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

September 16, 2011

Florida Power and Light Company
ATTN: Mr. Mano Nazar, Senior Vice President
Nuclear and Chief Nuclear Officer
P.O. Box 14000
Juno Beach, FL 33408-0420

SUBJECT: TURKEY POINT NUCLEAR PLANT - NRC COMPONENT DESIGN BASES INSPECTION - INSPECTION REPORT 05000250/2011008 AND 05000251/2011008

Dear Mr. Nazar:

On, August 31, 2011, U. S. Nuclear Regulatory Commission (NRC) completed an inspection at your Turkey point Nuclear Plant. The enclosed inspection report documents the inspection results, which were discussed on September 8, 2011, with Mr. M. Kiley 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 licenses. The team reviewed selected procedures and records, observed activities, and interviewed personnel.

This report documents five NRC identified findings of very low safety significance (Green), which were determined to involve violations of NRC requirements. The inspectors determined that one of the issues was a Severity Level IV violation of NRC requirements. The NRC is treating these violations as non-cited violations (NCVs) consistent the NRC Enforcement Policy. If you contest these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC 20555-001; with copies to the Regional Administrator Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Turkey Point. Further, if you disagree with the cross-cutting aspect assigned to any finding 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 Turkey Point. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

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 document system (ADAMS). ADAMS is accessible from the NRC Web site at

http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Binoy Desai, Chief
Engineering Branch 1
Division of Reactor Safety

Enclosure: Inspection Report 05000250/2011008 and 05000251/2011008,
w/Attachment: Supplemental Information

Docket Nos.: 50-250, 50-251
License Nos.: DPR-31, DPR-41

cc w/encl: (See page 3)

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.:	50-250, 50-251
License Nos.:	DPR-31, DPR-41
Report Nos.:	05000250/2011008, 05000251/2011008
Licensee:	Florida Power & Light Company (FP&L)
Facility:	Turkey Point Nuclear Plant, Units 3 & 4
Location:	9760 S. W. 344th Street Homestead, FL 33035
Dates:	July 11 – August 31, 2011
Inspectors:	D. Jones, Senior Reactor Inspector (Lead) R. Patterson, Reactor Inspector D. Mas Penaranda, Reactor Inspector E. Stamm, Project Engineer D. Terry-Ward, Construction Inspector (Trainee) M. Yeminy, Contractor G. Skinner, Contractor
Approved by:	Binoy B. Desai, Chief Engineering Branch 1 Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 05000250 & 251/2011008; 07/11/2011 – 08/31/2011; Turkey Point Nuclear Plant; Component Design Bases Inspection.

This inspection was conducted by a team of five NRC inspectors from the Region II office, and two NRC contract inspectors. Five Green non-cited violations (NCV) were identified of which one was a Severity Level IV violation. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using the NRC Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," (ROP) Revision 4, dated December 2006.

A. <u>NRC-Identified and Self-Revealing Findings</u>

Cornerstone: Mitigating Systems

- Green. The team identified a Green non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to verify or check the adequacy of design for with four examples. The licensee entered these issues into their corrective action program as ARs 1672459, 1676403, 1674790, 1675544 and 1679053, and performed evaluations to assure operability of components.

  The licensee's failure to adequately perform engineering evaluations as described in the four examples was a performance deficiency. The performance deficiency was more than minor because it adversely affected the Mitigating Systems cornerstone attribute of Design Control and adversely affected the cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the deficiencies described above, resulted in a reasonable doubt that safety-related equipment could perform their functions under the most limiting conditions. In accordance with NRC IMC 0609.04, "Initial Screening and Characterization of Findings", the inspectors conducted a Phase 1 Significance Determination Process (SDP) screening and determined the finding to be of very low safety significance (Green) because it was a design deficiency confirmed not to result in the loss of operability or functionality. Specifically, the licensee performed evaluations that provided reasonable assurance that the components would perform their required functions when called upon. The team determined that no cross cutting aspect was applicable to this performance deficiency because this finding was not indicative of current licensee performance. [Section 1R21.2.2]

- Green. The team identified a NCV of 10 CFR Part 50, Appendix B, Criterion XVII, "Quality Assurance Records," for the licensee's failure to maintain sufficient records to furnish evidence of activities affecting quality. Specifically, the licensee was not able to retrieve test data and calculations supporting an acceptance criterion that assures the reliability and availability of minimum MCC voltage to provide adequate voltage to MCC control circuits. The licensee entered these issues into their corrective action program as AR 1676661 and has proposed actions to (1) implement a design modification to increase the control power transformer size for three motor operated valves (MOV), (2) add the control circuits for the 3 MOVs to the site's low margin list, and (3) re-create missing analysis and test data.

The inspectors determined that the failure to have retrievable test data and calculations to support acceptance criteria for MCC control circuit voltage was a performance deficiency. The finding was more than minor because it affected the Mitigating Systems Cornerstone attribute of Design Control, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, there was reasonable doubt as to whether safety-related MCC control circuits would have sufficient voltage to function during a degraded voltage condition. The finding was considered to be of very low safety significance (Green) since this was a design deficiency confirmed not to have resulted in a loss of operability or functionality. The team determined that no cross cutting aspect was applicable to this performance deficiency because this finding was not indicative of current licensee performance. [Section 1R21.2.4.b.1]

- Green. The team identified a NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to perform adequate voltage calculations for safety-related equipment with two examples. The licensee entered these issues into their corrective action program as ARs 1677149, 1677149-02, 1673843, 1677149-02, 1676754 and 01676641 and performed evaluations to provide reasonable assurance that components would have adequate voltage pending forma re-analysis.

  The inspectors determined that the failure to perform adequate design calculations to support the setpoint of the degraded voltage relays and the failure to perform adequate design calculations for the 120Vac instrument system was a performance deficiency. The finding was more than minor because it affected the Mitigating Systems Cornerstone attribute of Design Control, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, there was reasonable doubt as to whether the components would have adequate voltage to perform their safety function during a degraded voltage condition. The finding was considered to be of very low safety significance (Green) since this was a design deficiency confirmed not to have resulted in a loss of operability or functionality. The team determined that no cross cutting aspect was applicable to this performance deficiency because this finding was not indicative of current licensee performance. [Section 1R21.2.4.b.2]

- Severity Level IV. The team identified a SL-IV NCV for the licensee's failure to update the Updated Final Safety Analysis Report (FSAR) for a modification affecting the Unit 3 emergency diesel generator fuel oil storage tank. Specifically, a common-mode failure method was not described in the UFSAR that required proceduralized manual actions during design bases rain events.

