addressed these conditions as isolated instances and these issues were not specifically evaluated for their cumulative impact or significance. Examples include:

- Quality Assurance Report 06-07, "System Engineering," documented "that errors with respect to execution of the corrective action program process may be directly related to not referring to the procedure when performing corrective action program activities." The condition identified in the audit was the result of reviewing numerous condition reports including Condition Report 05-11926, 05-12803, 06-4423, 06-4455, 06-5907, and 06-8515.

- Condition Report 06-9158 was generated to address the specific concerns with the above listed condition reports, and added "Any training or long-term measures to prevent recurrence will be addressed by a separate condition report once the final exit report for the assessment is complete."
- Condition Report 06-9542 was generated to address the above training or long-term measures to prevent recurrence. Specifically, the action was to create a training bulletin for all engineers with regard to procedure adherence. This training/long-term measure did not consider any other organizations.
- Following closure of Condition Report 06-9542, numerous condition reports were initiated on this issue and Quality Assurance Audit 07-06, "Corrective Action Program," documented similar instances where corrective action program supervisors do not consistently use the corrective action program procedure for condition report level determination.
- Despite the previous corrective actions, additional condition report examples were identified, including the essential cooling water cavitation/erosion of the aluminum-bronze piping (Condition Reports 05-7071, 05-7303, and 05-8601, which continued into the 2007 time-frame).
- Four other examples involving significant conditions adverse to quality were identified in Condition Report 07-12330, that documented causes or contributors in the area of untimely and ineffective corrective actions indicate a weakness in the implementation of the corrective action program. Subsequent to the inspector's identification of this example of failure to follow Procedure 0PGP03-7X-0002, "Condition Reporting Process," Revision 35, the licensee documented this condition on Condition Report 08-11995.
- Condition Report 02-17183 identified that the non safety-related essential cooling pond make-up pumps, needed to meet Regulatory Guide 1.27, "Ultimate Heat Sink for Nuclear Power Plants," have been unavailable for 6 years. The team identified that the licensee has initiated numerous condition reports to address this issue; however, none of the corrective actions have been implemented. The current status of the essential cooling pond make-up pumps is that they remain unavailable with an equipment clearance order hanging.

The team also identified instances of failure to follow corrective action program procedures where licensee personnel were classifying some conditions at inappropriately low significance levels. A similar condition was documented in Quality Independent Oversight Report 08-01. As noted by the team, the unintended consequence of inappropriately treating issues at a lower significance level means that the station will not benefit from information obtained from apparent or root-cause evaluations and the corrective actions may be narrowly focused or inappropriate for the circumstances. Accordingly, these actions may result in repetitive failures such as those described above in Condition Report 07-12330.

During the review of corrective action program implementing procedures, the team noted that the Procedure WCG 008, "Preventing Recurring Equipment Problems," Revision 3, was inappropriately classified as a non-quality document. Specifically, the team determined that the preventing recurring equipment problem process was being used to direct actions in parallel to, or in place of, the corrective action program process for safety-related and risk-significant equipment. Based on the inspector's reviews within this area there were no specific examples of actual conflicts with the corrective action program program. Therefore, this issue was identified as an observation. The licensee initiated Condition Report 08-11857 to address this observation.

Assessment - Effectiveness of Prioritization and Evaluation of Issues

The team reviewed a sample of condition reports that involved operability issues to assess the adequacy and timeliness of the operability assessment process. The team noted that operability review problems have existed throughout the review period. Specifically, operability review problems including inconsistent engineering evaluations and unverified assumptions have been documented in condition reports, in quality assurance audits, and Executive Oversight Review Board reports. However, changes to address these lingering issues were not implemented until April 2008, and insufficient time has elapsed to adequately evaluate the effectiveness of these changes.

The team also reviewed the root cause analysis and apparent cause evaluation procedures, as well as recent examples of both types of activities. The qualification records for a representative sample of the root cause evaluators were also reviewed. The team concluded that the licensee had an acceptable root cause determination process that was adequately implemented. Appropriate corrective actions were identified to address each cause, and operating experience and off-site expertise were appropriately utilized during these evaluations.

The apparent cause evaluations that were reviewed were primarily focused on resolving the specific issue identified. This narrowly focused approach was exemplified during the review of the equipment clearance order process, which had numerous apparent cause evaluations. Despite the recurring nature of these conditions which required an apparent cause analysis, each issue was resolved independently. Specifically, this resulted in a negative performance trend for the equipment clearance order process that has existed from March 2005 through July 2008 without effective resolution. This example is discussed in Section 4OA2.e.

