UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

September 25, 2013

Mr. Tom E. Tynan
Vice President
Southern Nuclear Operating Company, Inc.
Vogtle Electric Generating Plant
7821 River Road
Waynesboro, GA 30830

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT UNITS 1 AND 2- NRC COMPONENT DESIGN BASES INSPECTION REPORT 05000424/2013007 AND 05000425/2013007

Dear Mr. Tynan:

On August 30, 2013, U. S. Nuclear Regulatory Commission (NRC) completed an inspection at your Vogtle Electric Generating Plant, Units 1 and 2. The enclosed inspection report documents the inspection results which were discussed on August 16, 2013, and August 30, 2013, with Mr. J. Thomas and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The team reviewed selected procedures and records, observed activities, and interviewed personnel.

One NRC identified finding of very low safety significance (Green) was identified during this inspection. The finding did not involve a violation of NRC requirements.

If you disagree with the finding or its associated cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region II; and the NRC Resident Inspector at the Vogtle Electric Generating Plant.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's Agencywide Document Access and Management 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/

Rebecca L. Nease, Chief
Engineering Branch 1
Division of Reactor Safety

Docket Nos.: 05000424, 05000425
License Nos.: NPF-68, NPF-81

Enclosure:
NRC Component Design Bases Inspection
Report 05000424/2013007and 05000425/2013007
w/Attachment: Supplementary Information

cc: Distribution via Listserv

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Letter to Tom E. Tynan from Rebecca L. Nease dated September 25, 2013.

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT UNITS 1 AND 2- NRC COMPONENT DESIGN BASES INSPECTION REPORT 05000424/2013007 AND 05000425/2013007

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U. S. NUCLEAR REGULATORY COMMISSION
REGION II

Docket Nos.:	05000424 and 05000425
License Nos.:	NPF-68 and NPF-81
Report Nos.:	05000424/2013007 and 05000425/2013007
Licensee:	Southern Nuclear Operating Company, Inc.
Facility:	Vogtle Electric Generating Plant, Units 1 and 2
Location:	7821 River Road Waynesboro, GA 30830
Dates:	July 15 – August 16, 2013 (onsite inspection) August 19 - 29, 2013 (in office inspection)
Inspectors:	G. Ottenberg, Senior Reactor Inspector (Lead) E. Stamm, Senior Reactor Inspector A. Alen, Reactor Inspector T. Su, Reactor Inspector G. Crespo, Senior Construction Inspector C. Baron, NRC Contractor (Mechanical) (Trainee) S. Gardner, NRC Contractor (Electrical)
Approved by:	Rebecca L. Nease, Chief Engineering Branch 1 Division of Reactor Safety

Enclosure

SUMMARY

IR 05000424/2013007, 05000425/2013007; 7/15/2013 – 8/16/2013; Vogtle Electric Generating Plant, Units 1 and 2; Component Design Bases Inspection.

This inspection was conducted by a team of five Nuclear Regulatory Commission (NRC) inspectors from Region II, and two NRC contract personnel. One Green finding was identified. The significance of inspection findings is indicated by their color (Green, White, Yellow, Red) and determined using the NRC Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," dated June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Components Within the Cross-cutting Areas," dated October 28, 2011. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated January 28, 2013, revised July 9, 2013. 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.

A. NRC identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

Green. The team identified a Green finding for the licensee's failure to follow guidance in nuclear management procedure NMP-GM-002-001, "Corrective Action Program Instructions," Version 30.1, which resulted in their failure to correct a condition that adversely affected the implementation of the station's mitigating strategies for a station blackout (SBO). This was a performance deficiency. The licensee entered the issue into their corrective action program as Condition Report 673722, and performed an evaluation that determined the 'as-found' condition would not prevent successful implementation of their SBO mitigating strategies.

The performance deficiency was more than minor because it affected the Mitigating Systems cornerstone attribute of Design Control and 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 capability of the emergency diesel generator air start system following the SBO coping duration was not ensured since the licensee did not adequately evaluate and address the test acceptance criteria for the air start check valves, as captured in Condition Report 599089. The finding was determined to be of very low safety significance (Green) because the finding was a deficiency affecting the design of a mitigating structure, system, or component, confirmed not to have resulted in the loss of functionality. The cause of the finding was indicative of current licensee performance and involved the Corrective Action component of the Problem Identification and Resolution cross-cutting area, because the licensee failed to thoroughly evaluate a problem involving a deficiency in their SBO mitigation strategies such that the resolution addressed the cause of the deficiency. [P.1(c)]. (Section 1R21.2.1)

B. Licensee-Identified Violations

No findings were identified.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R21 Component Design Bases Inspection (71111.21)

.1 Inspection Sample Selection Process

The team selected risk-significant components and related operator actions for review using information contained in the licensee's probabilistic risk assessment. In general, this included components and operator actions that had a risk achievement worth factor greater than 1.3 or Birnbaum value greater than 1 $X10^{-6}$. The sample included 18 components, of which three were associated with containment large early release frequency (LERF), and six operating experience (OE) items.

The team performed a margin assessment and a detailed review of the selected risk-significant components and operator actions to verify that the design bases had been correctly implemented and maintained. Where possible, this margin was determined by the review of the design basis and Updated Final Safety Analysis Report (UFSAR) response times associated with operator actions. This margin assessment also considered original design issues, margin reductions due to modifications, or margin reductions identified as a result of material condition issues. Equipment reliability issues were also considered in the selection of components for a detailed review. These reliability issues included items related to failed performance test results, significant corrective action, repeated maintenance, maintenance rule status, Regulatory Issue Summary 05-020 (formerly Generic Letter 91-18) conditions, NRC resident inspector input regarding problem equipment, system health reports, industry OE, and licensee problem equipment lists. Consideration was also given to the uniqueness and complexity of the design, OE, and the available defense-in-depth margins. An overall summary of the reviews performed and the specific inspection findings identified is included in the following sections of the report.

.2 Component Reviews

.2.1 Emergency Diesel Generator Air Start and Control System

a. Inspection Scope

The inspection team reviewed the plant's Technical Specification (TS), UFSAR, design bases documents (DBDs), and piping and instrumentation drawings (P&ID) to establish an overall understanding of the design bases of the emergency diesel generator (EDG) air start and control system. Design calculations (i.e. minimum system pressure) and site procedures (operating and alarm response procedures) were reviewed to verify that the design bases and design assumptions had been appropriately translated into these documents. Test procedures and recent test results were reviewed against design basis documents to verify that acceptance criteria for tested parameters were supported by calculations or other engineering documents and that individual tests and analyses served to validate component operation under accident conditions. Vendor documentation, system health reports, preventive maintenance scope/schedule, and corrective action program (CAP) documents were reviewed in order to verify that potential degradation was monitored or prevented and that component replacement was consistent with in-service/equipment qualification life. A system walkdown was

conducted to verify that the installed configurations would support its design bases functions under accident conditions and that the system was maintained to be consistent with design assumptions and to visually inspect the observable material condition of the system.

b. Findings

Introduction: The team identified a Green finding for the licensee's failure to follow guidance contained in nuclear management procedure NMP-GM-002-001, "Corrective Action Program Instructions," Version 30.1, which resulted in their failure to correct a condition that adversely affected the implementation of the station's mitigating strategies for a station blackout (SBO).

