



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION IV  
1600 E. LAMAR BLVD  
ARLINGTON TX 76011-4511

March 20, 2017

Mr. G. T. Powell  
Executive Vice President and Chief Nuclear Officer  
STP Nuclear Operating Company  
South Texas Project Electric Generating Station  
P.O. Box 289  
Wadsworth, TX 77483

**SUBJECT: SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION,  
UNITS 1 AND 2 – NRC TRIENNIAL FIRE PROTECTION INSPECTION  
REPORT 05000498/2017007 AND 05000499/2017007**

Dear Mr. Powell:

On February 9, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the South Texas Project Electric Generating Station, Units 1 and 2, and discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

The NRC team documented one finding of very low safety significance (Green) in this report. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the violation or significance of the violation in this report, you should provide a written response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, Region IV; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC resident inspector at the South Texas Project Electric Generating Station, Units 1 and 2.

G. Powell

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This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

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Gregory E. Werner, Chief  
Engineering Branch 2  
Division of Reactor Safety

Docket Nos. 50-498 and 50-499  
License Nos. NPF-76 and NPF-80

Enclosure:  
Inspection Report No. 05000498/2017007  
and 050000499/2017007  
w/ Attachment: Supplemental Information

cc w/ encl: Electronic Distribution

**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION IV**

Docket: 05000498 and 05000499

License: NPF-76 and NPF-80

Report: 05000498/2017007 and 05000499/2017007

Licensee: STP Nuclear Operating Company

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

Location: FM 521 – 8 miles west of Wadsworth  
Wadsworth, Texas 77483

Dates: January 23 through February 9, 2017

Team Leader: S. Makor, Acting Senior Reactor Inspector

Inspectors: S. Alferink, Reactor Inspector  
J. Drake, Senior Reactor Inspector  
C. Stott, Reactor Inspector  
J. Watkins, Reactor Inspector

Approved By: Gregory E. Werner, Chief  
Engineering Branch 2  
Division of Reactor Safety

Enclosure

## SUMMARY

IR 05000498/2017007; 05000499/2017007; 01/23/2017– 02/09/2017; South Texas Project Electric Generating Station, Units 1 and 2; Fire Protection (Triennial)

The report covers a two-week triennial fire protection team inspection by specialist inspectors from Region IV. One finding, which was a non-cited violation, was documented. The significance of inspection findings is indicated by their color (i.e., Green, White, Yellow, or Red) and determined using Inspection Manual Chapter 0609, "Significance Determination Process," dated April 29, 2015. Cross-cutting aspects are determined using Inspection Manual Chapter 0310, "Aspects within the Cross-Cutting Areas," dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated November 1, 2016. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6.

### A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

Green. The team identified a non-cited violation of License Condition 2.E for the failure to provide 8-hour emergency lighting in all areas where operators perform manual actions required during an alternative shutdown. As a compensatory measure, the licensee added flashlights to the procedure box in the essential cooling water intake structure. The team noted that operators were also required to carry a flashlight while on shift. The licensee entered this issue into their corrective action program as Condition Report 17-1741.

The failure to provide 8-hour emergency lighting in all areas where operators perform manual actions required during an alternative shutdown was a performance deficiency. The performance deficiency was more than minor because it was associated with the protection against external events (fire) attribute of the Mitigating Systems Cornerstone and it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to provide 8-hour emergency lighting could adversely affect the ability of operators to perform the manual actions required for an alternative shutdown.

The team determined this finding affected the Mitigating Systems Cornerstone. The team evaluated this finding using Inspection Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," dated September 20, 2013, because it affected the ability to reach and maintain safe shutdown conditions in case of a fire. The team determined this finding was of very low safety significance (Green) in Task 1.3.1 because it had a low degradation rating.

The finding did not have a cross-cutting aspect since it was not indicative of present performance in that the performance deficiency occurred more than three years ago. Specifically, the team determined that the performance deficiency existed since original construction. (Section 1R05.08)

**B. Licensee-Identified Violations**

None

**REPORT DETAILS**

**1. REACTOR SAFETY**

**Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity**

**1R05 Fire Protection (71111.05T)**

This report presents the results of a triennial fire protection inspection conducted at South Texas Project Electric Generating Station, Units 1 and 2 in accordance with NRC Inspection Procedure 71111.05T, "Fire Protection (Triennial)," dated January 31, 2013. The inspection team evaluated the implementation of the approved fire protection program in selected risk-significant areas with an emphasis on the procedures, equipment, fire barriers, and systems that ensure the post-fire capability to safely shutdown the plant.

Inspection Procedure 71111.05T requires the selection of three to five fire areas and one or more mitigating strategies for review. The inspection team used the fire hazards analysis section of the South Texas Project Electric Generating Station, Units 1 and 2 Individual Plant Examination of External Events to select the following five risk-significant fire areas (inspection samples) for review:

- Fire Area 20                      Non-Radiological Pipe Chase
- Fire Area 32                      Component Cooling Water Pipe Chase
- Fire Area 51                      Train D Auxiliary Pump Room
- Fire Area 1                        Control Room
- Fire Area 7                        Alternate Shutdown Room

The inspection team evaluated the licensee's fire protection program using the applicable requirements, which included the plant Technical Specifications, Operating License Condition 2.E, NRC safety evaluations, 10 CFR 50.48, and Branch Technical Position 9.5-1. The team also reviewed related documents that included the Updated Final Safety Analysis Report (UFSAR), Section 9.5; the fire hazards analysis; and the post-fire safe shutdown analysis. Specific documents reviewed by the team are listed in the attachment.

Five fire area inspection samples and one mitigating strategy sample were completed.

**.01 Protection of Safe Shutdown Capabilities**

**a. Inspection Scope**

The team reviewed the piping and instrumentation diagrams, safe shutdown equipment list, safe shutdown design basis documents, and the post-fire safe shutdown analysis to verify that the licensee properly identified the components and systems necessary to achieve and maintain safe shutdown conditions for fires in the selected fire areas. The

team observed walkdowns of the procedures used for achieving and maintaining safe shutdown in the event of a fire to verify that the procedures properly implemented the safe shutdown analysis provisions.