The licensee entered these issues into their corrective action program as AR 1679078.

The failure to update the UFSAR as required by procedure ENG Q1-3.4 and 10 CFR 50.71(e) was a performance deficiency. This performance deficiency was considered as traditional enforcement because, not having an adequately updated UFSAR hinders the licensee's ability to perform adequate 10 CFR 50.59 evaluations and can impact the NRC's ability to perform its regulatory function such as, license amendment reviews and inspections. In addition, the team determined that the performance deficiency was material to safety because the modification resulted in a common-mode failure method that required proceduralized manual actions for the Unit 3 EDGs to meet their mission time during design bases rain events. This violation was determined to be a SL-IV violation using Section 6.1 of the NRC's Enforcement Policy because the erroneous information was not used to make an unacceptable change to the facility or procedures. Cross-cutting aspects are not assigned for traditional enforcement violations. [Section 1R21.2.8]

- Green. The team identified a NCV of 10 CFR 50.63 for the licensee's failure to test the station blackout (SBO) cross-tie components under loaded conditions. Since 1991, the licensee failed to verify the capability of the SBO cross-tie and associated components to carry the required amperage during post installation tests or subsequent periodic maintenance tests. The licensee entered these issues into their corrective action program as ARs 1676402 and 1680428 with an action to establish a method and frequency for loading the SBO cross-tie components.

  The team determined that the licensee's failure to perform adequate post installation testing and periodic testing as required by the licensee's commitment to RG 1.155, "Station Blackout," was a performance deficiency. This finding was more than minor because it affected the Mitigating Systems cornerstone attribute of Equipment Performance and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems and components that respond to initiating events to preclude undesirable consequences (i.e. core damage). Specifically, since the installation of cross-tie components to meet SBO requirements, the licensee failed to test the components in a loaded condition. The lack of testing resulted in a reduced reliability of the SBO cross-tie. In accordance with NRC IMC 0609.04, "Initial Screening and Characterization of Findings," the team conducted a Phase 1 SDP screening and determined the finding to be of very low safety significance (Green) because it was not a design issue resulting in loss of function, did not represent an actual loss of a system safety function, did not result in exceeding a TS allowed outage time, and did not affect external event mitigation. The team determined that no cross cutting aspect was applicable to this performance deficiency because this finding was not indicative of current licensee performance. [Section 1R21.2.10]

B. <u>Licensee-Identified Violations</u>

None

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 operator actions for review using information contained in the licensee's Probabilistic Risk Assessment (PRA). 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 fifteen components including one associated with containment, and four operating experience (OE) items.

The team performed a margin assessment and a detailed review of the selected risk-significant components to verify that the design bases had been correctly implemented and maintained. This design margin assessment 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 (RIS) 05-020 (formerly Generic Letter (GL) 91-18) conditions, NRC resident inspector input of problem equipment, System Health Reports, industry OE, and licensee problem equipment lists. Consideration was also given to the uniqueness and complexity of the design, operating experience, 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 (15 Samples)

.2.1 Intake Cooling Water Pump (ICW) Pump 4C and Strainer

a. Inspection Scope

The team reviewed the plant's Updated Final Safety Analysis Report (UFSAR), Technical Specification (TS), design bases documents (DBD), and piping and instrumentation drawings (P&ID) to establish an overall understanding of the design bases of the ICW pumps. Design calculations and site procedures were reviewed to verify the design bases and design assumptions had been appropriately translated into these documents. Component walk downs were conducted to verify that the installed configurations would support their design bases functions under accident/event conditions and had been maintained to be consistent with design assumptions. 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/or analyses served to validate component operation under accident/event conditions. Vendor documentation, preventive and corrective maintenance history, and corrective action system documents were reviewed to verify that potential degradation was being monitored.

b. Findings

No findings were identified.

.2.2 Auxiliary Feedwater (AFW) Pumps

a. Inspection Scope

The team reviewed the UFSAR, PI&Ds, test data, system health, vendor manual, as well as operating and surveillance procedures to identify design, maintenance, and operational requirements related to steam supply, pump flow rate, developed head, achieved system flow rate, net positive suction head (NPSH), and minimum flow requirements. These requirements were reviewed for pump operation with the source of water originating from the condensate storage tank (CST). Design calculations, as well as documentation of periodic surveillance tests, were reviewed to verify that design performance requirements were met. Maintenance, in-service testing, corrective action documents, and design change histories were reviewed to assess the potential for component degradation and the resulting impact on design margins and performance. The team also evaluated the adequacy of the suction piping of the pump, its vulnerability to over pressurization due to back flow from a leaking discharge check valve and whether a leaking discharge check valve could cause reverse rotation of the idle pump. The team verified the pump's capability of performing its safety function, i.e., delivering the required flow rate to the steam generators at the prescribed design pressure as well as the acceptability of AFW system operation criteria and operator action to secure pumps for minimum flow requirements. The team also reviewed off-normal and emergency operating procedures to verify that adequate guidance exists to shut down one of two AFW pumps operating on the same train. Simulator exercise performance was reviewed to confirm operators successfully perform the task within the time requirements. Additionally, the team walked down portions of the AFW system to verify that the installed configuration was consistent with design bases information and to visually inspect the material condition of the pumps.

b. Findings

Introduction: The team identified a Green non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to verify or check the adequacy of design for with four examples.

Description: The team identified four examples of design control violations:

Example 1: Failure to Analyze the Most Limiting System Configuration in the Auxiliary Feedwater (AFW) Pumps NPSH Calculation

Calculation PTN-BFSM-98-0010, AFW Pump Net Positive Suction Head (NPSH) Assessment, Rev. 0 assessed worst case NPSH requirements for a single AFW pump taking suction from two condensate storage tanks (CST). The team noted that the most limiting AFW configuration described in the UFSAR was a single pump taking suction from a single CST. This configuration is more limiting because of additional line resistance losses incurred when taking suction from a single tank. The team determined that insufficient NPSH existed for this most limiting configuration. During the inspection, the licensee performed a prompt operability determination for which a new NPSH calculation was drafted to properly account for the most limiting conditions. The re-analysis resulted in a significant loss of margin. This issue was entered into the licensee's corrective action program as AR 1672459.