Description: Title 10 CFR Part 50.63, "Loss of All Alternating Current (ac) Power," requires that each light-water-cooled nuclear power plant be able to withstand and recover from a SBO of a specified duration. An SBO is the complete loss of ac power, from offsite power sources as well as the emergency onsite ac power sources, to the essential and nonessential switchgear buses in a nuclear power plant. Regulatory Guide 1.155, which the licensee was committed to in its UFSAR, required in section 3.2, "Evaluation of Plant Specific Station Blackout Capability," that "each nuclear power plant should be evaluated to determine its capability to withstand and recover from an SBO of the acceptable duration determined for that plant." The licensee was committed to coping with and recovery from an SBO lasting four hours.

Nuclear management procedure NMP-GM-002-001, "Corrective Action Program Instructions," Version 30.1, required conditions that adversely affect the implementation of mitigating strategies for SBO be entered in the CAP via a Condition Report (CR). Additionally, NMP-GM-002-001 required that, CRs (affecting SBO) are assigned a Technical Evaluation (TE) to track the evaluation and resolution of the identified condition. In accordance with NMP-GM-002-001, closure of a TE required the reviewer to ensure that the proposed resolution answers the TE request; and to verify that the documented action(s) taken clearly communicate the TE request was completed.

During the licensee's self-assessment in preparation for the 2013 NRC Component Design Bases Inspection, the licensee generated CR 599089 to evaluate Plant Vogtle's vulnerability to a condition related to the EDG air start system's capability to recover ac power following the SBO coping duration. Specifically, the CR was written to evaluate a finding at another nuclear station which identified that the acceptance criterion for the EDG air start receivers inlet check valves leak rate test did not ensure enough air pressure would be available at the end of the coping duration to start the EDGs.

Upon completion of its review, the licensee determined that this condition was applicable to the station because its equivalent test procedure (14981, "D/G Air Start Receivers Inlet Check Valves Leak Test") could allow leakage past the check valves resulting in inadequate EDG air start pressure following the four hour coping duration. The licensee assigned TE 600438 to evaluate the adequacy of the leak rate test acceptance criterion of the check valves. The licensee's resolution of the TE included a review of the last completed test results for the check valves to determine acceptability of the current leak rates. The records review revealed that the No. 1 receiver for the Unit 1 "A" EDG (two receivers per EDG) had a pressure drop of 10psig/hour. Based on this leak rate and the minimum TS required pressure of 210psig, the licensee incorrectly determined that adequate air start pressure would be available at the end of the coping duration to recover the EDGs. The team noted that the licensee did not appropriately evaluate the air start pressure in the No. 1 air receiver at the end of the coping duration, because they did not

consider automatic and manual start attempts of the EDG, and further closed the TE without corrective actions to revise the leak rate acceptance criteria in the test procedure. The team determined that contrary to procedural requirements in NMP-GM-002-001, the licensee failed to ensure that the resolution and actions prior to closing TE 600438 answered the request. The request of the TE was to evaluate the adequacy of the leak rate test acceptance criterion to ensure that the air start receivers maintained sufficient pressure to start the EDGs at the end of the SBO coping duration. The licensee entered this issue in the CAP as CR 673722, and performed an evaluation of the expected air pressure at the end of the coping duration. The licensee determined that at the current leak rate, for the No.1 air receiver check valve, sufficient pressure would be available to start the EDG and recover from an SBO.

Analysis: The licensee's failure to follow guidance contained in nuclear management procedure NMP-GM-002-001, "Corrective Action Program Instructions," Version 30.1, which resulted in their failure to correct a condition that adversely affected the implementation of the station's mitigating strategies for a SBO was a performance deficiency. The performance deficiency was more than minor because it affected the Mitigating Systems cornerstone attribute of Design Control and 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 capability of the EDG air start system following the SBO coping duration was not ensured since the licensee did not adequately evaluate and address the test acceptance criteria for the air start check valves, as captured in CR 599089. The team used IMC 0609, Att. 4, "Initial Characterization of Findings," issued 6/19/12, for Mitigating Systems, and IMC 0609, App. A, "The Significance Determination Process (SDP) for Findings At-Power," issued 6/19/12, and determined the finding to be of very low safety significance (Green) because the finding was a deficiency affecting the design of a mitigating structure, system, or component, confirmed not to have resulted in the loss of functionality. Since the cause of the finding was indicative of current licensee performance, a cross-cutting aspect of the licensee thoroughly evaluates problems in the corrective action program component in the area of problem identification and resolution was assigned because the licensee failed to thoroughly evaluate a deficiency of their SBO mitigation strategies such that the resolution addressed the cause of the deficiency. [P.1(c)].

Enforcement: This finding does not involve enforcement action because no violation of a regulatory requirement was identified. Because this finding does not involve a violation and is of very low safety significance, it is identified as a FIN [05000424, 425/2013007-01], Failure to Correct a Condition Affecting EDG Recovery Capability Under Station Blackout Conditions.

.2.2 Residual Heat Removal (RHR) Hot Leg Loop Suction Valves [HV8701A/B and HV8702A/B] (LERF)

a. Inspection Scope

The team selected the RHR hot leg loop suction motor operated valves (MOVs) HV8701A/B and HV8702A/B for review due to their contribution to LERF. The team reviewed the plant TS, UFSAR, DBDs, and P&IDs to establish an overall understanding of the design bases of the MOVs, which are the reactor coolant system loop one and four hot leg suction valves to the RHR pumps for shutdown cooling. Design calculations (i.e. differential pressure, required torque/thrust, and actuator capability) were reviewed to verify that the design bases and design assumptions had been appropriately translated into these documents and ensure the valves are capable of performing their functions under the most limiting conditions. Component

modifications were reviewed to verify that the subject modifications did not degrade the system and/or component performance capability and were appropriately incorporated into relevant drawings and procedures. Test procedures and recent test results were reviewed against design bases documents to verify that acceptance criteria for tested parameters were supported by calculations or other engineering documents and to validate component operation under accident conditions. Vendor documentation and CAP documents were reviewed in order to verify that potential degradation was monitored or prevented. Selected site and industry OE (i.e. Vogtle Main Steam Isolation Valve (MSIV) stem/disk failure and Information Notice (IN) 92-60, associated with thermal embrittlement of valve stems; and IN 95-07 for pressure locking and thermal binding of MOVs) items were reviewed, along with associated plant actions, to assess the licensee's evaluation and disposition and to verify that applicable issues had been resolved.

The team reviewed safe shutdown procedures, emergency operating instructions, abnormal operating instructions, and operator training material to verify that low margin time critical operator actions could be accomplished as relied upon in design assumptions. The team interviewed individuals qualified to the task to ensure training was sufficient to accomplish the task. The team also reviewed the past results of exercises to identify any past operator failures or challenges to accomplish this activity.

b. Findings

No findings were identified.