For each of the selected fire areas, the team reviewed the separation of redundant safe shutdown cables, equipment, and components located within the same fire area. The team also reviewed the licensee's method for meeting the requirements of 10 CFR 50.48; Branch Technical Position 9.5-1, Appendix A; and 10 CFR Part 50, Appendix R, Section III.G. Specifically, the team evaluated whether at least one post-fire safe shutdown success path remained free of fire damage in the event of a fire. In addition, the team verified that the licensee met applicable license commitments.

b. Findings

No findings were identified.

.02 Passive Fire Protection

a. Inspection Scope

The team walked down accessible portions of the selected fire areas to observe the material condition and configuration of the installed fire area boundaries (including walls, fire doors, and fire dampers) and verify that the electrical raceway fire barriers were appropriate for the fire hazards in the area. The team compared the installed configurations to the approved construction details, supporting fire tests, and applicable license commitments.

The team reviewed installation, repair, and qualification records for a sample of penetration seals to ensure the fill material possessed an appropriate fire rating and that the installation met the engineering design. The team also reviewed similar records for the rated fire wraps to ensure the material possessed an appropriate fire rating and that the installation met the engineering design.

b. Findings

No findings were identified.

.03 Active Fire Protection

a. Inspection Scope

The team reviewed the design, maintenance, testing, and operation of the fire detection and suppression systems in the selected fire areas. The team verified the automatic detection systems and the manual and automatic suppression systems were installed, tested, and maintained in accordance with the National Fire Protection Association code of record or approved deviations, and that each suppression system was appropriate for the hazards in the selected fire areas.

The team performed a walkdown of accessible portions of the detection and suppression systems in the selected fire areas. The team also performed a walkdown of major

system support equipment in other areas (e.g., fire pumps and Halon supply systems) to assess the material condition of these systems and components.

The team reviewed the electric and diesel fire pumps' flow and pressure tests to verify that the pumps met their design requirements. The team also reviewed the halon suppression functional tests to verify that the system capability met the design requirements.

The team assessed the fire brigade capabilities by reviewing training, qualification, and drill critique records. The team also reviewed pre-fire plans and smoke removal plans for the selected fire areas to determine if appropriate information was provided to fire brigade members and plant operators to identify safe shutdown equipment and instrumentation, and to facilitate suppression of a fire that could impact post-fire safe shutdown capability. In addition, the team inspected fire brigade equipment to determine operational readiness for firefighting.

The team observed an unannounced fire drill and subsequent drill critique on February 8, 2017, using the guidance contained in Inspection Procedure 71111.05AQ, "Fire Protection Annual/Quarterly," dated September 30, 2010. The team observed fire brigade members fight a simulated fire in the isolation valve cubicle, located outside the radiological controlled area. The team verified that the licensee identified problems, openly discussed them in a self-critical manner at the drill debrief, and identified appropriate corrective actions. Specific attributes evaluated were: (1) proper wearing of turnout gear and self-contained breathing apparatus; (2) proper use and layout of fire hoses; (3) employment of appropriate firefighting techniques; (4) sufficient firefighting equipment was brought to the scene; (5) effectiveness of fire brigade leader communications, command, and control; (6) search for victims and propagation of the fire into other areas; (7) smoke removal operations; (8) utilization of pre-planned strategies; (9) adherence to the pre-planned drill scenario; and (10) drill objectives.

b. Findings

No findings were identified.

.04 Protection from Damage from Fire Suppression Activities

a. Inspection Scope

The team performed plant walkdowns and document reviews to verify that redundant trains of systems required for hot shutdown, which are located in the same fire area, would not be subject to damage from fire suppression activities or from the rupture or inadvertent operation of fire suppression systems. Specifically, the team verified:

- A fire in one of the selected fire areas would not directly through production of smoke, heat, or hot gases cause activation of suppression systems that could potentially damage all redundant safe shutdown trains.
- A fire in one of the selected fire areas or the inadvertent actuation or rupture of a fire suppression system would not directly cause damage to all redundant trains (e.g., sprinkler-caused flooding of other than the locally affected train).

- Adequate drainage was provided in areas protected by water suppression systems.

b. Findings

No findings were identified.

.05 Alternative Shutdown Capability

a. Inspection Scope

Review of Methodology

The team reviewed the safe shutdown analysis, operating procedures, piping and instrumentation drawings, electrical drawings, the Updated Final Safety Analysis Report, and other supporting documents to verify that hot and cold shutdown could be achieved and maintained from outside the control room for fires that require evacuation of the control room, with or without offsite power available.

The team conducted plant walkdowns to verify that the plant configuration was consistent with the description contained in the safe shutdown and fire hazards analyses. The team focused on ensuring the adequacy of systems selected for reactivity control, reactor coolant makeup, reactor decay heat removal, process monitoring instrumentation, and support systems functions.

The team also verified that the systems and components credited for shutdown would remain free from fire damage. Finally, the team verified that the transfer of control from the control room to the alternative shutdown location would not be affected by fire-induced circuit faults (e.g., by the provision of separate fuses and power supplies for alternative shutdown control circuits).

Review of Operational Implementation

The team verified that licensed and non-licensed operators received training on alternative shutdown procedures. The team also verified that sufficient personnel to perform an alternative shutdown were trained and available onsite at all times, exclusive of those assigned as fire brigade members.

The team performed a timed walkdown of the alternative shutdown procedure for Unit 2 with licensed and non-licensed operators to determine the adequacy of the procedure. The team verified that the operators could reasonably be expected to perform specific actions within the time required to maintain plant parameters within specified limits. Time critical actions that were verified included restoring electrical power, establishing control at the remote shutdown and local shutdown panels, establishing reactor coolant makeup, and establishing decay heat removal.