Example 2: Failure to Translate Uncertainties into an Emergency Operating Procedure (EOP)

Procedure 3-EOP-E-0, Reactor Trip or Safety Injection, Rev. 3, states that when the water level in the CST decreases to 10%, the operators are required to line up the condensate transfer pump and transfer water from the demineralized water tank to the CST. The required increase in water level is to protect the AFW pump from the ingestion of air caused by a vortex. The team noted that the licensee failed to translate the uncertainty associated with the CST level instrument, (+3.25% and -3.1% of full scale) when developing the criteria for aligning the alternate water source to the CST. This deficiency could result in the operators not initiating manual actions associated with re-filling the CST until the water level is at 6.9%. Waiting until 6.9% CST level would unnecessarily challenge the operators with respect to avoiding a vortex issue. This issue was entered into the licensee's corrective action program as AR 1676403 and the licensee plans to increase the CST level upon which the make up process is required to commence.

Example 3: Failure to Adequately Evaluate Refueling Water Storage Tank (RWST) Vortex Limit in Calculation

Calculation M12-383-01, "Vortex Design of Refueling Water Storage Tank,"12/13/1991, assessed worst case flow conditions to provide assurance that air ingestion by vortexing would not occur during design bases accidents. The team identified a deficiency in the calculation that resulted in a reasonable doubt that the licensee had adequately evaluated vortexing. The team noted that the licensee used a graph created by Gould Pumps Inc. to extrapolate the minimum water height required to avoid vortex formation when two safety injection pumps, two residual heat removal pumps and two containment spray pumps all take suction from the RWST. The team determined that the licensee incorrectly extrapolated data from the graph. This error resulted in an increase (22 feet to 27 feet) of the submergence height required to avoid vortex formation. This issue was entered into the licensee's corrective action program as AR 1674790 and the licensee performed engineering evaluation, PTN-ENG-SEMS-11-075, "Flow Dynamics Effect on Determining RWST Submergence" to recover the negative margin that resulted from the team's observation.

Example 4: Failure to Adequately Evaluate Alternate Cooling of Load Center and Switchgear Rooms

The Unit 3 load center and switchgear rooms are provided with a two train air conditioning system to remove the heat dissipated by electrical safety-related equipment during normal plant operation and emergency conditions. In the event that the air conditioning system is rendered non-functional by hazards such as fire, high winds, missiles, and heavy load drops, UFSAR Section, 9.16.3 states, in part, that reliability and independence is provided by a wall-mounted cooling fan located in the west wall of the building. For the event of a total loss of air conditioning, Procedure 3-NOP-070, Vital Load Center and Switchgear Rooms Chilled Water Air Conditioning System, Rev. 3 provides guidance for operators to initiate alternate cooling by placing the exhaust fan in service which includes opening doors to the exterior of the building. The procedure states that if any room temperature approaches 95°F immediately notify the shift manager because the design limit as stated in the UFSAR is 100 ºF for the switchgear room and 104ºF for the load center room.

The team noted that Calculation JPN-PTN-SENJ-92-003, Rev. 0, Safety Assessment for Load Center and Switchgear Rooms HVAC Safety Classification, Section 2.3 states, in part, that during alternate cooling, air temperature in the rooms rises slowly and remains below the 100ºF continuous service temperature limit for more than half a day. The team determined that within the first hour following the opening of the doors, the EDG discharge air would increase the bulk ambient air temperature in the rooms well above the 100ºF continuous service temperature limit. The team reached this conclusion because the calculation states that the EDG exhaust temperature will be approximately 120ºF and a sign on a steel railing located outside the room warns "Railing May Be Hot when the EDG is Operating. A flow rate of 35,000 CFM will pass two million cubic feet of hot air (much greater than the rooms' volume) at a temperature significantly greater than 104ºF, in less than one hour. This will result in a quick temperature rise above the switchgear and load center rooms' design temperatures of 100ºF and 104ºF respectively. Additionally, the team determined that the assessment for "more than half a day" was not consistent with the seven days that's mentioned in the UFSAR. The result of the deficiencies is that Procedure 3-NOP-070 provides inadequate guidance to mitigate a complete loss of air conditioning to the Unit 3 load center and switchgear rooms. This issue was entered into the licensee's corrective action program as AR 1675544 and 1679053. Additionally, the licensee performed a preliminary assessment that determined the equipment in the rooms would be operable up to 135ºF.

Analysis: The licensee's failure to adequately perform engineering evaluations as described in the four examples was a performance deficiency. The performance deficiency was more than minor because it was similar to Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues", Example 3.j, which states that if "*the engineering calculation error results in a condition where there is now a reasonable doubt on the operability of a system or component*" the performance deficiency is not minor. Further, the deficiencies were more than minor because the performance deficiencies adversely affected the Mitigating Systems cornerstone attribute of Design Control and adversely affected the cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the deficiencies described above, resulted in a reasonable doubt that safety-related equipment could perform their functions under the most limiting conditions. In accordance with NRC IMC 0609.04, "Initial Screening and Characterization of Findings", the inspectors conducted a Phase 1 Significance Determination Process (SDP) screening and determined the finding to be of very low safety significance (Green) because it was a design deficiency confirmed not to result in the loss of operability or functionality. Specifically, for the three examples provided above, the licensee performed evaluations that provided reasonable assurance that the components would perform their required functions when called upon. The team determined that no cross cutting aspect was applicable to this performance deficiency because this finding was not indicative of current licensee performance.

Enforcement: 10 CFR Part 50, Appendix B, Criterion III, "Design Control" requires, in part, that design control measures provide for verifying or checking the adequacy of design. Contrary to the above, as of August 12, 2011 the licensee failed to verify the adequacy of design in calculations used to provide assurance that safety-related components would perform their functions during design bases accidents. Specifically, the licensee (1) failed to verify that a single AFW pump would have adequate NPSH, (2) failed to verify that the uncertainties associated with CST level instrumentation were appropriately translated into an EOP, (3) failed to adequately verify that ECCS pumps would not be affected by the formation of air vortices during the most limiting flow conditions and (4) failed to adequately assess the capability of alternate cooling during the loss of all air conditioning to the Unit 3 switchgear and load center rooms. Because this finding is of very low safety significance and because it was entered into the licensee's corrective action program as ARs 1672459, 1676403, 1674790, 1675544 and 1679053, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. NCV 05000250 & 251/2011008-01, "Failure to Verify or Check the Adequacy of Design for with Four Examples."