.2.3 Auxiliary Feedwater Stop Check Valves [CV114, CV115]

a. Inspection Scope

The team reviewed the plant TS, UFSAR, DBD, and P&IDs to establish an overall understanding of the design bases of stop check valves CV114 and CV115. These valves are located on the discharge of the auxiliary feedwater pumps and provide system isolation from the steam generators during normal operation. Test procedures and recent test results were reviewed against design bases documents to verify that acceptance criteria for tested parameters were supported by calculations or other engineering documents and to validate component operation under accident conditions. Vendor documentation and CAP documents were reviewed in order to verify that potential degradation was monitored or prevented. Component walkdowns were conducted to verify that the installed configuration supported the valves' design bases functions under accident conditions, visually inspect the observable material condition of the equipment, and to verify the equipment and associated piping was not exposed to any other hazards. Selected industry OE (i.e. IN 84-06, and 85-01, associated with steam binding of AFW pumps due to discharge check valve back-leakage) items were reviewed, along with associated plant actions, to assess the licensee's evaluation and disposition and to verify that applicable issues had been resolved. An interview with the system engineer was conducted to discuss the history of the component operation, maintenance, and corrective actions.

b. Findings

No findings were identified.

.2.4 Main Steam Isolation Valves [1HV3026 and 1HV3016] (LERF)

a. Inspection Scope

The team selected the MSIVs for review due to their contribution to LERF. The team reviewed the plant TS, UFSAR, DBDs, P&IDs, for the MSIVs, which close to isolate the steam generators during a design bases event. Design calculations (i.e. required valve stem thrust, actuator capability) were reviewed to verify that the valves were capable of performing their design bases functions under the worst-case line and differential pressure conditions. Test procedures and recent test results were reviewed against design bases documents to verify that the stroke time acceptance criteria bounded the design bases assumptions. A component walkdown was conducted to verify that the installed configuration would support its design basis function under accident conditions, visually inspect the observable material condition of the equipment, and to verify the equipment and associated piping was not exposed to any other hazards. Vendor documentation, system health reports, preventive maintenance scope/schedule, and relevant CRs were reviewed in order to verify that potential degradation was monitored or prevented and that component replacement was consistent with in-service/equipment qualification life. An interview with the system engineer was conducted to discuss the history of the component operation, maintenance, and corrective actions.

b. Findings

No findings were identified.

.2.5 Auxiliary Component Cooling Water Pumps [1-1217-P4-001, 1-1217-P4-002]

a. Inspection Scope

The team reviewed the plant TS, UFSAR, DBDs, and P&IDs to establish an overall understanding of the design bases of the auxiliary component cooling water (ACCW) pumps. The team reviewed design analyses associated with the ACCW pumps to verify the equipment's capacity to perform its design function under normal and transient conditions. Specifically, the team reviewed the capacity to provide cooling water to the reactor coolant pump thermal barriers and to the normal charging pumps. The team performed walkdowns of the ACCW pumps and associated equipment, conducted interviews with the responsible system engineer, and reviewed a sample of CAP and maintenance documents to verify the material condition of the equipment. The team reviewed the design of the electrical power supply to the ACCW pump motors under loss of offsite power and accident conditions. The team also conducted an interview with the responsible engineer regarding vibration monitoring of the ACCW pumps.

The team reviewed safe shutdown procedures, emergency operating instructions, abnormal operating instructions, and operator training material to verify that low margin time critical operator actions could be accomplished as relied upon in design assumptions. The team observed a simulator scenario of a loss of ACCW with the potential to lead to a reactor coolant pump seal loss of coolant accident (LOCA). The team assessed if the time critical operator actions required to start and align a centrifugal charging pump to provide reactor coolant pump (RCP) seal cooling could be successfully accomplished within the required time restraints. Procedural interactions were reviewed to ensure operators would appropriately enter the correct procedure based on control room indications. The team interviewed individuals qualified to the task to ensure

training was sufficient to accomplish the task.

b. Findings

No findings were identified.

.2.6 RCP Thermal Barrier ACCW Return Trip Valves [HV2041, HV19051, HV19053, HV19055, HV19057] (LERF)

a. Inspection Scope

The team selected the RCP thermal barrier ACCW return trip valves for review due to their contribution to LERF. The team reviewed the plant TS, UFSAR, DBDs, and P&IDs to establish an overall understanding of the design bases of the RCP thermal barrier ACCW return trip valves. The team reviewed the design analyses and testing associated with the MOVs to verify their capability to operate under conditions resulting from the failure of a RCP thermal barrier. The team reviewed the basis of the maximum differential pressures used in the analyses, as well as the minimum voltage assumed to be available to the valves. The team reviewed the control logic associated with automatically closing the valves under conditions of high ACCW system pressure and/or flow. The team also conducted interviews with the responsible system engineer and valve engineer, and reviewed a sample of corrective action and maintenance documents to verify the material condition of the equipment.

b. Findings

No findings were identified.

.2.7 Nuclear Service Cooling Water Cooling Tower Fans [1-1202-W4-001-F01, 1-1202-W4-001-F02, 1-1202-W4-001-F03, 1-1202-W4-001-F04]

a. Inspection Scope

The team reviewed the plant TS, UFSAR, DBDs, and P&IDs to establish an overall understanding of the design bases of the nuclear service cooling water (NSCW) cooling tower fans. The team reviewed the design analyses and testing associated with the motor-operated NSCW fans to verify their capacity to operate under post-accident conditions. The team reviewed the design and testing of the control logic associated with automatically starting and stopping the fans to maintain the required NSCW system temperatures under normal, transient, and accident conditions. The team performed walkdowns of the NSCW cooling towers and associated equipment, including ongoing electrical equipment modifications. The team also conducted interviews with the responsible system engineer, and reviewed a sample of CAP and maintenance documents to verify the material condition of the equipment. Specifically, the team reviewed the material condition of the fan drives.

b. Findings

No findings were identified.

.2.8 NSCW Pump Discharge Valves [HV11600, HV11605, HV11606]

a. Inspection Scope

The team reviewed the plant TS, UFSAR, DBDs, and P&IDs to establish an overall understanding of the design bases of the NSCW pump discharge valves. The team reviewed the design analyses and testing associated with the MOVs to verify their capability to operate under normal, transient, and post-accident conditions. The team reviewed the basis of the maximum differential pressures used in the MOV analyses, as well as the minimum voltage assumed to be available to the valves. The team reviewed the control logic associated with automatically opening and closing the valves in response to operation of the associated NSCW pumps. Specifically, the team reviewed the testing of the control logic and the interlocks between the valves and the associated pumps to verify that all safety functions were fully tested. The team reviewed the design function of these valves in minimizing NSCW system water-hammer events potentially associated with NSCW pump starts, especially pump starts after postulated station blackout events. This review included the basis for the minimum valve stroke times periodically verified by in-service testing. The team also performed walkdowns of the NSCW valves and associated equipment, conducted interviews with the responsible system engineer and valve engineer, and reviewed a sample of CAP and maintenance documents to verify the material condition of the equipment.

b. Findings

No findings were identified.