The team also reviewed the periodic testing of the alternative shutdown transfer capability and instrumentation and control functions to verify that the tests were adequate to demonstrate the functionality of the alternative shutdown capability.



b. Findings

No findings were identified.

.06 Circuit Analysis

a. Inspection Scope

The team reviewed the post-fire safe shutdown analysis to verify that the licensee identified the circuits that may impact the ability to achieve and maintain safe shutdown. The team verified, on a sample basis, that the licensee properly identified the cables for equipment required to achieve and maintain hot shutdown conditions in the event of a fire in the selected fire areas. The team verified that these cables were either adequately protected from the potentially adverse effects of fire damage or were analyzed to show that fire induced circuit faults (e.g., hot shorts, open circuits, and shorts to ground) would not prevent safe shutdown.

The team's evaluation focused on the cables of selected components from the emergency diesel generator, component cooling water, auxiliary feedwater, high head safety injection, low head safety injection, pressurizer power operated relief valves (PORV's), PORV block valves, alternative shutdown control room isolation and transfer switches, and chemical volume and control system. For the sample of components selected, the team reviewed electrical elementary and block diagrams, and identified power, control, and instrument cables necessary to support their operation. In addition, the team reviewed cable routing information to verify that fire protection features were in place as needed to satisfy the separation requirements specified in the fire protection license basis. Specific components reviewed by the team are listed in the attachment.

b. Findings

No findings were identified.

.07 Communications

a. Inspection Scope

The team inspected the contents of designated emergency storage lockers and reviewed the alternative shutdown procedure to verify that portable radio communications and fixed emergency communications systems were available, operable, and adequate for the performance of designated activities. The team verified the capability of the communication systems to support the operators in the conduct and coordination of their required actions. The team also verified that the design and location of communications equipment such as repeaters and transmitters would not cause a loss of communications during a fire. The team discussed system design, testing, and maintenance with the system engineer.

b. Findings

No findings were identified.

.08 Emergency Lighting

a. Inspection Scope

The team reviewed the portion of the emergency lighting system required for alternative shutdown to verify that it was adequate to support the performance of manual actions required to achieve and maintain hot shutdown conditions, and to illuminate access and egress routes to the areas where manual actions would be required. The team evaluated the locations and positioning of the emergency lights during a walkdown of the alternative shutdown procedure.

The team verified that the licensee installed emergency lights with an 8-hour capacity, maintained the emergency light batteries in accordance with manufacturer recommendations, and tested and performed maintenance in accordance with plant procedures and industry practices.

b. Findings

Introduction. The team identified a Green non-cited violation of License Condition 2.E for the failure to provide 8-hour emergency lighting in all areas where operators perform manual actions required during an alternative shutdown.

Description. During a walkdown of the alternative shutdown procedure, the team identified four areas where the 8-hour emergency lighting was not sufficient for operators to perform manual actions required during an alternative shutdown. The four areas, manual actions, and associated procedure sections are provided in the table below.

<b>Area</b>	<b>Manual Action (Procedure Step)</b>
Electrical Auxiliary Building Penetration Space (train A)	De-energize valve 2-CC-MOV-0339 (Addendum 20)
Electrical Auxiliary Building Penetration Space (train B)	De-energize valve 2-CC-MOV-0356 (Addendum 21)
Essential Cooling Water Intake Structure (train B)	De-energize dampers HZ-FV-9895/9895A (Addendum 5, Step 2.0)
Essential Cooling Water Intake Structure (train C)	De-energize dampers HZ-FV-9896/9896A (Addendum 5, Step 2.0)

In response to the team's request, the licensee conducted a blackout test to evaluate the adequacy of the 8-hour emergency lighting in the essential cooling water intake structure (train B). This blackout test confirmed the team's determination that the 8-hour emergency lighting in the room was not sufficient for operators to de-energize dampers HZ-FV-9895/9895A.

As a compensatory measure, the licensee added flashlights to the procedure box in the Essential Cooling Water Intake Structure. The team noted that operators were also required to carry a flashlight while on shift.

Analysis. The failure to provide 8-hour emergency lighting in all areas where operators perform manual actions required during an alternative shutdown was a performance deficiency. The performance deficiency was more than minor because it was associated with the protection against external events (fire) attribute of the Mitigating Systems Cornerstone and it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to provide 8-hour emergency lighting could adversely affect the ability of operators to perform the manual actions required for an alternative shutdown.

The team determined this finding affected the Mitigating Systems Cornerstone. The team evaluated this finding using Inspection Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," dated September 20, 2013, because it affected the ability to reach and maintain safe shutdown conditions in case of a fire. The team assigned the finding to the post-fire safe shutdown category since it impacted the remote shutdown and control room abandonment element. Using Inspection Manual Chapter 0609, Appendix F, Attachment 2, "Degradation Rating Guidance Specific to Various Fire Protection Program Elements," dated February 28, 2005, the team assigned the finding a low degradation rating since the ability to reach and maintain safe shutdown conditions in the event of a control room fire would be minimally impacted by the failure to provide 8-hour emergency lighting in the four areas. Specifically, the team determined that operators were required to carry flashlights while on shift and these flashlights would be sufficient for operators to perform the required manual actions. Because this finding had a low degradation rating, it screened as having very low safety significance (Green) in Task 1.3.1.

The finding did not have a cross-cutting aspect since it was not indicative of present performance in that the performance deficiency occurred more than three years ago. Specifically, the team determined that the performance deficiency existed since original construction.

Enforcement. License Condition 2.E states, in part, that the licensee shall implement and maintain in effect all provisions of the approved fire protection program as described in the Updated Final Safety Analysis Report through Amendment Number 55 for Unit 1, the Updated Final Safety Analysis Report through Amendment Number 62 for Unit 2, and the Fire Hazards Analysis Report through Amendment Number 23. Section 4.1 of the Fire Hazards Analysis Report contains a comparison of the licensee's fire protection program to the requirements in 10 CFR Part 50, Appendix R. The Fire Hazards Analysis Report states that "fixed self-contained emergency lighting, consisting of sealed-beam units with individual 8-hour minimum battery supply, will be provided in areas needed for operation of hot standby/hot shutdown equipment, and in access and egress routes thereto."