Assessment - Effectiveness of Corrective Actions

The team reviewed plant records, primarily condition reports and work orders, to verify that corrective actions were appropriately developed and implemented, including corrective actions to address common cause or generic concerns. Additionally, the team reviewed a sample of condition reports that addressed past NRC-identified violations for each cornerstone to ensure that the corrective actions adequately addressed the issues identified in the respective inspection reports. The team also reviewed a sample of corrective actions closed to other condition reports, work orders,

or tracking programs to ensure that the defined corrective actions had been appropriately implemented.

Overall, the team concluded that the licensee developed appropriate corrective actions to address specific problems. The team reviewed a sample of non-cited violations and condition reports generated to address the violations. During review of the associated condition reports, the team determined that the corrective actions for the human performance errors (failure to follow procedures, inadequate procedures, and failure to self check) were appropriate to address each specific issues. However, the same types of human performance errors continued to be manifested over an extended period of time, some of which involved significant conditions adverse to quality, that were indicative of ineffective corrective actions.

The following condition reports are examples of noncited violations associated with recurring human performance issues:

- Condition Report 07-2369 documented opening an incorrect breaker which was attributed to failure to use self checking.
- Condition Report 07-7030 (significant conditions adverse to quality) documented five repetitive occurrences of radiological controls deficiencies all categorized as failure to follow procedures.
- Condition Report 07-1017 documented manipulation of a switch when the switch was tagged out with a danger tag. This condition not only represented a violation of work procedures but also a failure to use self checking or peer checking.
- Condition Report 07-4371 (significant conditions adverse to quality) documented that during changing reactor power level, the ramp rate was incorrectly taken to a setting of 200 percent per minute. This resulted in a power excursion. The cause for the power excursion was determined to be failure to follow procedures.
- Condition Report 06-16436 (significant conditions adverse to quality) documented that during seal replacement of a high head safety injection pump, maintenance personnel used unauthorized work practices (e.g., strong-backs & port-a-power) to disassemble the pump-to-motor spacer. This error was attributed to a failure to follow procedures.
- Condition Report 07-1007 documented that incorrect supervisory guidance was provided to maintenance personnel during the spent fuel pool cooling pump seal replacement that subsequently leaked following reassembly. This deficiency was attributed to inadequate guidance.
- Condition Report 07-12748 documented that while installing electrical conduit, the conduit came in contact with an energized ac breaker, which tripped the breaker off. This deficiency was attributed to an inadequate procedure.

- Condition Report 06-17091 (significant conditions adverse to quality) documented that during surveillance testing, the turbine driven auxiliary feed-water pump's latching mechanism failed. This repeat occurrence was attributed to inadequate procedures.
- Condition Report 07-9154 documented the failure to follow fire protection procedures when all three emergency diesel generators had been isolated from the fire suppression system.
- Condition Report 08-5486 documented an instance where the emergency cooling water pump discharge valve failed to open during a surveillance test. This caused overheating and motor overload, which resulted in the power supply breaker opening. The apparent cause identified the failure to follow procedures to land electrical leads correctly and the lack of self checking.

b. Assessment of the Use of Operating Experience

(1) Inspection Scope

The team examined the licensee's program for reviewing industry operating experience, including reviewing the governing procedure, evaluating self assessments, and interviewing the operating experience program owner. A sample of operating experience notification documents that had been issued during the assessment period was reviewed to determine whether the licensee had appropriately evaluated the notification for relevance to the facility. The team also examined whether the licensee had entered those items into their corrective action program and assigned actions to address the issues. The team reviewed a sample of root cause evaluations and significant condition reports to verify that the licensee had appropriately included industry operating experience.

(2) Assessment

Overall, the team determined that the licensee had appropriately evaluated industry operating experience for relevance to the facility, and had entered applicable items in the corrective action program. However, once this information was disseminated, the team noted that reviews and other actions associated with or generated as part of the condition report actions were not being completed in a timely manner as documented in Condition Report 08-317. Operating experience condition reports were normally assigned as conditions not adverse to quality, the lowest level of classification in the corrective action program program. This lack of priority was exemplified in at least 12 outstanding operating experience condition reports that had been initiated during the previous 2-year assessment period and numerous outstanding operating experience condition reports with actions that had been extended multiple times; however, the team did not identify safety issues associated with these delays. Once evaluated, assessments of the issues were appropriate. The team noted improvement in the use of internal and external operating experience during the planning of work evolutions. The

team also determined that the licensee was evaluating industry operating experience when performing root cause and apparent cause evaluations.

c. Assessment of Self-Assessments and Audits

(1) Inspection Scope

The team reviewed a sample of licensee self assessments and audits to assess whether the licensee was regularly identifying performance trends and effectively addressing them. The team also reviewed audit reports to assess the effectiveness of assessments in specific areas.