.2.3 125vdc 3A Bus

a. Inspection Scope

The team reviewed loading and sizing calculations related to 125VDC 3A Bus to verify whether the bus would have sufficient capacity to support its required loads under worst case accident loading conditions. The team reviewed schematic diagrams and calculations for the breakers to determine whether equipment operation was consistent with the design bases. The team reviewed calculations for protective device settings to determine whether the breakers were subject to spurious tripping, and whether the breakers were selectively coordinated with upstream devices. Also, the team reviewed associated corrective action history to verify that degraded conditions were being appropriately addressed. In addition, the team interviewed the system engineer and performed a non-intrusive visual inspection of the bus to assess the installation configuration and verify that degraded material conditions were being appropriately addressed.

b. Findings

Introduction: The team indentified an Unresolved Item (URI) regarding the licensee's failure to establish a test program for safety-related molded case circuit breakers (MCCB) (120vac and 125vdc) to demonstrate these breakers would be able to reliably perform their intended safety functions, specifically protective tripping.

Description: The age range of approximately 511 safety-related MCCBs at Turkey Point is twenty to forty years - some are original plant equipment, some were installed in the 1980s, and the remainder in the early 1990s. With the exception of bench testing prior to installation, no testing/maintenance has been performed on the breakers. MCCBs are susceptible to age related failures such as, overheating due to loose connections and long term grease hardening. Overheating can exceed material temperature ratings, distort motor control center case and operating mechanism tolerances, and result in hardening/baking of grease. Long term grease hardening can result in the breaker failing to open or a delay in opening during a downstream electrical fault.

NRC Information Notice (IN) 93-64, "Periodic Testing and Preventive Maintenance of Molded Case Circuit Breakers," states, in part: "MCCB preventive maintenance practices can mitigate the effects of aging and help ensure continued MCCB reliability," and that "certain standard MCCB tests (such as individual pole resistance, 300 percent thermal overload and instantaneous magnetic trip tests) performed periodically were found effective along with the additional techniques of infrared temperature measurement and vibration testing." Also, EPRI NP-7410, Section 7.3.1, states, that " ensuring that all MCBs are periodically exercised is considered a vital part of a maintenance program, applicable to all breakers regardless of their safety classification." In addition, EPRI/NMAC NP-7410-V3, Section 7.3.1, states that safety related MCCB cycling/trip testing should be performed on a 4 to 6 year frequency.

In 2005 and 2006, during Turkey Point's preventive maintenance optimization (PMO) project, the licensee identified the lack of a testing program for safety-related 120vac and 120vdc MCCBs which resulted in the creation of a preventative maintenance (PM) program for the breakers. The PMs for the 120Vac breakers were to include a periodic inspection and electrical test to verify functionality. The PMs for the 125Vdc breakers were to replace each individual breaker. However, the licensee suspended the PMs, in part, because of scheduling challenges associated with Technical Specification (TS) restrictions – the TS has a two hour action statement associated with the de-energization of the ac or dc load centers.

In 2008, in response to the cancelled PMs, CAR 08-069 was created and assigned as a Turkey Point Excellence (TPE) project. TPE considered several options, and decided on a one-time replacement of the vital 120Vac and 125Vdc breakers.

In 2010, the licensee initiated AR 1649834 because the funding for the TPE project was terminated. This AR created a new long term asset management initiative to re-target the project in future years.

In 2011, ECR 1657020 was created for a one-time replacement of the MCCBs and entered into the licensee's long term asset management program (PTN-11-0177 [U3] and PTN -11-0179[U4].

The team identified that since 2005/2006 when the lack of periodic testing of the MCCBs was identified; no interim measures were taken to correct the nonconforming condition. Specifically, on multiple occasions since 2005, the licensee failed to take adequate actions to ensure the reliability and capability of the MCCBs to perform their design function while pursuing long term strategies. Additionally, the team identified that the licensee failed to scope the protective tripping function of the MCCBs in the Maintenance Rule program. These issues were entered into the licensee's corrective action program as ARs 1675539 and 1676808 which include developing an interim strategy that is to consider visual inspections augmented by thermography, planned cycling, and testing of the MCCBs.

<u>Summary:</u> This issue is unresolved pending further inspection to determine the extent of condition and impact of not establishing a test program for the MCCBs. The team requires additional information from the licensee to determine if the issue is more than minor. Specifically, the team will review test results of a statistically significant amount of the approximately 511 safety-related MCCBs prior to dispositioning the issue. (URI 05000250, 251/2011008-02, Molded Case Circuit Breaker Testing)

.2.4 <u>3A and/or 3B 4.16kv Bus</u>

a. <u>Inspection Scope</u>

The team reviewed bus loading calculations to determine whether the 4160V system had sufficient capacity to support its required loads under worst case accident loading and grid voltage conditions. The team reviewed the design of the degraded voltage protection scheme to determine whether it afforded adequate voltage to safety-related devices at all voltage distribution levels. This included review of degraded voltage relay setpoint calculations, motor starting and running voltage calculations, and motor control center (MCC) control circuit voltage drop calculations. The team reviewed the overcurrent protection scheme for the 4.16kV buses including drawings and calculations to determine whether loads were adequately protected and immune from spurious tripping. The team reviewed the load shedding and load sequencing schemes to determine whether they were consistent with the design bases and design calculations. The team reviewed the fast bus transfer scheme, including drawings and procedures, to determine whether the transfer capability described in the UFSAR could be achieved without adverse effects on equipment and systems. The team reviewed the high resistance grounding scheme of the 4.16kV buses including drawings and alarm response procedures to determine whether system operation was consistent with equipment design requirements. The team reviewed corrective action documents and maintenance records to determine whether there were any adverse operating trends. In addition, the team performed a visual inspection of the 4.16kV safety buses to assess material condition and the presence of hazards.