Contrary to the above, prior to February 9, 2017, the licensee failed to implement and maintain in effect all provisions of the approved fire protection program. Specifically, the licensee failed to provide 8-hour emergency lighting in all areas needed for operation of hot standby/hot shutdown equipment.

The licensee entered this issue into their corrective action program as Condition Report CR 17-1741. In addition to ensuring operators carried flashlights while on shift, the licensee also implemented a compensatory measure of adding flashlights to the procedure box in the essential cooling water intake Structure. Because this violation was of very low safety significance and has been entered into the corrective action program, this violation is being treated as a non-cited violation, consistent with Section 2.3.2.a of the NRC Enforcement Policy: NCV 05000498/2017007-01; 05000499/2017007-01, "Failure to Provide 8-hour Emergency Lighting for All Alternative Shutdown Manual Actions."

.09 Cold Shutdown Repairs

a. Inspection Scope

South Texas Project Electric Generating Station has three trains of redundant equipment in each unit and, therefore, does not credit any cold shutdown repairs.

b. Findings

No findings were identified.

.10 Compensatory Measures

a. Inspection Scope

The team verified that compensatory measures were implemented for out-of-service, degraded, or inoperable fire protection and post-fire safe shutdown equipment, systems, or features (e.g., detection and suppression systems and equipment; passive fire barriers; or pumps, valves, or electrical devices providing safe shutdown functions). The team also verified that the short-term compensatory measures compensated for the degraded function or feature until appropriate corrective action could be taken, and that the licensee was effective in returning the equipment to service in a reasonable period of time.

The team reviewed operator manual actions credited for achieving hot shutdown for fires that do not require an alternative shutdown. The team verified that operators could reasonably be expected to perform the actions within the applicable shutdown time requirements. The team reviewed these operator manual actions using the guidance contained in NUREG-1852, "Demonstrating the Feasibility and Reliability of Operator Manual Actions in Response to Fire," dated October 2007.

For the train of systems necessary to achieve and maintain hot shutdown conditions, the team verified that the licensee treated these manual actions as compensatory measures while appropriate corrective actions are implemented or while preparations are made by the licensee to submit exemptions or deviations. For components important to safe shutdown that could adversely affect the safe shutdown capability, the team verified that operators could reasonably be expected to perform the actions within the applicable shutdown time requirements.

b. Findings

No findings were identified.

.11 Review and Documentation of Fire Protection Program Changes

a. Inspection Scope

The team reviewed changes made to the approved fire protection program since September 25, 2014. The team verified that the changes did not constitute an adverse effect on the ability to safely shutdown.

b. Findings

No findings were identified.

.12 Control of Transient Combustibles and Ignition Sources

a. Inspection Scope

The team reviewed the licensee's approved fire protection program, implementing procedures, and programs for the control of ignition sources and transient combustibles. The team assessed the licensee's effectiveness in preventing fires and in controlling combustible loading within limits established in the fire hazards analysis. The team performed plant walkdowns to independently verify that transient combustibles and ignition sources were being properly controlled in accordance with the administrative controls.

b. Findings

No findings were identified.

.13 Alternative Mitigation Strategy Inspection Activities

a. Inspection Scope

The team reviewed the licensee's implementation of guidance and strategies intended to maintain or restore core, containment, and spent fuel pool cooling capabilities under the circumstances associated with the potential loss of large areas of the plant due to explosions or fire as required by 10 CFR 50.54(hh)(2).

The team verified that the licensee implemented and maintained adequate procedures, maintained and tested equipment necessary to properly implement the strategies, and ensured station personnel were knowledgeable and capable of implementing the procedures. The team performed a visual inspection of portable equipment used to implement the strategy to ensure the availability and material readiness of the equipment, including the adequacy of portable pump trailer hitch attachments, and verify the availability of on-site vehicles capable of towing the portable pump. The team assessed the off-site ability to obtain fuel for the portable pump and foam used for firefighting efforts. The strategy and procedure selected for this inspection sample included:

- Procedure 0POP10-FP-0001, "Alternate Fire Protection System Operation," Revision 4

One mitigating strategy sample was completed.

b. Findings

No findings were identified.

**4. OTHER ACTIVITIES [OA]**

**4OA2 Problem Identification and Resolution (71152)**

Corrective Actions for Fire Protection Deficiencies

a. Inspection Scope

The team selected a sample of condition reports associated with the licensee's fire protection program to verify that the licensee had an appropriate threshold for identifying deficiencies. The team reviewed the corrective actions proposed and implemented to verify that they were effective in correcting identified deficiencies. The team evaluated the quality of recent engineering evaluations through a review of condition reports, calculations, and other documents during the inspection.

b. Findings

No findings were identified.

**4OA6 Meetings, Including Exit**

Exit Meeting Summary

On February 9, 2017, the team presented the inspection results to Mr. G. Powell, Executive Vice President and Chief Nuclear Officer, and other members of the licensee staff. The licensee acknowledged the findings presented.

The team verified that no proprietary information was retained by the team members or documented in this report.