.2.9 Motor Driven Auxiliary Feedwater Mini-Flow Valve [FV5154]

a. Inspection Scope

The team reviewed the plant TS, UFSAR, DBDs, and P&IDs to establish an overall understanding of the design bases of MOVs 1FV5154 and 2FV5154, “B” motor driven auxiliary feedwater mini-flow valves. Design calculations (i.e., differential pressure, required torque/thrust, and minimum voltage) and site procedures were reviewed to verify that the design bases and design assumptions had been appropriately translated into these documents. A component walkdown was conducted to verify that the installed configuration would support its design basis function under accident conditions and to visually inspect the observable material condition of the equipment. Test procedures and recent test results were reviewed against DBDs to verify that acceptance criteria for tested parameters were supported by calculations or other engineering documents and that individual tests and/or analyses served to validate component operation under accident conditions. Vendor documentation, system health reports, preventive and corrective maintenance history, and CAP documents were reviewed in order to examine the material condition and function of the components and verify that potential degradation was monitored.

b. Findings

No findings were identified.

.2.10 125Volt (V) Direct Current Bus 1BD1

a. Inspection Scope

The team reviewed the plant's TS, UFSAR, DBDs, and relevant electric drawings to establish an overall understanding of the design bases of the 125 V Direct Current Bus 1BD1 and its interfacing systems. The team reviewed system maintenance records of the components, system health reports and relevant one line diagrams to verify that the maintenance activities did not degrade the component's performance and that there were no adverse performance trends. Component walkdowns were conducted to verify that the installed configurations would support their design bases functions under accident/event conditions and to verify the system was maintained consistent with design assumptions. Panel indicators were observed and operating procedures were reviewed to verify that component operation and alignments were consistent with design and licensing basis assumptions. Maintenance procedures and results were reviewed against DBDs to verify that acceptance criteria were supported by calculations or other engineering documents. System documentation, system health reports, preventive and corrective maintenance history, and relevant CAP documents were reviewed in order to verify that potential degradation was monitored or prevented and that component replacement was consistent with inservice/equipment qualification life.

b. Findings

No findings were identified.

.2.11 Inverter 1BD1I12

a. Inspection Scope

The team reviewed the plant's TS, UFSAR, DBDs, and relevant electric drawings to establish an overall understanding of the design bases of the inverter 1BD1I12 and its interfacing systems including alarms and indicators. The team reviewed system maintenance records of the components, system health reports and relevant CAP documents to verify that the maintenance activities did not degrade the component's performance and that there were no adverse performance trends. Component walkdowns were conducted to verify that the installed configurations would support their design bases functions under accident/event conditions consistent with design assumptions. Control panel indicators were observed and alarm response procedures were reviewed to verify that component operation and alignments were consistent with design and licensing basis assumptions. Maintenance procedures and results were reviewed against DBDs to verify that acceptance criteria were supported by calculations or other engineering documents. System documentation, system health reports, preventive and corrective maintenance history, and relevant CAP documents were reviewed in order to verify that potential degradation was monitored or prevented and that component replacement was consistent with inservice/equipment qualification life.

The team reviewed safe shutdown procedures, emergency operating instructions, abnormal operating instructions, and operator training material to verify that low margin time critical operator actions could be accomplished as relied upon in design assumptions. The team conducted a walkdown to assess if the operator actions required to align the 120V alternating current supply to an alternate power supply could be

successfully accomplished. The team interviewed individuals qualified to the task to ensure training was sufficient to accomplish the task. The team also reviewed the past results of exercises to identify any past operator failures or challenges to accomplish this activity.

b. Findings

No findings were identified.

.2.12 Battery Chargers 1BD1CA and 1BD1CB

a. Inspection Scope

The team reviewed the plant's TS, UFSAR, DBDs, and relevant electric drawings to establish an overall understanding of the design bases of the Battery Charger 1BD1CA and 1BD1CB and the associated interfacing systems including alarms and indicators. Component walkdowns were conducted to verify that the installed configurations would support their design bases function under accident/event conditions consistent with design assumptions. Panel indicators were observed and alarm response procedures were reviewed to verify that component operation and alignments were consistent with design and licensing basis assumptions. Maintenance procedures and results were reviewed against DBDs to verify that acceptance criteria were supported by calculations or other engineering documents. System documentation, system health reports, preventive and corrective maintenance history, and relevant CAP documents were reviewed in order to verify that potential degradation was monitored or prevented and that component replacement was consistent with in-service/equipment qualification life.

The team reviewed safe shutdown procedures, emergency operating instructions, abnormal operating instructions, and operator training material to verify that low margin time critical operator actions could be accomplished as relied upon in design assumptions. The team conducted a walkdown to assess if the operator actions required to locally align a centrifugal charging pump following a station blackout could be successfully accomplished. The team interviewed individuals qualified to the task to ensure training was sufficient to accomplish the task. The team also reviewed the past results of exercises to identify any past operator failures or challenges to accomplish this activity.

b. Findings

No findings were identified.

.2.13 4160 Volt Bus 1AA02

a. Inspection Scope

The team reviewed the plant's TS, UFSAR, DBDs, and relevant electric drawings to establish an overall understanding of the design bases of the 1AA02 4160V Bus. The team reviewed the one line diagrams, the short-circuit and load-flow calculations, and the switchgear vendor specifications and drawings to determine maximum load and interrupting duty for design basis conditions. Switchgear and circuit breaker maintenance results were reviewed for indications of adverse conditions. The team reviewed the modification history to verify that modifications did not adversely impact the design bases.

Corrective maintenance and CR history were reviewed to verify that there were no recurring issues affecting reliability. The team conducted a walkdown of the switchgear to verify that the installed configuration would support its design bases functions under accident/event conditions consistent with design assumptions. A walkdown of the circuit breaker maintenance shop was also performed to observe conditions under which overhauls of 1E 4160 V breakers were being performed. Additionally, the warehouse was inspected to determine appropriate receipt and storage of breakers, with an emphasis on tracking 1E and non-1E breakers.

b. Findings

No findings were identified.

.2.14 NSCW Pump Motors

a. Inspection Scope

The team reviewed the plant's TS, UFSAR, DBDs, and relevant drawings to establish an overall understanding of the design bases of the NSCW pump motors. The team reviewed the station long term plan for large motors in general and the NSCW pump motors specifically. The motor preventive maintenance was reviewed to determine the effectiveness of condition monitoring. Maintenance and corrective action history were reviewed to verify that component degradation was being identified and corrected at the appropriate threshold and interval. The team selectively reviewed Unit 2 NSCW Train A Pump motor 3 for recent corrective action history and vendor manual recommendations. The team performed a walkdown of the NSCW system to assess visible material condition. The team observed the implementation of a design modification to address corrosion to the electrical distribution providing power in the NSCW system. The team also reviewed a design change to replace the analog control relays with solid state relays.

b. Findings

No findings were identified.