The inspectors also reviewed off-normal and emergency operating procedures to verify that adequate guidance exists for operators to restore power to a de-energized bus.

b.1 Findings

Introduction: The inspectors identified a Green, NCV of 10 CFR Part 50, Appendix B, Criterion XVII, “Quality Assurance Records,” for the licensee’s failure to maintain sufficient records to furnish evidence of activities affecting quality. Specifically, the licensee was not able to retrieve test data and calculations supporting an acceptance criterion that assures the reliability and availability of minimum MCC voltage to provide adequate voltage to MCC control circuits.

Description: Calculation PTN-3FSE-07-001, Unit 3 Safety-related AC Electrical Distribution PSB-1, Short Circuit, Voltage Drop and Bus Loading, Rev. 1 was used by the licensee to provide assurance that motor control center (MCC) had adequate voltage. The calculation uses a May 20, 1982, letter (L-82-211) to the NRC from Florida Power & Light (FPL) as an input into the calculation. The values provided in the letter are used as the basis for the minimum voltage required at MCCs to ensure adequate voltage to MCC contactors. These values for minimum MCC voltages ranged from 69.2% to 82.1% of 480 volts. Letter L-82-211 stated that the required MCC voltages were developed by testing contactors and control transformers, and by performing calculations for cable and control transformer voltage drop. However, the licensee was not able to retrieve test data or calculations to support the values provided in the letter.

The team noted that the licensee did not performed periodic pickup voltage testing of the contactors to demonstrate that the alternate contactor pick up voltage cited in the letter remained valid over the installed life of the contactors. Additionally, the team noted that vendor manual A0534 listed the required pickup voltage for the magnetic contactors as 85%, consistent with National Electrical Manufacturers Association (NEMA) and Underwriters Laboratories (UL) standards. The team further noted that Specification 5610-E-8 for ITE contactors required design tests in accordance with NEMA and UL standards and did not specify alternate (lower) contactor pickup voltage criteria.

In response to this concern the licensee performed preliminary calculations based on actual circuit lengths and contactor pickup criteria provided in a February 24, 1982, letter (L-82-65) to the NRC. This letter cited contactor pickup voltages ranging from 71% to

76% of 120 volts, based on data supplied by the vendor. The preliminary calculations identified control circuits for three safety-related MOVs as having low voltage under degraded voltage conditions. They included circuits for Pressurizer Relief Isolation Valves MOV-3-535 and MOV-4-535, and Steam Generator Sample Valve MOV-3-1427. The preliminary calculations showed that these circuits would have voltage deficits of approximately 1% to 2%.

The licensee entered this item into the corrective action program as AR 1676661 and performed a prompt operability determination. The licensee's proposed actions include the following: (1) implement a design modification to increase the control power transformer size for the three MOVs, (2) add the control circuits for the three MOVs to the site's low margin list, and (3) recreate analysis and test data in support of letter L-82-211.
Based on the original criteria in Letter L-82-211and 2008 test data for a size 4 contactor that operated successfully at 70% voltage, the licensee concluded that there was reasonable assurance of operability for these MOVs pending final resolution.

Analysis: The inspectors determined that the failure to have retrievable test data and calculations to support acceptance criteria for MCC control circuit voltage was a performance deficiency. The finding was more than minor because it affected the Mitigating Systems Cornerstone attribute of Design Control, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. In addition, the finding is similar to IMC 0612 Appendix E, example 3.j because the issue resulted in a condition where there was a reasonable doubt with respect to operability of safety-related components. Specifically, there was reasonable doubt as to whether safety-related MCC control circuits would have sufficient voltage to function during a degraded voltage condition. The finding was considered to be of very low safety significance (Green) since this was a design deficiency confirmed not to have resulted in a loss of operability or functionality. The team determined that no cross cutting aspect was applicable to this performance deficiency because this finding was not indicative of current licensee performance.

Enforcement: 10 CFR 50, Appendix B, Criterion III, Criterion XVII, "Quality Assurance Records," requires, in part, that sufficient records shall be maintained to furnish evidence of activities affecting quality. It also requires that inspection and test records identify the type of observation, the results, the acceptability, and the action taken in connection with any deficiencies noted, and that the records be identifiable and retrievable. Contrary to the above, on August 12, 2011 the licensee failed to maintain sufficient records to furnish evidence of activities affecting quality. Specifically, the licensee was not able to retrieve test data and calculations supporting an acceptance criterion that assures the reliability and availability of minimum MCC voltage to provide adequate voltage to MCC control circuits. Because this violation was of very low safety significance and because the issue was entered into the licensee's CAP as AR 1676661, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy and designated as NCV 05000250/2011008-03 and 05000251/2011008-03 Failure to Maintain Adequate Records to Support Acceptance Criteria in Design Calculations.

b.2 Findings

Introduction: The inspectors identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to perform adequate voltage calculations for safety-related equipment with two examples.

<u>Description:</u> The team identified two examples of design control violations associated with electrical calculations. The issues discussed below are applicable to both units.

<u>Example 1: Inadequate calculations to support basis for degraded voltage relay setpoint</u>
Staff positions defined in NRC Generic Letter to FPL dated June 3, 1977 states that the selection of voltage and time delay setpoints for the degraded voltage relays shall be determined from an analysis of the voltage requirements of the safety-related loads at all on-site system distribution levels. The team noted that the voltage requirements for some safety-related loads were not properly considered in the calculation that determined the degraded voltage relay setpoints for Unit 3.

Calculation PTN-3FSE-07-001, Unit 3 Safety-related AC electrical distribution PSB-1, Short Circuit, Voltage Drop and Bus Loading contained the following errors:

- Calculations for motor starting voltage during load sequencing assumed a minimum administratively controlled switchyard voltage of 233kV instead of the lower voltage afforded by the degraded voltage relays. In response to this concern, the licensee initiated AR 1677149 and performed preliminary calculations for load sequencing based on degraded voltage relay setpoints defined in Technical Specifications. These calculations showed that the safety buses could remain connected to the offsite power with switchyard voltage as low as approximately 220kV for train A and 224kV for train B. These calculations showed that all motors met their specified starting voltage criteria of 80% of rated voltage except for the containment spray pumps, 3P214A (78.19%) and 3P214B (76.82%). The licensee noted that Calculation 21701-523-E-02, Voltage Drop for A.C. & D.C. Control Circuits for Unit 3 [Plant Change/Modification (PC/M) 83-154], Rev. 1 showed that the motors were able to accelerate with 70.7% voltage without tripping their overcurrent protection.