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### **Licensee Personnel**

J. Alston, Systems Engineering Department Supervisor  
M. Berg, Manager, Design Engineering  
J. Berrio, Manager, Operations-Production Support and Programs  
A. Capristo, Chief Administrative Officer  
F. Cox, Design Engineering Department Safe Shutdown  
G. Ferrigno, Radiation Protection GS  
K. Frazier, Systems Engineering Department, Elect/IMS Section Supervisor  
C. Gann, Manager, Employee Concerns Program  
C. Georgeson, Supervisor, Design Engineering  
D. Gore, Supervisor, Reactor Analysis  
D. Hubenak, Radiation Protection GS  
D. Janak, Performance Improvement Coordinator  
D. Jenkins, Operations Support-Procedures  
W. Jordan, Plant Operator  
R. Kersey, Supervisor, Design  
D. Koehl, President and Chief Executive Officer  
R. Krupa, Senior Staff Specialist, Quality  
R. Lacey, Design Engineering Department Electrical  
B. Lane, Manager, Operations Division – Integrated Work Mgmt. & Outage  
G. Lamberth, Operations Support-Procedures  
H. Leon, Design Engineering Department, Electrical Engineer  
J. Lovejoy, Manager Assistant, Maintenance  
N. Mayer, Manager, Major Projects  
M. Murray, Manager, Regulatory Affairs/Licensing  
C. Pence, Manager, Chemistry  
B. Powell, Staff Operations Specialist  
G. Powell, Executive Vice President and Chief Nuclear Officer  
D. Rohan, Operations Support-Procedures  
R. Scarborough, Manager NOS  
M. Schaefer, Plant General Manager  
G. Schinzel, Supervising Engineer  
C. Stinson, Manager, Maintenance & Technology Training  
R. Stastny, Manager, Maintenance  
D. Wiegand, Fire Protection Engineering  
D. Whiddon, Supervisor, Quality  
R. Gonzales, Engineer Staff

#### **NRC Personnel**

F. Sanchez, Senior Resident Inspector  
N. Hernandez, Resident Inspector

### **LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED**

None

## LIST OF DOCUMENTS REVIEWED

### Cable Routing Data Components

A2AF01C1WB	A2RC13C1LAA	B2CV31C2WA	B2SP17CDSA
A2AF01C1WC	A2RC13C1LB	B2CV31C2WC	B2SP17CHSB
A2AF01C1WD	A2RC13C1LC	B2CVAEC1LA	B2SP17CHSE
A2AF01C1WE	A2RC13C1WA	B2MB04C1SK	B2SP17CHSF
A2AF01C1WF	A2RC13C1WB	B2MB04C1SU	C2CV26C1WA
A2AF01C1WG	A2RC13C1WC	B2MB04C1SV	C2CV26C1WB
A2AM14C1SA	A2RC13C1WD	B2MB04C1SW	C2CV26C1WC
A2CV26C1WA	A2RC13C1WE	B2RC05C2WA	C2CV26C1WD
A2CV26C1WB	A2RC13C1WF	B2RC05C2WB	C2CV26C1WE
A2CV26C1WC	A2RCAAC1WA	B2RC05C2WC	C2CV31C1SB
A2CV26C1WD	A2RCABC1LA	B2RC05C2WD	C2CV31C1WA
A2CV26C1WE	A2RCABC1LB	B2RC05C2WE	C2CV31C1WC
A2CVAAC1GA	A2RCABC1LC	B2RC13C2LB	C2CVACC1GA
A2MB01C1SB	A2SI05C1SA	B2RC13C2LC	C2CVAHC1LA
A2MB01C1SJ	A2SI05CSSB	B2RC13C2LD	C2MB04C1SB
A2MB01C2SN	A2SI06C1SA	B2RC13C2LE	C2MB04C1SL
A2MB04C1SB	A2SI06C1SB	B2RC13C2WA	C2SP17CFSA
A2MB04C1SS	A2SIAAC1EA	B2RC13C2WB	N2AM11C3SA
A2MB04C1ST	A2SIAAC1EB	B2RC13C2WC	N2IC14C1XD
A2MB04C1SU	A2SP17CHSB	B2RC13C2WD	N2IC14C1XD1
A2RC05C1WA	A2SP17CHSE	B2RC13C2WE	N2IC14C3XD
A2RC05C1WB	A2SP17CHSF	B2RC13C2WF	N2IC14C3XD1
A2RC05C1WC	A2SP22CASG	B2RCACC1WA	
A2RC05C1WD	A2SP22CMSD	B2RCADC1LA	
A2RC05C1WE	A2SP27CASE	B2RCADC1LB	
A2RC13C1LA	B2CV31C2SB	B2RCADC1LC	

### Calculations

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
EC6053 Sheet 187	4.16 kV Switchgear Transfer Switch Schemes Figure 8.5 Fuse Curves for 15 Amp Type A4J15 fuse, KWN15A fuse, and ITE Class J 30 Amp A4J30 fuse	December 24, 1987



Calculations

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
MC06023	Appendix R Evaluation	13
MC-5557	IVC Flooding Analysis	9
NC-0709	Fire Hazards Analysis	6
NC-9703	Flooding Analysis: MAB	2

Condition Reports

11-10905	15-864	17-1020*
13-11633	16-1036-1	17-1022*
14-10845	16-12666	17-1026
14-16243	16-13030	17-1029*
14-17206	16-13587	17-1042*
14-17681	16-13588	17-1102*
14-17098	16-13821	17-1110*
14-4215-4	16-13941	17-1113*
15-10544	16-13993	17-1141*
15-10698	16-14060	17-1473*
15-16087	16-14207	17-1661*
15-17634	16-14210	17-1677*
15-18016	16-14274	17-1741*
15-20739	16-1488	17-1776*
15-22156	16-15937	17-1777*
15-22736-2	16-15951	17-1790*
15-23704	16-16045	
15-23705	16-1832	
15-23793	16-3841	
15-23796	16-4633	
15-23859	16-4905	
15-24143	16-6501	
15-24188	16-8427	
15-24734	16-903	
15-25399	17-1016*	
15-26129	17-1019	

\*Issued as a result of inspection activities.