(2) Assessment

From 2007 to present, quality assurance audits have become increasingly performance based and have been instrumental in identifying a number of substantive issues and areas for improvement. However, some of these issues have not been acted upon in a timely manner. Examples noted by the team include repeated deficiencies associated with the equipment clearance order process (see Section 4OA2.e), condition report effectiveness concerns (see Section 4OA2.a), and the essential cooling pond makeup pump issue (see Section 4OA2.a). Other self assessments appeared to be narrowly focused and primarily compliance-based activities. Many of the self assessments reviewed did not identify any insightful issues concerning their performance, which limited the value of the assessment. The team reviewed recommendations made in self assessments and the actions assigned as a results of those recommendations. The team noted that these were often given a low priority and were not implemented in a timely manner.

d. Assessment of Safety Conscious Work Environment

(1) Inspection Scope

The team interviewed 60 individuals from different departments representing a cross section of functional organizations, including supervisory and non-supervisory personnel. The interviews assessed whether conditions existed that would challenge an effective safety conscious work environment. The team also reviewed the results of the 2007 Nuclear Safety Culture Assessment and the corrective action plan to address the associated findings. The team reviewed procedures and training materials used to implement the safety conscious work environment and safety culture programs at the site, and discussed them with the site Employee Concerns Program coordinator. The team also reviewed the number and general themes for issues received by the Employee Concerns Program and compared them to the types of allegations the NRC received during the same period.

(2) Assessment

Overall, the team concluded that a safety conscious work environment exists at the South Texas Project. However, as a result of safety conscious work environment interviews with Regulated Security Services security officers and Brock fire watch personnel, it became apparent that not all of the long-term contractors on site have received the requisite corrective action program user training nor do they have access to the corrective action program database. The team determined that some permanent plant workers were not provided the same access to the corrective action program system that other station personnel have been given, which may inhibit the reporting of problems. As noted by the team, there were specific corrective actions from significant conditions adverse to quality Condition Report 06-12171, to provide corrective action program access training to all long-term contractors. Based on the results of interviews and related records, the action to provide this training had not been completed, even though the action is indicated as complete in the corrective action program. The licensee initiated Condition Report 08-11874 to document this condition. Relative to this issue, the team noted that consideration should be give to providing recurrent training because a number of individuals indicated that although they had initially been trained, they were no longer proficient at entering condition reports into the corrective action program system.

At the time of the previous problem identification and resolution inspection, there were significant communication challenges and cultural issues associated with the security organization. Based on the teams interviews, a number of improvements have been implemented related to working relations, working conditions, and habitability issues. However, it was noted that there are still instances where workers do not feel that there concerns are being adequately addressed. There are also legacy concerns including the perception that if problems are identified, nothing will be done to correct these issues. Despite these concerns, the team determined that employees felt free to identify nuclear safety issues to their supervisors or to the NRC and enter them into the corrective action program system.

Subsequent to the completion of extensive safety conscious work environment discussions with station personnel, the team determined that many of the individuals interviewed lacked confidence that the station's Employee Concerns Program would effectively resolve issues. Specifically, numerous individuals from diverse organizations expressed a common sentiment that they would not use this program. The concerns expressed, generally indicated a lack of trust that the Employee Concerns Program would effectively resolve issues brought to them and that individuals would normally seek alternative means of recourse. The team noted that the level of dissatisfaction expressed by station personnel with the Employee Concerns Program was high.

e. Specific Issues Identified During This Inspection

Ineffective Corrective Actions to Preclude Recurrence

Introduction. The team identified a Green finding for ineffective corrective actions involving the equipment clearance order process.

Description. On July 12, 2008, maintenance was being performed on a Unit 2 condenser air removal pump for which an equipment clearance order had been prepared, reviewed, approved, hung, verified, and accepted for work. The equipment clearance order preparer, reviewer, and the craft that accepted the work all believed that the equipment clearance order removed power to the component. The craft performed a live-dead-live check of the component, but failed to perform the check correctly and did not identify that the component was still energized. During the removal of a component an arc was seen and the control power breaker tripped. Even though this was unexpected, the worker continued on and removed, troubleshot, and reinstalled the component before notifying the control room. The equipment clearance order failed to remove all the power sources to the component and failed to identify the remaining sources on the equipment clearance order as directed in accordance with Procedure OPGP03-ZO-ECO1, "Equipment Clearance Order Program," Revision 17. This occurred because, as stated in Condition Report 08-10998, it had become culturally acceptable to ignore low voltages (e.g., less than 120 volts).

Additional behaviors that resulted in this event included: (1) the craft's reliance on operations in performing the equipment clearance order, the craft does not routinely verify the boundaries of the work they are about to perform using drawings and prints; (2) the improper live-dead-live check, because of the lack of refresher training; (3) the lack of failing to follow the defined responsibilities in the equipment clearance order procedures (for example, the technical reviewer had not performing a required check of the temporary modification log); and (4) the lack of operations training on the equipment clearance order process (for example, the licensee has no job task analysis and training currently consists of on-the-job training with no objectives or formal acceptance criteria).