.2.15 EDG Relaying

a. Inspection Scope

The team reviewed the system description and UFSAR to determine all conditions or functions required of the EDG control system. Elementary control drawings were analyzed for any latent design conflicts in the relay scheme. Maintenance relay procedures and corrective action history of EDG relays were evaluated for frequency and effectiveness of relay testing, calibration and replacement. The team performed a walkdown of the EDG system to assess the visible material condition.

b. Findings

(Opened) Unresolved Item (URI): Failure to Identify and Correct Potential Emergency Diesel Generator 2B Inoperability Following Failed Surveillance Testing

Introduction: An URI was identified regarding the discovery of a condition that could have resulted in an inoperable condition on the 2B EDG due to an intermittently misaligned mechanically operated cell (MOC) switch on the 2B EDG output breaker which provided a permissive signal to the 2B EDG sequencer. The URI was opened pending receipt and NRC review of the licensee's evaluation to determine the effect the misaligned switch had on past operability. The results of the licensee's evaluation will allow for an appropriate characterization of the performance deficiency as minor or greater than minor.

Description: During the inspection, the team reviewed the licensee's evaluations of the 2B EDG failed surveillance tests that were performed on December 13, 2011, documented in CR 383267, and June 25, 2012, documented in CR 474941. During each of the failed surveillances, the EDG experienced unexpected automatic increased electrical loading, requiring the EDG to be secured. Following the event on December 13, 2011, the licensee determined the cause of the event was due to a failed "load sharing module" which provided an input to the EDG governor. The licensee further determined that the condition would not have affected the EDG if it was required to operate in its emergency mode, since the module was only active while the EDG was in test mode. The EDG was retested satisfactorily following replacement of the "load sharing module" and was declared operable. The EDG successfully passed its monthly surveillances between December 2011 and June 2012. Following a second unexpected increased loading event on June 25, 2012, the licensee performed an apparent cause determination and concluded that the cause of the event was due to an intermittently misaligned MOC switch. The MOC switch and its associated contacts change state when the EDG output breaker is closed. One of the contacts on the MOC switch was associated with the "load sharing module" and the licensee determined the misaligned MOC switch was the cause of the increased loading events on December 13, 2011, and June 25, 2012. The licensee incorrectly determined that this condition could not have affected the operability of the EDG nor would it have affected its function if the EDG were to be called upon to operate in its emergency mode. The MOC switch was readjusted following the event on June 25, 2012, and the EDG was retested and declared operable.

Upon review by the team, it was determined that the MOC switch controlled multiple contacts, one of which provides a permissive signal through the MOC switch to the EDG sequencer, which allows safety-related loads to be added to the EDG in a specified order for accident mitigation. Another one of the contacts on the MOC switch was associated with the "load sharing module." The licensee's apparent cause determination did not address how the misaligned MOC switch contacts could have affected the sequencer permissive; therefore EDG operability. It only determined that a misaligned contact associated with the "load sharing module" could have resulted in the unexpected increased loading events the EDG experienced on December 13, 2011, and June 25, 2012. The licensee generated CR 687752, to evaluate the effect of the condition on prior operability of the EDG. Additional inspection of the licensee's evaluation is required to appropriately characterize the licensee's failure to promptly identify and correct the condition following the surveillance test failure on December 13, 2011, as minor or greater than minor. This issue will be identified as URI 05000425/2013007-02, Failure to Identify and Correct Potential Emergency Diesel Generator 2B Inoperability Following Failed Surveillance Testing.

.2.16 480 Volt Switchgear 1BB07

a. Inspection Scope

The team reviewed the plant's TS, UFSAR, DBDs, and relevant electrical drawings to establish an overall understanding of the design bases of the 480V switchgear. The team reviewed one line diagrams, load calculations during post-LOCA loading and at degraded grid voltage conditions, short circuit calculations, and voltage drop and voltage regulation. The team reviewed the coordination curves for the main and branch overcurrent protection devices. The team reviewed modification documents associated with replacement of General Electric AKR type breakers with Asea Brown Boveri (ABB) "EMAX" breakers. A walkdown of the equipment was performed to observe environmental conditions, grounding connections to building systems, component configuration, and component conditions such as work space cleanliness, labeling, proper work space, and metering equipment. The team reviewed testing records that included activities such as bus insulation resistance tests, breaker operational tests, contact resistance tests, and circuit breaker current injection tests for trip unit function setting verification. The team reviewed work orders associated with ABB EMAX breaker cover repair operations and CAP documents in order to verify that potential degradation was monitored or prevented.

b. Findings

No findings were identified.

.2.17 Load Center Transformer 1BB07X

a. Inspection Scope

The team reviewed the plant's TS, UFSAR, DBDs, and relevant electrical drawings to establish an overall understanding of the design bases of the 480V load center transformer. The team reviewed one line diagrams, load calculations, short circuit calculations, transformer installation procedures, and field test results. The team reviewed the coordination curve for the overcurrent devices associated with the transformer for magnetization currents and design-basis loading. The team reviewed the basis for replacing the transformer from a General Electric unit to an ABB unit in response to the anticipated end-of-life for this component. The team reviewed component replacement documentation to confirm proper voltage measurements, phase rotation, turns ratio, tap setting verification (4050V – 480V in response to degraded grid voltage analysis), temperature monitoring devices, and control room annunciation alarms. A walkdown of the equipment was performed to observe environmental conditions, grounding connections to building systems, and component configuration.

b. Findings

No findings were identified.

.2.18 480 Volt Motor Control Center 1BBF

a. Inspection Scope

The team reviewed the plant's TS, UFSAR, DBDs, and relevant electrical drawings to establish an overall understanding of the design bases of the 480V motor control center. The team reviewed one line diagrams, load calculations during post-LOCA loading and at degraded grid voltage conditions, short circuit calculations, and voltage drop and voltage regulation. The team reviewed the coordination curves for the main and branch overcurrent protection devices. A walkdown of the equipment was performed to observe environmental conditions, grounding connections to building system, and component configuration. The team reviewed testing records that included activities such as bus insulation resistance, breaker operational tests, contact resistance tests, and thermal overload trip device operations. The team reviewed predictive maintenance program work orders that covered the 6 and 12 year motor control center breaker cycling, thermal overload trip testing, cleaning, inspection, and tightening. The team reviewed corrective actions associated with high efficiency National Electrical Manufacturers Association Design Class B motors and their inrush current that resulted in false trips and were addressed by revised breaker trip setpoints to accommodate these starting inrush currents.

b. Findings

No findings were identified.

.3 Operating Experience

a. Inspection Scope

The team reviewed six operating experience issues for applicability at the Vogtle Electric Generating Plant. The team performed an independent review for these issues and where applicable, assessed the licensee's evaluation and dispositioning of each item. The issues that received a detailed review by the team included:

- NRC Information Notice 2008-18, "Loss of a Safety-Related Motor Control Center Caused by a Bus Fault"
- NRC Information Notice 2010-25, "Inadequate Electrical Connections"
- NRC Information Notice 2012-14, "Motor Operated Valves Inoperable Due to Stem-Disc Separation"
- NRC Information Notice 2012-11, "Age Related Capacitor Degradation"
- NRC Generic Letter 96-06, "Assurance of Equipment Operability and Containment Integrity During Design Basis Accident Conditions"
- NRC Information Notice 2003-19, "Unanalyzed Condition of Reactor Coolant Pump Seal Leakoff Line During Fire Scenarios or Station Blackout"

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On August 16, 2013, and August 30, 2013, the team presented the inspection results to Mr. J. Thomas and other members of the licensee's staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Licensee personnel:

B. Enter, Mechanical/Civil Design Engineering Supervisor
G. Gunn, Senior Licensing Engineer
F. Pournia, Engineering Director
J. Wade, Site Design Manager
K. Walden, Licensing Engineer

NRC personnel

L. Cain, Senior Resident Inspector, Division of Reactor Projects (DRP), Vogtle Resident Office
T. Chandler, Resident Inspector, DRP, Vogtle Resident Office
F. Ehrhardt, Chief, Projects Branch 4, DRP, Region II
R. Nease, Chief, Engineering Branch Chief 1, Division of Reactor Safety, Region II

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000424, 425/2013007-01	FIN	Failure to Correct a Condition Affecting EDG-Recovery Capability under Station Blackout Conditions [Section 1R21.2.1]

Opened

05000425/2013007-02	URI	Failure to Identify and Correct Potential Emergency Diesel Generator 2B Inoperability Following Failed Surveillance Testing [Section 1R21.2.15]

LIST OF DOCUMENTS REVIEWED

Calculations

1X4DR008, Unit 1 Station Blackout Analysis Report, Rev. 1
AX4AK01-00509, Standby Diesel Generator Instruction Manual, Vol. I, Ver. 22
AX4AK01-00563, Associated Publications Manual (Instructions, Forms, Bulletins, Parts Lists, Etc.): Book 1 – Standby Diesel Generator, Vol. II, Ver. 20
AX4AR17-20023, Weak Link Analysis Report for VEGP MSIVs, Ver. 1
AX4CP-9000, Evaluation of the Seal Leak Off Line Flange Connection for Overpressurization due to SBO, dated 8/12/13
CCN-V-12-0011, Unit 1 Load Study, dated 10/5/12
DC-1804, Design Criteria 4160 VAC System, Rev. 10
DC-1809, Design Criteria Cable Systems, Ver. 21
REA 01-VAA138, NSCW Single Pump Operation, dated 12/19/01
X2CF10, Correction Factor for Battery Intercell Cable Connections, Ver. 13
X3CA18, Unit 1 Load Study, Ver. 10
X3CA26, Protective Relaying Calculation, Ver. 10.0
X3CE01, Diesel Generator Steady State Load Study
X3CF02, Class 1E Battery Systems, Ver. 22
X3CF02, Determine Class 1E Battery Sizing Per IEEE 485-1983, Ver. 23
X3CF07, DC Breaker Sizing, Ver. 16
X3CF11, Calculate Battery 1AD1B Operating Capacity with 58 cells, Ver. 0
X3CF12, 1E DC Panel Loading, Ver. 7
X3CF13, Battery Ground/DC Ground Detection – Setpoint, Ver. 1
X4C1000U01, Differential Pressure Calculation for REA VG-9049 (G.L. 89-10), dated 10/10/92
X4C1000U01, Differential Pressure Calculations for REA VG-9049 (GL 89-10), Ver. 18
X4C1000U02, Valve Required Thrust/Torque and Operator Capabilities and Limitations for the Generic Letter 89-10 Scope MOVs, Revs. 15, 17 and 22
X4C1000U07, GL 95-07 Expanded Evaluation for Pressure Locking & Thermal Binding, Rev. 11
X4C1000U187, JOG Motor Operated Valve Classifications for GL 96-05 Gate Valves, Ver. 1
X4C1202V056, NSCW Water Hammer Analysis, Rev. 2
X4C1217V03, Auxiliary Component Cooling Water (ACCW) Pump Verification, Rev. 2
X4C1217V09, ACCW Pump and Surge Tank Verification, Rev. 1
X4C1302V04, Verification of Auxiliary Feedwater Pumps Technical Specification, Ver. 9
X4C2403V09, Emergency Diesel Generator Starting Air Pressure Technical Specification Values, dated 1/12/95
X5CP5154, Mini-Flow Control Train “A” and Train “B” Aux Feedwater Pumps P4-002 and 003, dated 3/17/98
X5CP9060, Diesel Air Start Receiver Pressure, dated 12/1/86
X4CPS.0075.520, Qualified Life Extension for Limitorque Operated Valve Actuator, Rev. 8

Completed Procedures

14748-1, AFW Pump and Check Valve C/D IST and TDAFW Pump Auto Start Test (Section 5.3, 5.4, and 5.5), dated 4/6/11, and 10/18/12
14748-2, AFW Pump and Check Valve C/D IST and TDAFW Pump Auto Start Test (Section 5.3, 5.4, and 5.5), dated 10/12/11, and 4/3/13
14850-1, Cold Shutdown Valve IST (MSIV Section), dated 9/20/09, 3/6/11, and 9/16/12
14850-2, Cold Shutdown Valve IST (MSIV Section), dated 3/7/10, 9/15/11, and 3/10/13
14980A-1, Diesel Generator 1A Operability Test (Section 5.1 Slow Start Test), dated 1/26/12, 5/8/12, and 10/22/12
14980A-1, Diesel Generator 1A Operability Test (Section 5.2 Fast Start Test), dated 2/14/12, 3/14/12, 4/10/12, 6/4/12, 7/2/12, 7/30/12, 8/29/12, 9/29/12

14981-1, D/G Air Start Receivers Inlet Check Valve Leak Test, dated 6/18/11, 11/17/12, and 12/4/12
14981-2, D/G Air Start Receivers Inlet Check Valve Leak Test, dated 8/3/11 and 12/11/12
23948A-1, 1A Emergency Diesel Generator Air Start Receiver Dew Point Calibration (Monthly), dated May – Dec/2012 and Jan – May/2013
27739-C, Breaker and Thermal Overload Pre-installation Testing, dated 3/29/08
PM 11807R5101, Periodic Component Replacement Vital AC inverter 1BD1I12, dated 9/1/12