Design Change Notices

0601177                      0601176                      0701838

Drawings

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5S139F00063#2	Piping & Instrumentation Diagram Feedwater	36
5S109F00016#2	Piping & Instrumentation Diagram Main Steam	34
5S142F00024	Piping & Instrumentation Diagram Auxiliary Feedwater	12
5R209F05017#2	Piping and Instrumentation Diagram Component Cooling Water System	20
E0AAAA Sht. 1	Single line Diagram Main one Line Diagram Unit Number 1 and 2	28
9E0AAAB#1 Sht. 1	Single Line Diagram Class 1E 125V DC and 120V Vital AC Non-Class 1E 48V, 125V, 250V, DC and 120V Vital AC Non-Class 1E Inverter power for Computer 208V/120V AC Regulated Power	27
C012-000937F	Detail "M-1A" Silicone Elastomer Typical Mechanical Penetration Seals (walls and Floors)	November 9, 1999
9E0DG04#2 Sht. 1	Elementary diagram Standby Diesel Generator Number 21 Emergency Control and Instrumentation	20
9E0DG04#2 Sht. 2	Elementary diagram Standby Diesel Generator Number 21, 22, and 23 Emergency Control and Instrumentation	16
5Z109Z42117#2	Instrumentation ESF Load Sequencer Actuation Train A Logic Diagram System SP	12
8041—01197CE	STP Log Number Cooper Bessemer G5-553-137 Control Schematic (Starting Sequence Control)	0
9-E-MB03-01#2	Elementary Diagram Master Block Diagram ESF Main Control Board ZCP003	6
9E0PK03#2	Elementary Diagram ESF Transformer and 4.16kV Bus E1A, E1B, and E1C Protection and Metering Circuit	9
9E0PK04#2 Sht. 1	Elementary Diagram ESF Transformer and 4.16kV Bus E2A, E2B, and E2C Protection and Metering Circuit	14

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9E0DG01#2 Sht. 1	Elementary Diagram Standby Diesel Generator DG21 4.16kV Feeder Breaker	16
9E0PK01#2 Sht. 1	Elementary Diagram 4.16kV ESF Bus E1A, E1B, and E1C Supply Breaker Control	10
9E0PK01#2	Elementary Diagram 4.16kV ESF Bus E1A, E1B, and E1C Supply Breaker Control	7
9-E-RC1 3-01	Elementary Diagram Reactor Coolant Pressurizer Power Relief Valves PCV-655A and PCV-656A	9
9E0SI05#2 Sht. 1	Elementary Diagram High Head Safety Injection Pumps PA201A, PA201B, and PA201C	8
9E0SI06#2 Sht. 1	Elementary Diagram Low Head Safety Injection Pumps PA202A, PA202B, and PA202C	9
9E0CH11#2 Sht. 1	Elementary Diagram E.A.B. HVAC Essential Chilled Water Chiller Units CH004, CH005, and CH006	10
9-E-CH11-03#2	Elementary Diagram E.A.B. HVAC Essential Chilled Water Chiller Units CH004, CH005, and CH006	5
9-E-PKAA-01 #2	Single Line Diagram 4.16kV Class 1E Switchgear E2A	10
9E0PKAB#2 Sht. 1	Single Line Diagram 4.16kV Class 1E Switchgear E2B	10
9E0PKAC-01#2	Single Line Diagram 4.16kV Class 1E Switchgear E2C	9
9E0EW01#2 Sht. 1	Elementary Diagram Essential Cooling Water Pumps Number 2A, 2B, and 2C	20
9E0AF01#2 Sht. 1	Elementary Diagram Auxiliary Feedwater Pumps Number 21, 21, and 23	10
9E-AF01-02 #2	Elementary Diagram Auxiliary Feedwater Pumps Number 11, 12, and 13	3
9E0CV26#2 Sht. 1	Elementary Diagram Centrifugal Charging Pumps Number 2A and 2B (PA201A and PA201B)	12
9E0CV26#2 Sht. 2	Elementary Diagram Centrifugal Charging Pumps Number 2A and 2B (PA201A and PA201B)	12