The team identified that the causes of this event were similar to other equipment clearance order problems previously documented in various significant conditions adverse to quality condition reports and quality assurance audit reports. The team noted that previous corrective and preventive actions intended to address equipment clearance order errors were limited in scope in that they addressed the specific event. The licensee did not perform an overall assessment of the equipment clearance order/work control process to determine the extent of the condition and, therefore, had not implemented effective corrective and preventive actions. Since 2006, equipment clearance order procedural issues and training concerns have been documented in various documents from formal self assessments to significant conditions adverse to quality condition reports (Condition Reports 06-6348, 06-11221, 07-2520, 07-5341, and 08-10998).

While there has been limited improvement, the overall trend continues as evidenced by the number of the errors. As documented in Condition Report 07- 2520, 55 condition reports were reviewed during the 2003-2005 time frame, which equated to 47 percent preparer/reviewer, 20 percent tagger/independent verifier, and 11 percent acceptor. During the 2006-2008 time frame Condition Report 08-10998, documented 48 condition reports related to equipment clearance order issues of which 31 percent concerned preparer/reviewer, 21 percent concerned tagger/independent verifier, and 10 percent concerned acceptor. Specific examples of events that have resulted from equipment clearance order errors included: (1) an equipment clearance order that de-energized a load center that resulted in securing power to an instrument air compressor, which rendered essential cooling water screen wash pump inoperable resulting in an unplanned technical specification entry; (2) a reduction in power of approximately 13 megawatts for an equipment clearance order that restored circulating water valves in the wrong sequence; (3) operations not properly ensuring a valve on the make-up water system was closed (it had been tagged, verified, and accepted as closed when in fact it was open); (4) while shutdown, the Unit 1 pressurizer liquid sample inside and outside containment isolation valves were worked at the same time under an inadequate equipment clearance order; and (5) while shutdown, the Unit 1 battery Charger E1A11-2 equipment clearance order did not isolate the temporary power to the charger before the craft accepted the equipment clearance order. These examples show errors in all aspects of the equipment clearance order process, at all levels, and with all personnel involved and that the licensee has not made sufficient progress to correct the situation.

Procedure OPGP03-ZX-0002, "Condition Reporting Process," Revision 9, specifies that the licensee is to implement corrective actions to resolve the condition. Specifically, "At least one Corrective Action to Prevent Recurrence should be implemented to address the Root-Cause(s)," otherwise, the licensee is to document the basis and justification for not following the action. As a result of experiencing several significant conditions adverse to quality related to equipment clearance order process issues, the licensee has not ensured that appropriate corrective and preventive actions were implemented.

Analysis. The team determined that the ineffective corrective actions associated with the equipment clearance order process, which continues to result in equipment clearance order errors affecting personnel and equipment safety, was a performance deficiency. The team determined that the finding was more than minor because it affected the Initiating Events cornerstone objective to limit those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The team evaluated the finding using the Phase 1 worksheet in Inspection Manual Chapter 0609, "Significance Determination Process," and determined the finding to have very low safety significance because: it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would be unavailable; it did not contribute to the likelihood of a loss-of-coolant accident; and it did not increase the likelihood of a fire or flooding. This issue has a crosscutting aspect in the area of human performance, specifically, the work practices aspect, in that, the licensee failed to adequately define and communicate expectations regarding procedural compliance and personnel following procedures. [H.4(b)]

Enforcement. No violation of regulatory requirements occurred. The team determined that the finding did not represent a noncompliance because the most recent, more than minor, occurrences were associated with non safety-related equipment. Procedure OPGP03-ZX-0002, "Condition Reporting Process," Revision 9, requires, in part, that at least one corrective action to prevent recurrence should be implemented to address the root-cause(s) or provide documented justification for not having a corrective action. From March 2005 through July 2008, the licensee has not corrected numerous errors associated with the equipment clearance order process as documented in several significant conditions adverse to quality condition reports. This issue has been entered into the licensee's corrective action program as condition report 08-10998. This issue is being treated as a finding: FIN 05000498/2008009-01, 05000499/2008009-01, "Ineffective Corrective Actions on the Equipment Clearance Order Process."

4OA6 Management Meetings

Exit Meeting

On August 14, 2008, an onsite exit was conducted on the last day of the onsite inspection. The preliminary results of the inspection were discussed with Mr. J. Sheppard and other members of the staff. The licensee confirmed that no proprietary information was handled during this inspection.