Completed Work Orders
WO 0010402187, Freedom Series Starter Replacement, dated 8/27/04
WO 0020401720, Freedom Series Starter Replacement, dated 9/8/04
WO 10201407, Replace GE 4160-480V Transformer 1BB07X with ABB 4160-480V, dated 5/13/02
WO 10202396, 12 year Maintenance for 480V Switchgear 1BB07, dated 8/30/02
WO 10300927, Transformer Megger and Turns Ratio Test on 1BB07X, dated 3/28/03
WO 1060336211, Test / Replace Breakers in 480V Switchgear 1BB07, dated 5/18/07
WO 1060336212, Functional Test Breakers in 480V Switchgear 1BB07, dated 5/18/07
WO 1060336221, Circuit Breaker 1BB0704 Close Coil Replacement in 480V Switchgear 1BB07, dated 3/31/10
WO 1060336222, Circuit Breaker 1BB0712 Close Coil Replacement in 480V Switchgear 1BB07 for ABB 10 CFR Part 21, dated 3/31/10
WO 1060336223, Circuit Breaker 1BB0713 Close Coil Replacement in 480V Switchgear 1BB07, dated 3/31/10
WO 1070832601, 480V Motor Control Center 1ABF, dated 3/29/08
WO 1080483901, Replace Air Distributor Air Filter and Strainer, dated 1/20/09
WO 1100184101, Channel Calibration 1F-5154, dated 3/1/11
WO 1100228101, 480V Motor Control Center 1BBF – 12 year, dated 3/14/11
WO 1100228136, 480V Motor Control Center 1BBF – 6 year, dated 3/14/11
WO 1100228501, 480V Motor Control Center 1BBF – Performed 1E Molded Case Circuit Breaker/ Thermal Overload Trip Testing, dated 3/13/11
WO 1101737601, Cold Shutdown Auxiliary Feedwater Check Valve Inservice Test, dated 4/6/11
WO 2091056701, Replace 2AB319 breaker, dated 2/1/11
WO 2101813301, Cold Shutdown Auxiliary Feedwater Check Valve Inservice Test, dated 9/16/11
WO SNC125357, Pressure Switch Calibration D/G 1A Non-Engine (PM), dated 1/20/12
WO SNC125437, Motor Operated Valve Test Perform Static Test, dated 8/15/12
WO SNC126831, Remove Emax Breakers TM, dated 10/4/12
WO SNC127882, Perform Channel Calibration 1F-5154, dated 8/16/12
WO SNC132804, 10 Yr 4160 Switchgear Maintenance on 2AB319, dated 10/2/11
WO SNC134646, Channel Calibration 2F-5154, dated 8/22/11
WO SNC136967, Remove Emax Breakers TM, dated 10/4/12
WO SNC326459, 18 Month Train “C” TDAFW Pump Auto Start Test, dated 10/6/12
WO SNC337698, Breaker 2BBF06 failed, Reference CR 358466, dated 5/22/12
WO SNC340204, Replace ‘HFB’ Type Breaker with ‘HMCP’ Type Breaker at 1ABF20, dated 8/25/12
WO SNC340205, Replace ‘HFB’ Type Breaker with ‘HMCP’ Type Breaker at 1BBF06, dated 8/15/12
WO SNC340662, Troubleshooting of Removed Breaker 2BBF06, dated 11/2/12
WO SNC343066, Replace front cover mounting screws on safety-related ABB 480V EMAX breakers 1BB07-01, 02, 05, 08, 09, and 14, dated 9/30/12
WO SNC343386, Replace front cover mounting screws on safety-related ABB 480V EMAX breakers 1BB07-04, 06, 08, 09, 12, and 13, dated 9/11/12
WO SNC355369, Troubleshoot, Investigate Loading When DG 2B was Tied to the Grid, dated 1/23/12
WO SNC356001, Connect Recorder to 2BDG, dated 1/10/12

WO SNC365891, Alignment of 2AB319 MOC switch, dated 6/26/12
WO SNC381199, 480 Volt Breaker Test – 18 Month, dated 11/6/12
WO SNC388949, Replace broken front cover plate on safety-related ABB 480V EMAX breakers 1BB07-08, dated 5/11/12
WO SNC398570, B Trn AFW Pmp 2 Miniflow MOV - Clean/Inspect/Lube/Stroke, dated 8/15/12
WO SNC407762, Replace broken front cover plate on safety-related ABB 480V EMAX breakers 1BB07-01, dated 8/06/12
WO SNC407763, Replace broken front cover plate on safety-related ABB 480V EMAX breakers 1BB07-09, dated 8/06/12
WO SNC407764, Replace broken front cover plate on safety-related ABB 480V EMAX breakers 1BB07-13, dated 8/06/12
WO SNC429363, B-MDAFW IST-Q (2), dated 3/7/13

Corrective Action Program Documents
Condition Reports:
2008103570, 1ABF20 molded case breaker was tested per 27740-C
2008104267, Found 1ABF-20 tripped
2008104455, During review of MWO 1070832601, it was discovered that section 4.6 was missing data for two phases of breaker testing for 1ABF20
2008113387, NRC Information Notice 2008-18, “Loss of a Safety-Related Control Center Caused by a Bus Fault” issued to inform addressees of a recent event involving an electrical fire cause by a bus fault at the Arkansas Nuclear One Unit 2 power plant, which resulted in the loss of a safety-related motor control center and the associated loss of some safety-related loads
2009112669, Extension of EDG Allowed Outage Time Inspection Frequencies
2010100180, Unit 2 NSCW Pump #6 Discharge Valve
2010101674, EMAX breaker Part 21 notification from ABB Florence concerning closing coil not designed to be continuously energized resulting in premature failure of the coil.
2010102051, Non-class 1E breakers were identified to have continuous close signal affecting the ABB 10CFR part 21 on EMAX breaker closing coils
2010107494, NSCW Valve Mis-position
2010109181, Procedure Revision Suggestion - NMP-AD-009 and NMP-ES-022 Do Not Provide Adequate Time
2010113714, EMAX breaker 1AB05-08, 13, 14 broken cover
2010113886, EMAX breaker 1BB07-01 broken cover
2011103221, Failure to Precharge
2011105810, 1A NSCW Slow Fill Line Vent Valve
162252, Minor to Moderate Slightly Discolored Boric Acid Residue Noted in Packing Area of 1HV8701A and 1HV8702A
164691, Discovered Rotor Terminal Broken on During Performance of Viper Testing on 1HV8701A
164943, Annunciator (ALB06D01) did not Illuminate During Testing
166952, Unexpected Control Room Alarm received, ALB34 C06 Bat Charger 1DD1CA 1DDACB Trouble
332810, D/G 2B Lost Full Loading during 14980B-2
353130, Valve Did Not Close
358466, Unit 2 B Train MDAFW mini flow valve power supply 2BBF-06 tripped
363431, Troubleshooting of Removed breaker 2BBF06
364428, Need Contingency Work Order
372011, Maintenance Rework Evaluation associated with 2FB 5154-MO and 2BBF06
372425, Evaluate Current Set-point of EDG Reverse Power Relay
381742, PMCR Request
383267, U2 DG B Manually Stopped during Surveillance Testing
428518, EMAX Broken Covers in breakers 1AB05-06, 12, and 13

431891, EMAX Broken Covers in breakers 1BB07-08, 09, and 13
435132, PMCR Request
458344, Work Week Critique; Breaker Bench Test at 90%
474941, U2 DG B Uncontrollably Loaded during Surveillance Testing
518228, 1HV8702A Will not Open
521468, Need Proper Documentation for Using Unfiltered Fyrquel Oil in the MSIV/MFIV
527135, Missing bolt inside 480V Switchgear 1BB07
528645, 1HV8701B Packing Leak
528652, Packing Leak on 1HV8701B Train 'A' RHR Loop 1
528690, Incident Response Team (IRT) for 1HV8701B Packing Leak
528885, Calculation X3CA18 Minor Voltage Discrepancy
529174, Packing Leak Assessment of 1HV8701B
529229, Boric Acid Build-Up in Yoke Area
529504, SNC128221 Partially Satisfactory
529840, Functionality Assessment of HV8701B
530137, Moderate Boric Acid Residue in Packing Area of HV8702A
530916, Unit SG Loops 2 and 3 do not Indicate Steam Flow
535544, Aux Feed Water SG2 1-1302-U4-114 failed surveillance
550461, 14802A-102 Unsat Pending IST Review
553494, NSCW 162-1 Agastat Failure
577277, UNSAT Operator Rounds Reading
591749, 2B AFW System Outage Challenge Board Action
599089, 2013 CDBI Self Assessment Standards Deficiency
607037, Unit 2 MSIV Stem Replacement
607054, New MSIV Discs Fit-up Issue
609463, Relief Valve Test Failure
610859, Leak Coming from Insulation or Valve 2-1302-U4-115
624108, High Particle Count on 2HV3006B MSIV Oil Sample
624114, MSIV 2HV3036B Oil Sample High in Water and Particle Count
641721, NSCW Fan High Vibration
644170, 1R18 Work Order Request
647157, 2FV-5154 failed stroke time
651205, ER Clock Reset - April 2013
654109, Rounds call for Upstream Line to be Cool
654110, Rounds Call for this Line to be Cool Upstream of Valve
661755, Need WO to Replace the 2B NSCW Fan #3 Gearbox
665929, Loose Sheetmetal Shroud on Valve 1-1302-U4-114
672333, DCP-SNC137824 Issues (mounting plate for Allen Bradley relay)
672652, NSCW Pump #1 Seal Leak
677074, Unit 1 and 2 Outside Rounds are not Consistent
681523, Stock Tagging Discrepancy
688341, Delays in Issuance NSCW Agastat Replacement Relays