- No calculations were available to start individual motors during degraded voltage conditions. In response to this concern, the licensee initiated AR 1677149-02 and performed preliminary calculations for starting individual motors with the safety buses near the degraded voltage relay setpoint defined in Technical Specifications. These calculations again showed that the containment spray pumps did not meet their 80% starting voltage specification; 3P214A (77.82%) and 3P214B (76.5%), but were still acceptable as noted above. In addition, two emergency containment cooler fans exhibited voltages below their 80% starting voltage specification; 3V30B (78.87%) and 3V30C (79.86%). The licensee concluded that these motors would not stall or trip their overcurrent protection during degraded voltage based on evaluations in Calculation 21701-523-E-02.

- Degraded voltage calculations did not address voltage requirements for non-motor loads such as the constant voltage transformer (CVT). In response to this concern, the licensee initiated AR 1677149-02 and evaluated voltage available to the CVTs. This evaluation determined that the voltage at the terminals of the CVTs under degraded voltage conditions would be below the

432V (90%) minimum voltage specified. The vendor indicated that reduced input voltage could degrade the tolerance of the output voltage from its specified ± 2% to approximately ± 3%. This effect was considered by the licensee to be within the available voltage margin of the affected 120Vac instrument panel circuits.

- Calculation PTN-3FSE-07-001 provided inputs to Calculation PTN-BFSE-90-006, Motor Operated Valve Voltage Drop Calculations, Rev. 26 for calculating voltage to Generic Letter 89-10 motor operated valves (MOV). The inputs from Calculation PTN-3FSE-07-001 used the minimum administratively controlled switchyard voltage 233kV instead of the degraded voltage relay setpoints defined in Technical Specifications. In response to this concern, the licensee initiated AR 1673843 and evaluated available torque using the worst case voltages at MCCs from the preliminary load sequencing calculations described for the motors above. The licensee concluded that by using these conservatively bounding voltages, all safety-related MOVs would still have sufficient available torque to start and run. Based on the above evaluations, the team concluded that there was reasonable expectation of operability for the affected circuits, pending formal re-analysis.

<u>Example 2: Lack of analysis to ensure adequate voltage for safety-related loads supplied by 120 Vac vital buses</u>

The safety-related 120Vac instrument panels can be supplied from their primary source consisting of a battery supplied 120Vac inverter, or an alternate source consisting of a Constant Voltage Transformer (CVT) that is supplied by a 480 volt vital MCC. Although the output voltage of both sources is regulated to within ±2%, variables such as circuit length and loading must be controlled to ensure adequate voltage at safety-related loads under accident loading conditions.

The team learned through interviews that voltage calculations were not available for the original installation. However, for recent modifications to the 120vac system (Panel 3P08) the licensee has analyzed the effect of loading changes (including the effect on voltage drop). The team reviewed selected modifications and noted that the voltage drop evaluations were either qualitative, or non-conservative. For example, PCMs 04-112 and 04-113 evaluated load additions to various non-safety and safety-related 120Vac circuits and assumed a voltage drop of approximately 1 volt from the inverter to the distribution panel. PCM 07-055 concluded that the additional voltage drop of approximately 1% due to new equipment was “negligible”. The evaluation in PCM 08-025 concluded that the load remained within the ratings of the inverters and circuit breakers and that no adverse voltage drop effects were anticipated.

As a result of the team’s review, the licensee performed preliminary calculations for Panel 3P23 which determined that actual voltage drop from Inverter 3Y02 to Panel 3P23 was 2.97V and from CVT 3Y02A to Panel 3P23 the voltage drop was 5.37V. These voltage drops were considerably larger than the 1V assumed for the circuits evaluated in PCMs 04-112 and 04-113 R1.

The team noted that voltage requirements for electrical loads are typically ±10% of rated voltage. Considering the ±2% voltage regulation of the power source and >4% voltage drop from the worst case source (the CVT), the team concluded that for 120V rated equipment there was less than 4% margin for voltage drop for the rest of the circuit. As a result of the low margin, the team concluded that the lack of initial calculations for the 120Vac panels adversely affected the ability of the licensee to evaluate 120Vac system changes that could adversely affect the operability of safety-related loads. Additionally, the team noted that the licensee's maintenance procedure that periodically measures the output voltage of the CVT did not have proper acceptance criteria because it only required the voltage to be "approximately" 120 volts and did not require the voltage to be within the design requirement of ±2%. The combination of the lack of calculations, and the lack of proper acceptance criteria resulted in a reasonable doubt that the CVT could not perform its design bases function.

In response the team's concern, the licensee initiated ARs 01676754 and 01676641, and provided a more detailed preliminary analysis of loads supplied by Instrument Panel 3P23. The analysis noted that output voltage measurements for the CVTs over the last 3 years have been >120VAC and that some equipment such as the Hagan instrument modules are rated less than 120VAC (117V±10%), thus providing reasonable assurance that adequate voltage would be supplied by the alternate CVT source until a formal evaluation is performed.

Analysis: The inspectors determined that the failure to perform adequate design calculations to support the setpoint of the degraded voltage relays and the failure to perform adequate design calculations for the 120Vac instrument system was a performance deficiency. The finding was more than minor because it affected the Mitigating Systems Cornerstone attribute of Design Control, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. In addition the finding is similar to IMC 0612 Appendix E, example 3.j because the issue resulted in a condition where there was a reasonable doubt with respect to operability of safety-related components. Specifically, there was reasonable doubt as to whether the components would have adequate voltage to perform their safety function during a degraded voltage condition. The finding was considered to be of very low safety significance (Green) since this was a design deficiency confirmed not to have resulted in a loss of operability or functionality. The team determined that no cross cutting aspect was applicable to this performance deficiency because this finding was not indicative of current licensee performance.