Attachments:

1. Supplemental Information
2. Information request

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

C. Bowman, General Manager, Oversight
W. Bullard, Manager, Health Physics
J. Calvert, Manager, Training
K. Coates, Plant General Manager
D. Cobb, Manager, Employee Concerns Program
J. Cook, Supervisor, Project Engineering
R. Engen, Manager, Maintenance Engineering
R. Gangluff, Manager, Chemistry, Environmental and HP
C. Grantom, Manager PRA
G. Gaytko, Performance Improvement
W. Harrison, Engineering Licensing Staff
S. Head, Manager, Licensing
G. Hildebrandt, Manager Ops Division – Unit 2
K. House, Manager, Engineering
B. Jenewein, Manager, Testing/Programs Engineering
G. Janak, Manager Ops Division – Unit 1
A. McGalliard, Manager, Performance Improvement
M. Meier, Vice President, Shared Services
J. Mertink, Manager, Operations
A. Mikus, Supervisor, Communications and public Affairs
H. Murray, Manager, Maintenance
J. Paul, Engineering Licensing Staff
E. Payne, Compliance
L. Peter, Manager, Outages and Strategic Projects
J. Pierce, Operational Training
G. Powell, Vice President Engineering
D. Rencurrel, Site Vice President
M. Reddix, Manager Security
M. Ruvalcaba, Supervisor, Engineering
R. Savage, Engineering Licensing Staff
M. Schaffer, Work Control
J. Sheppard, President and CEO
W. Sotos, Supervisor, Design Engineering Electrical and I&C
D. Swett, Supervisor, Radiation Protection
D. Towler, Manager, Quality

NRC

N. O'Keefe, Chief, Engineering Branch 2, Division of Reactor Safety

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000498; 5000499/2008009- FIN Ineffective Corrective Actions on the Equipment
01 Clearance Order Process

LIST OF DOCUMENTS REVIEWED

Procedures

0PGP04-ZA-0002, "Condition Report Engineering Evaluation", Revision 9
0PGP04-ZA-0101, "Vendor Document Control Program", Revision 8
0PGP04-ZA-0328, "Engineering Document Processing", Revision 10
0PAP01-ZA-0101, "Plant Procedure Writer's Guide", Revision 2
0PAP01-ZA-0102, "Plant Procedures", Revision 10
0PGP03-ZX-0002 "Condition Reporting Process", Revision 35
0PGP03-ZX-0013, "Industry Event Analysis", Revision 7
0PGP03-ZO-9900, "Operability Determinations," Revision 0
0PGP03-ZO-ECO1, "Equipment Clearance Order Program," Revision 17
0PGP03-ZO-ECO1A, "Equipment Clearance Order Preparation," Revision 7
0PGP03-ZO-ECO1B, "Equipment Clearance Order Field Operation," Revision 1
0PGP03-ZO-ECO1C, "Equipment Clearance Order Tags and Audits," Revision 0
STP-707, "Corrective Action Programs," Revision 1
ACE-0001, "Apparent Cause Evaluators Manual," Revision 1
RCA-0001, Root Cause Investigators Manual," Revision 8
WCG-0008, "Preventing Recurring Equipment Problems", Revision 3
CAP-0001, "CR Classification Guideline", Revision 2
PS-HND-002, "ECO Guideline," Revision 2
Conduct of Operations, Chapter 8, Equipment Configuration Management, Revision 10
Conduct of Operations, Chapter 11, Operations Departmental Guidelines, Revision 1
Conduct of Operations, Chapter 11, Operations Departmental Business Practices, Revision 6

Drawings

5N129F05013, P&ID Safety Injection System, Revision 27
5N129F05014, P&ID Safety Injection System, Revision 17
5N129F05015, P&ID Safety Injection System, Revision 20
5N129F05016, P&ID Safety Injection System, Revision 14

Audits

Quality Audit Report 06-07 (SY), Systems Engineering, August 29, 2006
Quality Audit Report 06-08 (PO), Plant Operations, July 26, 2006
Quality Audit Report 06-10 (SE), Physical Security/Fitness-For-Duty, October 11, 2006
Quality Audit Report 07-03 (MM), Maintenance, July 10, 2007

Quality Audit Report 07-05 (FP), Fire Protection Program, August 13, 2007
 Quality Audit Report 07-06 (CAP), Corrective Action Program, August 29, 2007
 Quality Audit Report 07-07 (SE), Physical Security/Fitness-For-Duty, October 10, 2007
 Quality Audit Report 07-09 (DE), Design Control, December 11, 2007
 Quality Audit Report 08-05 (PO), Plant Operations, July 29, 2008
 Quality Independent Oversight Report: 08-01 (Nov 2007 – April 2008)