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9E0CC01#2 Sht. 1	Elementary Diagram Component Cooling Water PA201A, PA201B, and PA201C	16
9E0CC01#2 Sht. 2	Elementary Diagram Component Cooling Water PA201A, PA201B and PA201C	20
9-E-CC10-01 #2	Elementary Diagram Master Cable Block Diagram Component Cooling Water System	13
9E0CV05#2 Sht. 1	Elementary Diagram CVCS VCT Outlet Isolation MOV-0112B and MOV-0113A	12
9E0CV31#1 Sht. 1	Elementary Diagram CVCS RWST to Charging Pump MOV-0112C AND MOV-0113B	14
9E0SI12#2 Sht. 1	Elementary Diagram SI RWST Outlet MPV's 0001A, 0001B, and 0001C	11
9E0RC05#1 Sht. 1	Elementary Diagram Reactor Coolant Pressurizer Relief Block Valve MOV0001A and MOV0001B	17
9E0RC05#2 Sht. 1	Elementary Diagram Reactor Coolant Pressurizer Relief Block Valve MOV0001A and MOV0001B	15
5-R-14-9-Z-42155#1	Reactor Coolant Pressurizer Relief Block Valves logic Diagram System	11
9E0AF13#2 Sht. 1	Elementary Diagram AFW to Steam Generator 2D Regulating Valve FV-7526	16
9E0CV09#2 Sht. 1	Elementary Diagram CVCS Excess Letdown Line Isolation MOV-0083 and MOV-0082	11
9E0RH05#2 Sht. 1	Elementary Diagram Residual Heat Removal Pumps 2A, 2B, and 2C (PA201A, PA201B, and PA201C)	12
9E0RH05#2 Sht. 2	Elementary Diagram Residual Heat Removal Pumps 2A, 2B, and 2C	1
9E0PLAA#2 Sht. 1	Single Line Diagram 480V Class-1E Center E2A	19
9E0PLAB#2 Sht. 1	Single Line Diagram 480V Class-1E Center E2B	16
9E0PLAC#2 Sht. 1	Single Line Diagram 480V Class-1E Center E2C	17
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9E0PMAB#2 Sht. 1	Single Line Diagram 480V Class-1E Motor Control Center E2A2	27
9E0PMAC#2 Sht. 1	Single Line Diagram 480V Class-1E Motor Control Center E2A3 ECW Building	14
9E0PMAD#2 Sht. 1	Single Line Diagram 480V Class-1E Motor Control Center E2B1	25
9E0PMAD#2 Sht. 2	Single Line Diagram 480V Class-1E Motor Control Center E2B1	22
9E0PMAE#2 Sht. 1	Single Line Diagram 480V Class-1E Motor Control Center E2B2	17
9E0PMAF#2 Sht. 1	Single Line Diagram 480V Class-1E Motor Control Center E2B3 ECW Building	15
9E0PMAG#2 Sht. 1	Single Line Diagram 480V Class-1E Motor Control Center E2C1	21
9E0PMAG#2 Sht. 2	Single Line Diagram 480V Class-1E Motor Control Center E2C1	17
9E0PMAH#2 Sht. 1	Single Line Diagram 480V Class-1E Motor Control Center E2C2	21
9E0PMAJ#2 Sht. 1	Single Line Diagram 480V Class-1E Motor Control Center E2C3 ECW Building	14
9E0PMAK#2 Sht. 1	Single Line Diagram 480V Class-1E Motor Control Center E2A4	22
9E0PMAL#2 Sht. 1	Single Line Diagram 480V Class-1E Motor Control Center E2B4	22
9E0PMAM#2 Sht. 1	Single Line Diagram 480V Class-1E Motor Control Center E2C4 Center	20
9E0PCAA#2 Sht. 1	Single Line Diagram 13.8 kV Switchgear 2F	17
9E0PCAB#2 Sht. 1	Single Line Diagram 13.8 kV Switchgear 2G	17
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9E0VAAA#2 Sht. 1	Single Line Diagram Vital 120V AC Distribution Panels DP001, DP1201 Channel I	27
5R209F05017	Piping and Instrumentation Component Cooling Water System	20
86-534801 Sht. 1	Liquid Level Controller FR72LL – Remote Electronics	A
86-534801 Sht. 2	Liquid Level Controller FR72LL – Remote Electronics	A
9-W-01-9-E-50102	Electrical-Communications Maintenance Jack Station One Line Diagram	5
9E569E03765	Electrical – Electrical Auxiliary Bldg. Lighting & Communications Plan Elevation 35'-0"	11
9E569E03751	Electrical – Electrical Auxiliary Bldg. Lighting & Communications Plan Elevation 10'-0"	15
9E569E03753	Electrical – Electrical Auxiliary Bldg. Lighting & Communications Plan Elevation 10'-0"	20
9E569E03767#2	Electrical – Electrical Auxiliary Bldg. Lighting Plan Elevation 35'-0"	21
9E560E03001	Electrical Elementary Diagram – Lighting Fixture Schedule Units 1 & 2	30
0-E-0102 SH. 5	Electrical Lighting Notes & Details Lighting Symbols	9
7E569E03046	Appendix R Light Locations	3
9E560E0102 SH. 23	Electrical Lighting Notes And Details Wall Mount Emergency LTGS.	9
9W019E00466 #2	Mech. And Elect. Aux. Bldg. Fire Detection Plan El. 21'-0" & 29'-0"	7
9W019E00467 #2	Mech. And Elect. Aux. Bldg. Fire Detection Plan El. 35'-0" & 41'-0"	9
9W019E00468 #2	Mechanical and Electrical Aux. Bldg. Fire Detection Plan El. 60'-0"	7
9-W-01-9-E-50471 #2	Mechanical & Electrical Auxiliary Building Fire Detection Partial Plans for Miscellaneous Areas	4

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9-W-01-9-E-50474 #2	Isolation Valves Cubicle Fire Detection Plan El. 10'-0" & 21'-2"	4
9-W-01-9-E-50475 #2	Isolation Valves Cubicle Fire Detection Plan El. 58'-6"	3
7M149M24514 #2	Fire Areas Mechanical & Electrical Building Plan at El. 21'-0", 23'-0", 29'-0", & 32'-0"	10
7M149M24515 #2	Fire Areas Mechanical & Electrical Auxiliary Building Plan at El. 35'-0", 41'-0" & 51'-0"	14
7M149M24516 #2	Fire Areas Mechanical & Electrical Auxiliary Building Plan at El. 60'-0"	11
7M-14-9M-24534 #2	Fire Areas Isolation Valves Cubicle Plan at El. 10'-0" & 21'-2"	4
7M-14-9M-24535 #2	Fire Areas Isolation Valves Cubicle Plan at El. 34'-0" & 44'-0"	4
7M-14-9M-24536 #2	Fire Areas Isolation Valves Cubicle Plan El. 51'-6"	4
7M-14-9M-24537 #2	Fire Areas Isolation Valves Cubicle Plan at El. 59'-6"	4
7M-14-9M-24538 #2	Fire Areas Isolation Valves Cubicle Sections "A-A" & "B-B"	4
7M149M24513 #1	Fire Areas Mechanical & Electrical Auxiliary Building Plan at El, 10'-0"	10
7M149M24515 #1	Fire Areas Mechanical & Electrical Auxiliary Building Plan at EL. 35'-0", 41'-0" & 51'-6"	19
7M149M24514 #1	Fire Areas Mechanical & Electrical Building Plan at EL. 21'-0", 23'-0" & 330'-0"	10
7M149M24516 #1	Fire Areas Mechanical & Electrical Building Plan at EL. 60'-0"	11
7M-14-9M-24534 #1	Fire Areas Mechanical & Electrical Building Plan at EL. 10'-0" & 21'-2'	4
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00009E0AAAB #1	Single Line Diagram Class 1E 125V DC & 120V Vital AC Non-Class 1E 48V, 125V, 250, DC, & 120V Vital AC Non-Class 1E Inverter Power for Computer	27