Enforcement: 10 CFR 50, Appendix B, Criterion III, "Design Control," requires, in part, that design control measures provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculational methods, or by the performance of a suitable testing program. Contrary to the above, as of August 12, 2011 the licensee's design control measures failed to check the adequacy of design for the degraded voltage relay setpoint and the adequacy of design for the voltage to the 120VAC Instrument AC system. Specifically, the licensee's degraded voltage analyses failed to properly consider the voltage requirements of starting motors, MOVs and the CVTs; and did not have adequate calculations to enable proper evaluation of changes to the 120Vac system. Because this violation was of very low safety significance and because the issue was entered into the licensee's CAP as ARs 1677149, 1677149-02, 1673843, 1677149-02, 1676754 and 01676641 this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy and designated as NCV 05000250/2011008-04 and 05000251/2011008-04 Inadequate Voltage Calculations.

.2.5 Unit 4 MOV 843A/B, HHSI Pump to Cold Leg Injection Valves

a. Inspection Scope

The team reviewed the plant's TS, UFSAR, DBDs, and P&IDs to establish an overall understanding of the design bases of valves 843A and 843B. The team reviewed records of surveillance testing, maintenance activities, and applicable corrective actions to verify that potential degradation was being monitored and prevented or corrected. The team also conducted interviews with plant personnel to discuss the history of the valve testing, maintenance, and details of the corrective actions that had been completed. The team also conducted a visual inspection of both valves to verify that any degraded material conditions were being appropriately addressed. In addition, the team verified that the power demand requirements for the valves were captured in electrical load and degraded voltage calculations. The team also verified that the worst case/highest differential pressure was used to determine the maximum valve opening and/or closing requirements to ensure that the valve would perform its intended safety-related design basis function. A review was conducted of the licensee's testing procedures and a review of results from diagnostic valve testing was performed to verify that both MOVs were tested in a manner that would detect a malfunctioning valve and verify compliance with Generic Letter (GL) 89-10 program plan requirements.

b. Findings

No findings were identified.

.2.6 120Vac Instrument Bus 3P08/3P27

a. Inspection Scope

The team reviewed 120Vac Instrument System load lists, design calculations, and modification packages to determine whether inverters were applied within their specified ratings, and whether system voltage drop had been adequately evaluated. The team reviewed system arrangement drawings, DBD and TS to determine whether the system design was consistent with its design and licensing bases. The team reviewed maintenance procedures, technical manuals, schedules and completed work orders to determine whether the 120 Vac instrument system was being properly maintained. The team reviewed maintenance rule scoping criteria for the 120 Vac instrument system to determine whether the system and components were being properly tracked. The team reviewed maintenance records and corrective action history for 120 Vac instrument system components to determine whether there had been any adverse operating trends. In addition, the team performed a visual inspection of the components to assess material condition and the presence of hazards.

b. Findings

See Section 1R21.2.3 and 2.4

.2.7 Unit 4 Motor Operated Valve (MOV) 626 and Check Valves 4-721A/B/C (Containment Related Sample)

a. Inspection Scope

The inspectors reviewed applicable portions of the plant's TS, UFSAR, DBDs, system descriptions, and system lesson plans to identify design basis requirements for MOV 4-626 and check valves 4-721A/B/C. Component walkdown of MOV 4-626 was conducted to verify that the installed configurations would support the design basis function under accident conditions and had been maintained to be consistent with design assumptions. The inspectors conducted a non-intrusive visual inspection of MOV 4-626 to verify that potentially degraded material conditions were being appropriately addressed. The inspectors compared valve testing data with the design requirements to verify that valve performance was adequate. The inspectors reviewed calculations that determined required valve actuator torque and thrust limits and traced these requirements to the vendor-supplied data. The inspectors interviewed the system engineer and MOV engineer to discuss the valve analysis as well as operational and maintenance history to verify that potentially degraded conditions were being appropriately addressed. Control logic diagrams were reviewed to verify that controls and interlocks were consistent with the design-basis performance requirements and operating procedures. The inspectors reviewed system modifications to verify that modifications did not degrade the performance capability of the valves and were appropriately incorporated into relevant drawings and procedures. Control panel indicators were observed and operating procedures reviewed to verify that component operation and alignments were consistent with design and licensing bases assumptions. 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 that individual tests and analyses served to validate component operation under accident conditions. The inspectors examined maintenance rule documentation to verify that the valves were properly scoped, and monitored. Vendor documentation, system health reports, preventive and corrective maintenance history, and corrective action system documents were reviewed in order to verify that potential degradation was monitored or prevented and that scheduled component replacements were consistent with vendor recommendations and equipment qualification life. Additionally, associated electrical calculations were reviewed to confirm that the design basis minimum voltage at the MOV motor terminals was consistent with the design inputs used in the MOV thrust calculations, and that the thermal overload heaters protecting the motors would not prematurely trip. The team verified by review of control diagrams, that the operation of the MOV is consistent with the design basis and operational requirements. Also, the team verified testing and calibration of instruments related to the valve.

b. Findings

No findings were identified.

.2.8 Emergency Diesel Generator (EDG) 3A and 3B Fuel Oil Supply

a. Inspection Scope

The team reviewed the UFSAR, TS, DBD, and P&IDs to establish an overall understanding of the design bases of the EDG with special emphasis on the fuel oil supply and delivery system. Design calculations and site procedures were reviewed to verify that the design bases and design assumptions had been appropriately translated into these documents. The team reviewed system modifications to verify that the modifications did not degrade the component's performance capability and were appropriately incorporated into relevant drawings and procedures. The team focused on vulnerability to flooding. Component walkdowns were conducted to verify that the installed configurations would support their design bases function under accident, flood, and loss of offsite power conditions and had been maintained to be consistent with design assumptions. Operating procedures were reviewed to verify that component operation and alignments were consistent with design and licensing bases assumptions. Test procedures and results were reviewed against the design bases to verify that acceptance criteria for tested parameters were supported by calculations or other engineering documents and that tests and analyses served to validate component operation under accident and loss of offsite power conditions. Vendor documentation, preventive and corrective maintenance history, and corrective action system documents were reviewed to ascertain that potential degradation was monitored or prevented and that component rework and replacement was consistent with equipment qualification life.

b. Findings

Introduction: The team identified a SL-IV NCV for the licensee's failure to update the Updated Final Safety Analysis Report (UFSAR) for a modification affecting the Unit 3 emergency diesel generator fuel oil storage tank. Specifically, a common-mode failure method was not described in the UFSAR that required proceduralized manual actions during design bases rain events.