Condition Reports

| | | | | |
|----------|----------|----------|----------|----------|
| 02-17183 | 06-09139 | 07-01601 | 07-17302 | 08-2338 |
| 03-10548 | 06-09845 | 07-01607 | 07-17608 | 08-3328 |
| 03-16243 | 06-10149 | 07-02520 | 07-17608 | 08-3494 |
| 03-5592 | 06-1073 | 07-05341 | 07-17718 | 08-3749 |
| 04-15221 | 06-11221 | 07-06701 | 07-18019 | 08-3753 |
| 04-2576 | 06 13009 | 07-1017 | 07-18706 | 08-4594 |
| 04-2578 | 06-13436 | 07-1075 | 07-1958 | 08-4624 |
| 04-2580 | 06-16703 | 07-1077 | 07-2216 | 08-4625 |
| 04-7752 | 06-17060 | 07-11286 | 07-2369 | 08-4626 |
| 04-8154 | 06-17062 | 07-11643 | 07-2520 | 08-4651 |
| 05-12540 | 06-17102 | 07-11852 | 07-2707 | 08-5068 |
| 05-14355 | 06-17102 | 07-11936 | 07-3674 | 08-5781 |
| 05-15107 | 06-17157 | 07-1198 | 07-4263 | 08-5847 |
| 05-15684 | 06-3408 | 07-12330 | 07-5341 | 08-5871 |
| 05-2079 | 06-3674 | 07-12330 | 08-0929 | 08-6110 |
| 05-3310 | 06-7085 | 07-12906 | 08-10454 | 08-6127 |
| 05-6401 | 06-7329 | 07-13337 | 08-10584 | 08-6463 |
| 05-6402 | 06-7345 | 07-14055 | 08-10593 | 08-6481 |
| 05-7071 | 06-7380 | 07-15148 | 08-10784 | 08-7016 |
| 05-7187 | 06-7382 | 07-15237 | 08-10998 | 08-7124 |
| 05-7303 | 06-7407 | 07-15626 | 08-11085 | 08-7937 |
| 05-8505 | 06-7419 | 07-15799 | 08-11124 | 08-9488 |
| 05-8601 | 06-7553 | 07-15973 | 08-11124 | 08-9591 |
| 05-9666 | 06-7554 | 07-16112 | 08-11633 | 08-9891 |
| 06-07272 | 06-8301 | 07-16530 | 08-1365 | 08-9962 |
| 06-07516 | 06-8935 | 07-16682 | 08-1552 | 08-10304 |
| 06-08138 | 06-9158 | 07-16682 | 08-1594 | 08-11731 |
| 06-08206 | 06-9542 | 07-16711 | 08-1838 | 08-11857 |
| 06-08982 | 06-9740 | 07-16805 | 08-21930 | 08-11995 |

Root Cause Evaluations Reviewed

| | | | | | |
|----------|----------|---------|---------|---------|----------|
| 06-8935 | 06-12171 | 07-2520 | 07-5341 | 07-7030 | 07-15148 |
| 07-16530 | 08-10998 | | | | |

Apparent Cause Evaluations Reviewed

| | | | | |
|----------|----------|---------|---------|---------|
| 05-15107 | 06-17102 | 07-2216 | 08-2193 | 08-9488 |
| 05-2079 | 06-3408 | 07-2369 | 08-5781 | 08-9891 |
| 05-3310 | 06-7382 | 07-3674 | 08-5847 | |
| 05-7187 | 07-1017 | 07-4263 | 08-6110 | |
| 06-1073 | 07-12330 | 08-1594 | 08-7124 | |

Self-assessments Reviewed

Engineering Support Personnel Training Programs Comprehensive, CR 06-131-13
Rigging and Lifting Program, CR 07-448-3
STPNOC Mid-Cycle Self-Assessment, CR 07-1189-18
Radiation Protection Program, CR 07-750-3 and 07-9849
Corrective Action Program, CR 06-15579-3
Equipment Clearance Order Program, CR 06-11221-2 and 07-17608

LEERS

- 1-06-003, Control Room Envelop HVAC Makeup Fan 11B Failure to Start (Unit 1)
- 1-06-004, Multiple Main Steam Safety Valves Found Outside Acceptance Criteria (Unit1)
- 1-06-005, Quadrant Power Tilt Ratio Surveillance Not Performed As Required By TS 3.3.1 Action 2 (Unit 1)
- 1-06-006, Inoperable Auxiliary Feedwater Flow instrumentation (Unit 1)
- 2-06-001, Safety Injection Train Inoperable Longer Than Allowed Under Technical Specifications (Unit 2)
- 1-07-001, Turbine-Driven Auxiliary Feedwater Pump Failed to Start During Surveillance Testing (Unit 1)
- 1-07-002, Entry into TS 3.0.3 for Greater than 1 Hour due to Inoperable Degraded Voltage Relays (Unit 1)
- 1-07-003, Incorrect Count Rate Board Installed in Extended Range Nuclear Instrumentation Channel (Unit 1)
- 2-07-001, Auxiliary Feedwater Pump Inoperable Longer than Allowed by Technical Specifications (Unit 2)