Technical Evaluations:
12891, Replace breakers 1ABF20 and 1BBF06 under DCP C053876501
12892, Replace breakers 2ABF20 and 2BBF06 under DCP C053876501
216254, Interim Disposition, D/G 2B Lost Full Loading during 14980B-2
216670, MR Evaluation, D/G 2B Lost Full Loading during 14980B-2
220653, AI to Engineering Resulting from CAR191168
220664, AI to Prevent Recurrence
220671, Evaluate Motoring of 2DG due to reverse Power Relay Settings
294604, Troubleshooting of Removed breaker 2BBF-06
296008, Track Closure of PDO for 2FV5154-MO under CR 363431

301271, Evaluate Set-points of EDG Reverse Power Relays
308352, MR Evaluation U2 DG B Manually Stopped during Surveillance Testing
308467, IDO, U2 DG B Manually Stopped during Surveillance Testing
312106, Results of Troubleshooting U2 DG B Manually Stopped during Surveillance Testing
445367, MR Evaluation U2 DG B Uncontrollably Loaded during Surveillance Testing
447631, IDO, U2 DG B Uncontrollably Loaded during Surveillance Testing
496539, NRC issued Information Notice 2012-14: Motor-operated valve inoperable due to stem-disc separation
580473, IN12-11aged capacitors in NSCW
580475, IN12-11aged capacitors in RHR
580487, IN12-11aged capacitors in CVCS
580488, IN12-11aged capacitors in AFW
580490, IN12-11aged capacitors in SI
580491, IN12-11aged capacitors in CCW
580492, IN12-11aged capacitors in 125VDC
580493, IN12-11aged capacitors in 120VAC
580494, IN12-11aged capacitors in 480VAC
580495, IN12-11aged capacitors in 4160VAC
580496, IN12-11aged capacitors in Sequencer
580497, IN12-11aged capacitors in 7300 System
580498, IN12-11aged capacitors in SSPS
580499, IN12-11aged capacitors in Rod Control
593233, 2B AFW System Outage Challenge Board Action
647415, TE for Maint. Rule Eval-2FV-5154 failed stroke time
76355, NRC Information Notice (IN) Inadequate Electrical Connections

CARs:
191168, D/G 2B Lost Full Loading during 14980B-2
192314, Unit 2 B Train MDAFW mini flow valve power supply 2BBF-06 tripped
192792, Maintenance Rework Evaluation associated with 2FB 5154-MO and 2BBF06
193081, U2 DG B Manually Stopped during Surveillance Testing
195200, U2 DG B Uncontrollably Loaded during Surveillance Testing

Design Basis Documents
UFSAR Section 7.3.7, Auxiliary Feedwater System, Rev. 17
UFSAR Section 10.4.9, Auxiliary Feedwater System, Rev. 17
UFSAR Appendix 10A, VEGP Auxiliary Feedwater System Reliability Analysis, Rev. 14
V-LO-TX-01101, Electrical System Description, Rev. 7.4
V-LO-TX-06101, NSCW System Description, Rev. 7.1
V-LO-TX-11101, DG_DG Auxiliaries Description, Rev. 10.4
V-LO-TX-12101, Residual Heat Removal System, Rev. 2.2
V-LO-TX-21101, Main Steam System, Rev. 5.3

Drawings
10-107116 Sh. 1 0f 2, Ametek Drawing 10KVA Production Inverter 125VDC 120VAC 60 HZ, dated 4/11/03
10-107116 Sh. 2 0f 2, Ametek Drawing 10KVA Production Inverter 125VDC 120VAC 60 HZ, dated 4/11/03
152-1AA0219 from Emergency Diesel Generator 1A
1ADI1 & 1ADI2 1-1806-Q3-DA1 & DA2, Ver. 15.0
1X3D-AA-F36A, One Line Diagram 480V Motor Control Center 1ABF, Ver. 15.0
1X3D-AA-E05A, One Line Diagram 480V Switchgear 1AB05, Ver. 13.0
1X3D-AA-E07A, One Line Diagram 480V Switchgear 1BB07 1-1805-S3-B07, Ver. 10

1X3D-AA-F36A, One Line Diagram 480V Motor Control Center 1ABF 1-1805-S3-ABF, Ver. 15
1X3D-AA-F38A, One Line Diagram 480V Motor Control Center 1BBF 1-1805-S3-BBF, Ver. 15
1X3D-AA-G01A, Main One Line Class 1E 125V DC and 120V Vital AC System, Ver. 10.0
1X3D-AA-G02A, One Line Diagram 120V AC Class 1E Vital Instrument DIST PNLS 1AY1A, 1BY1B, 1CY1A and 1DY1B, Ver. 28.0
1X3D-AA-G02C, 120V AC Class 1E VITAL INSTR DIST PNLS 1-1807-03-V15 & V16, Ver. 14.0
1X3D-AA-H01A, One Line Diagram 125V DC CLASS 1E DISTR TRAIN A 11806-S3-DSA, 1-1806-S3-DC, Ver. 17.0
1X3D-AA-H01B, One Line Diagram 125V DC CLASS 1E DISTR PANELS 1AD11 & 1AD12 1-1806-03-DA1 & -DA2, Ver. 15
1X3D-AA-H02A, One Line Diagram 125V DC CLASS 1E DISTR TRAIN B 1-1806-S3-DSB, 1-1806-S3-DCB, Ver. 19.0
1X3D-AA-H02B, One Line Diagram 125V DC CLASS 1E DISTR PNL 1BDI1 & 1BDI2 1-1806-03-DB1 & -DB2, Ver. 16.0
1X3D-AA-H04A, One Line Diagram 125V DC CLASS 1E DISTR TRAIN C 1-1806-S3-DSC, 1-1806-S3-DCC, Ver. 26.0
1X3D-AA-H05A, One Line Diagram 125V DC CLASS 1E DISTR TRAIN D 1-1806-S3-DSD, Ver. 19.0
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