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7M149M24513, Sheet 1	Mechanical & Electrical Auxiliary Building, Plan at El. 10'-0"	10
7M149M24514, Sheet 1	Mechanical & Electrical Auxiliary Building, Plan at El. 21'-0", 23'-0", 29'-0", and 30'-0"	10
7M149M24515, Sheet 1	Mechanical & Electrical Auxiliary Building, Plan at El. 35'-0", 41'-0", and 51'-6"	19
7M149M24516, Sheet 1	Mechanical & Electrical Auxiliary Building, Plan at El. 60'-0"	11
7M149M24534, Sheet 1	Isolation Valves Cubicle, Plan at El. 10'-0" and 21'-2"	4
9-E-56-9-E-3608, Sheet 2	Electrical – Mechanical Auxiliary Building, Lighting and Communications Plan, Elevation 29'-0"	13
9-E-NI02-091, Sheet 2	Elementary Diagram, Master Block Diagram, Neutron Flux Monitoring System, QDPS Interface	4

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
	Westinghouse Type EB, EHB, MARK 75 Type HFBFuse Curves for 15 Amp circuit breaker	December 11, 1985
	Littelfuse Incorporated Time-Current Characteristics 334 and 336 Series Indicating Fuses Fuse Curves	September 25, 1986
	STP User's Guide for Maintenance Jack and Fueling/Refueling Jack Systems	September 1987
07-457-70	Evaluation for Adding 500 GPM of Demineralized Water to the Spent Fuel Pool Using the Temporary Fire Water Pump Through the Fire Water Header	December 9, 2008
1200006	Design Change Notice	March 7, 2012
1200360	Design Change Notice	March 13, 2012
9703446	Document Change Notice	October 8, 1997



Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
ED-1020	Document Change Notice	January 2, 1991
204608A	PCF Amendment Form	February 14, 1994
204641A	PCF Amendment Form	January 31, 1994
CR 08-14399	STP Multiple Spurious Operation Report	1
	STP MSO Generic List	1
15-06 (FP)	STP Nuclear Operating Company Fire Protection Quality Audit Report	August 31, 2015
16-07 (FP)	STP Nuclear Operating Company Fire Protection Quality Audit Report	August 17, 2016
	Active Fire Protection Impairment Permits	January 26, 2017
	U2 Open Fire Watches	January 26, 2017
17-01-03	Unannounced Fire Drill (OPGP03-ZF-0011, STEGS Fire Brigade, Rev. 16)	February 8, 2017
NCR 89-2-025	Appendix R Emergency DC Lighting, ECWIS Rooms 101, 102, 103	January 26, 1989
5A019MFP001	Post-Fire Operator Actions and Equipment Protection Requirements	16
	Fire Hazards Analysis Report	23

Modifications

<u>Number</u>	<u>Title</u>	<u>Date</u>
1401401	13-11489-1, Revise Drawing as Shown on Page 3	June 16, 2014
1400495	13-11489-1, Change Page 2 of Calculation 0238-0201005SQ	May 19, 2014

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
0PSP03-CV-0011	Chemical and Volume Control System Valve Operability Test (Cold Shutdown)	28
0PSP03-RC-0010	Pressurizer Power Operated Relief Valve Operability Test	13
0PSP03-ZG-0005	Remote Shutdown System Operability Test (Cold Shutdown)	16
1PSP03-ZG-0007A	Train A Remote Shutdown System Operability Test	9
1PSP03-ZG-0007B	Train B Remote Shutdown System Operability Test	9
1PSP03-ZG-0007C	Train C Remote Shutdown System Operability Test	9
2PSP03-ZG-0007A	Train A Remote Shutdown System Operability Test	4
2PSP03-ZG-0007B	Train A Remote Shutdown System Operability Test	5
2PSP03-ZG-0007C	Train A Remote Shutdown System Operability Test	5
1PSP03-ZG-0007C	Train C Remote Shutdown System Operability Test	9
2PSP03-ZG-0007C	Train C Remote Shutdown System Operability Test	5
0PGP03-ZF-0011	STPEGS Fire Brigade	16
0POP10-FP-0001	Alternate Fire Protection System Operation	4
0PRP06-ZR-0013	Respirator Fit Testing	8
0POP01-ZA-0001	Plant Operations Department Administrative Guidelines	49
0PTP03-FP-0106	Fire Protection Water System Functional Test	15
0POP10-FP-0001	Alternate Fire Protection System Operation	4
0POP10-ZO-EDMG	Extensive Damage Mitigation Guideline	5
0PGP03-ZF-0018	Fire Protection System Functionality Requirements	19
0POP04-ZO-0009	Safe Shutdown Fire Response	15

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0PGP05-ZV-0014	Emergency Response Activities	15
PMI-EM-EL-0001	Emergency Light Testing	0
0PGP03-ZF-0001A	Hot Work Program	3
0PGP03-ZF-0019	Control of Transient Fire Loads and Use of Combustible and Flammable Liquids and Gases	15
0PGP03-ZF-0018	Fire Protection System Functionality Requirements	19
0PGP03-ZT-0131	Fire Protection Training and Qualification Program	11
0POP04-ZO-0009	Safe Shutdown Fire Response	14
0POP04-ZO-0008	Fire/Explosion	25
0PGP04-ZA-0002	Condition Report Engineering Evaluation	24
0POP04-ZO-0001	Control Room Evacuation	42
2TOP07-LB-0001	Unit 2 ECWIS Emergency DC Lighting Test	0

Vendor Document

<u>Number</u>	<u>Title</u>	<u>Revision</u>
VTD-M568-0004	Holophane M-19 12 volt DC power pack for automatic emergency lighting – Installation and maintenance instructions	3

Work Orders

553365	476850	509206	469672
498017	476853	509205	439418
516337	525424	503414	455441
482275	525364	497337	489640
499679	486919	479338	525362
507880	470941	476848	484809
502929	96006291		

SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION, UNITS 1 AND 2 –  
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OFFICE	ASRI:EB2	RI:EB2	SRI:EB2	RI:EB1	RI:EB2	C:EB2	C:PBB	C:EB2
NAME	SMakor	SAiferink	JDrake	CStott	JWatkins	GWerner	NTaylor	GWerner
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