Training Material

LOT802.31, Configuration Management
NTD028, Equipment Clearance Orders
NTD028.01, Equipment Clearance Order- Refresher Training
OJT-CRO-119
OJT-SRO-4487

Miscellaneous

Independent Oversight Report 08-01

Letter from NRC Chairman Klein to Congressman Markey, Regarding South Texas Project Nuclear Power Plant and Force-on-Force Exercises at NRC-Licensed Facilities, dated December 22, 2006

Letter from the NRC, Summary of NRC's Review of the Recent Security Issues at the South Texas Project Nuclear Power Plant, dated November 27, 2006

Letter from Union of Concerned Scientists, Concerns About Inadequate Security at South Texas Project, dated August 31, 2006

ECW Pipe Timeline (assoc. with CRs 05-7071, 05-7303, and 05-8601)

Unit 1 Operator Burden – Working Report (printed 07/29/08)

Unit 2 Operator Burden – Working Report (printed 07/29/08)

Safety Conscious Work Environment Review Employee Concerns Program (ECP) June Monthly Report (July, 10, 2008)

Operating Experience Review

| | | | | | |
|----------|----------|----------|----------|---------|----------|
| 06-11475 | 06-16561 | 07-109 | 07-14853 | 07-3436 | 08-10274 |
| 06-12124 | 06-16805 | 07-11415 | 07-15148 | 07-346 | 08-1539 |
| 06-14573 | 06-16998 | 07-11578 | 07-15835 | 07-6164 | 08-2356 |
| 06-14594 | 06-17091 | 07-11949 | 07-17848 | 07-6465 | 08-3036 |
| 06-1493 | 06-7101 | 07-12817 | 07-2341 | 07-6468 | 08-3433 |
| 06-15407 | 06-9709 | 07-13552 | 07-2362 | 07-8242 | 08-0571 |
| 06-16436 | 06-9763 | 07-14246 | 07-3195 | 07-8374 | |
| 06-16559 | 06-9913 | 07-14248 | 07-340 | 07-9323 | |

Information Notices

IN 2004-19, Problems Associated with Back up Power Supplies to Emergency Response Facilities and Equipment

IN 2006-17, Recent Operating Experience of Service Water Systems due to External Conditions, July 31, 2006

IN 2006-20, Foreign Material Found in the Emergency Core Cooling System, October 16, 2006

IN 2006-21, Operating Experience Regarding Entrainment of Air into Emergency Core Cooling and Containment Spray Systems, September 21, 2006

IN 2006-31, Inadequate Fault Interruption Rating of Breakers, December 26, 2006

IN 2007-08, Potential Vulnerabilities of Time Reliant Computer Based Systems due to Change in Daylight Savings Time Dates, February 28, 2007

IN 2007-15, Effects of the Ethernet Based, Non-Safety Related Controls on the Safe and Continued Operation of Nuclear Power Stations, April 17, 2007

IN 2007-18, Operating Experience Regarding Entrainment of Gas or Debris into Auxiliary Feedwater Systems May 13, 2007

IN 2007-40, Inadequate Implementation of 10 CFR Part 21 Requirements by Vendors Who Supply Basic Components to Nuclear Power Plant Licensees, December 21, 2007

RIS 2006-23, Post Tornado Operability of Ventilating and Air Conditioned Systems Housed in Emergency Diesel Generator Rooms, December 6, 2006

RIS 2007-02, Clarification of NRC Guidance for Emergency Notifications During Quickly Changing Events, February 2, 2007

RIS 2007-18, Data for Updating the Interim Inventory of Radioactive Sources, September 7, 2007

NCV Effectiveness Reviews

NCV 2008002-01 (CR 06-11475)

NCV 2008003-01 (CR 08-5486, -5399, -5486, -10584, -8059, & 06-12633, -12194, -7781, -12195)

NCV 2008003-4OA7 (CR 08-5642)

NCV 2008006-01 (CR 08-0887)

NCV 2008401-4OA7 (CR 08-2520)

NCV 2008401-01 (CR 08-2848)

FIN 2007002-01 (CR 07-02369, 07-01017, 07-05341, 07-02520)

NCV 2007002-03 (CR 06-16436, 07-01000, 07-01254)
NCV 2007003-01 (CR 07-04371)
NCV 2007003-02 (CR 07-06574, 07-07030)
NCV 2007003-03 (CR 07-03436)
NCV 2007003-40A7 (CR 07-3436)
FIN 2007004-01 (CR 07-12748, 07-14295)
NCV 2007004-02 (CR 06-16805, 06-17091)
NCV 2007004-40A7 (CR 07-09154)
NCV 2007005-01 (CR 07-06164)
NCV 2007005-02 (CR 07-15148)
NCV 2007005-03 (CR 06-17055)
NCV 2007005-40A7 (CR 07-16715, 07-16697)
NCV 2007007-01 (CR 07-15443)
NCV 2007007-02 (CR 07-15592)
NCV 2007007-03 (CR 07-15455)
NCV 2007007-04 (CR 07-14903, 07-14959)
NCV 2007007-05 (CR 07-15817)
NCV 2007007-06 (CR 07-15752)
URI 2007007-07 (CR 07-14398, 07-16309)
URI 2007007-08 (CR 07-1 4398)
FIN 2006003-01 (CR 06-7272)
NCV 2006-03-(no number) (CR 05-3071)
NCV 2006004-01 (CR 06-8982)
NCV 2006004-02 (CR 06-9139, 06-8138, 06-9845, 06-8206, 06-7516)
NCV 2006005-01 (CR 06-14600, 06-17157, 07-1297)
NCV 2006005-40A7 (CR 06-130059)
NCV 2006005-40A7 (CR 06-13436)

South Texas Project PI&R Inspection Document Request

This inspection will cover the period July 28, 2006 through August 15, 2008. Unless otherwise stated, all requests should be limited to this time period.

Please provide the following as soon as possible in electronic form, if practical, but not later than July 21, 2008:

1. Procedures for implementing all problem-identification and resolution processes. This would include, but not be limited to, Condition Report reporting and resolution, assessment of industry operating experience, operability assessment and documentation, root cause assessment, event assessment, addressing violations of NRC requirements, cause evaluations, etc.
2. Self assessment documents:
 - a. Copies of all internal and external self-assessments and QA audits performed during the review period. This should include department-level assessments.
 - b. Copies of all trend reports and corrective action effectiveness reports associated with the corrective action process generated within the last year (e.g. equipment trends, trending of CR's, etc.).
 - c. Copies of procedures used to conduct trending of equipment failures, and other trend analyses.
 - d. Copy of the latest system health report summary for all systems monitored.
 - e. A copy of any safety culture assessments performed during the review period, and any documents that describe the site plan to address the results. (If none was performed during the period, please provide a copy of the last one, regardless of date performed).
 - f. A copy of the most recent corrective action program metric results.
3. Procedures and/or charter documents describing responsibilities of the Condition Review Group.
4. List of all current maintenance rule (a)(1) SSCs, including time it entered into a(1) and what caused it to go into (a)(1) status.
5. A copy of the current Top 10 Equipment Reliability Issues list (or equivalent).
6. Operating Experience items:
 - a. A list of all industry events, generic communications, Part 21 reports, or other operating experience documents reviewed by the station operating experience program during the review period.
 - b. A list of CR's generated to assess any of those items.

- c. Copies of procedures for implementing assessments of industry operating experience from any sources (e.g. NRC, INPO, Part 21 reports, vendor technical bulletins, etc.).

7. Cause evaluation documents:

- a. A copy of all root cause evaluations performed during the period of review.
- b. A summary list of apparent cause evaluations during the same period.
- c. Copies of the procedures used to conduct root cause evaluations and apparent cause evaluations.

8. Operability assessment documents:

- a. Copies of procedures governing operability assessment in accordance with Information Notice 2005-20.
- b. A list (with document number and description) of all items classified as degraded or non-conforming in accordance with Information Notice 2005-20 that are currently open.

9. Event-related documentation:

- a. The post-trip assessment packages and restart readiness reviews for any trips during the review period.
- b. Any event review team reports during the review period.

10. A list of meetings (times and locations) for the periods of onsite inspections for the following:

Onsite Review Committee (OSRC)
CR Review Committee screening meeting
Condition Review Group (CRG)

11. A list of preventive maintenance items (number and title) for safety related equipment which are currently:

- a. Past their due date.
- b. Have no due date assigned.

12. Copies of all CR's written to address problems or improvements identified as a result of emergency preparedness drills or exercises during the review period.

13. Workaround documents:

- a. A copy of procedures for identifying, documenting and correcting workarounds in the broadest sense of the term (many stations have several categories for workaround-type issues)

- b. A copy of the latest issues being tracked in these processes.
- c. A copy of CR's or other documents relating to workarounds.

14. Copies of training material, pamphlets, or other material provided to employees and contractors at the site concerning the station's nuclear safety concerns program or similar program. Please include explanation of the periodicity of such training or handouts.