Description: The EDG fuel oil storage and transfer system is credited in the UFSAR, Section 9.15.1.1, for providing a storage capacity of fuel oil for seven days and maintaining that fuel supply to at least one Unit 3 EDG. In addition, UFSAR, Section 9.15.1.2, states that diesel oil is normally transferred from the diesel oil storage tank automatically to maintain diesel oil day tank level. In April 2005, Plant Change/Modification 04-036 was approved to replace the existing aggregate base surrounding the Unit 3 EDG fuel oil storage tank with an impervious surface of concrete. The berm and associated ramps were installed in order to ensure compliance with new oil pollution prevention requirements by capturing any oil spills. The licensee conducted a 10 CFR 50.59 evaluation to review potential flooding of the Unit 3 EDG fuel oil storage tank area due to the modification. The evaluation identified that the modification presented a new common-mode failure method (design basis rain event) for the EDG fuel oil storage tank isolation valves (solenoid valves SV-3-2051A & B), which, during a design basis rainfall, would become submerged, fail closed, and prevent the flow of diesel fuel oil from the storage tank to the day tanks. The licensee installed reach rods onto manual bypass valves 3-70-010A & B and implemented procedural guidance to manually open the bypass valves as part of hurricane preparations and to implement operator actions during rounds to drain any standing water in the tank area.

The licensee's procedure for updating the UFSAR, ENG Q1-3.4, UFSAR Updating, Rev.5 contained guidance which stated the existing level of detail typically provides a sufficient basis for determining whether an UFSAR change is required. The version of the UFSAR in effect at the time of the modification referenced downstream air-operated valves and other solenoid valves in the diesel fuel oil flow path as well as their associated manual actions. ENG Q1-3.4 also stated, that new or revised restrictions on facility operation should be included in the UFSAR. The inspectors determined that although the licensee's evaluation concluded that prior NRC approval was not required for the modification, the licensee failed to translate a description of the new common-mode failure (design basis rain event) of the solenoid valves and the alternate use of the manual valves into the UFSAR. Failure to update the UFSAR to include this new information resulted in erroneous information being contained in the current version of the UFSAR. Specifically, for design bases rain events, the operation of the fuel oil transfer system was not automatic as described in the UFSAR. This issue was entered into the licensee's corrective action program as AR 1679078.

Analysis: The failure to update the UFSAR as required by procedure ENG Q1-3.4 and 10 CFR 50.71(e) was a performance deficiency. This performance deficiency was considered as traditional enforcement because, not having an adequately updated UFSAR hinders the licensee's ability to perform adequate 10 CFR 50.59 evaluations and can impact the NRC's ability to perform its regulatory function such as, license amendment reviews and inspections. In addition, the team determined that the performance deficiency was material to safety because the modification resulted in a common-mode failure method that required proceduralized manual actions for the Unit 3 EDGs to meet their mission time during design bases rain events. This violation was determined to be a SL-IV violation using Section 6.1 of the NRC's Enforcement Policy because the erroneous information was not used to make an unacceptable change to the facility or procedures. Cross-cutting aspects are not assigned for traditional enforcement violations.

Enforcement: 10 CFR 50.71(e) requires, in part, that the licensee shall update periodically, the final safety analysis report originally submitted as part of the application for the license, to assure that the information included in the report contains the latest information developed. The submittal shall include the effects of all changes made in the facility or procedures as described in the final safety analysis report and all safety analyses and evaluations performed by the licensee in support of conclusions that changes did not require a license amendment in accordance with 10 CFR 50.59(c)(2). Contrary to the above, from April 2005, to August 12, 2011, the licensee did not update the UFSAR to include the effects of changes made to the facility and procedures as part of the modification that affected the Unit 3 fuel oil storage tank. Specifically, a common-mode failure method was not described in the UFSAR that required proceduralized manual actions during design bases rain events because this violation was determined to be a SL-IV violation and was entered into the licensee's corrective action program as AR 1679078, it is being treated as an NCV in accordance with Section 2.3.2 of the NRC Enforcement Policy. The violation is identified as: NCV 05000250, 251/2011008-05, Failure to Update the UFSAR to Reflect Changes to the Unit 3 Fuel Oil Storage and Transfer System.

.2.9 Cross-tie Breakers 3AD07,4AD07 and Associated Components

a. Inspection Scope

The team reviewed load flow calculations to verify that the cross-tie components were assessed within their specified capacity ratings under worst case accident loading. The team reviewed EDG loading calculations to verify that loads do not exceed EDG capacity and that the licensee properly accounted for frequency changes. Also, the team reviewed design bases documents and operation procedures to verify that the EDG loading calculation accounted for all accident loads. In addition, the team reviewed short circuit calculations to verify that the duty cycle does not exceed the equipment protection ratings. The team reviewed calculations for protective device settings to determine whether the breakers were subject to spurious tripping, and whether the breakers were selectively coordinated with upstream devices. The team reviewed completed test procedures for the cross-tie breakers to verify the trip accuracy of breakers. One-line and schematic diagrams were reviewed to verify proper configuration of the electrical distribution system. The team performed a walkdown to verify material condition of the cross-tie equipment and reviewed a sample of corrective action system documents to confirm that the licensee adequately identified, evaluated, and dispositioned adverse conditions. The team also reviewed off-normal and emergency operating procedures to verify that adequate guidance exists for operators to perform the 4KV cross-tie during a station blackout event.

b. Findings

No findings were identified.

.2.10 Unit 3 Switchyard Breakers for Start-up Transformers

a. Inspection Scope

The team reviewed battery sizing calculations to verify that loads do not exceed battery bank capacity. For station blackout event and loss of coolant accident scenarios, the team verified that all control circuit breaker loads were accounted for in the loading calculation. Also, a review of the battery service test was performed to verify that for the required current, the battery can provide the adequate voltage during an accident. One-line and schematic diagrams were reviewed to verify proper configuration of the electrical controls. The team performed a walkdown to verify material condition of the switchyard batteries and start-up transformers.

Also, the team reviewed bus load flow, short-circuit and voltage drop calculations to determine whether the start-up transformers were applied within their specified capacity ratings under worst case accident loading and grid voltage conditions. The team reviewed schematic diagrams and calculations for the transformer to determine whether equipment operation was consistent with the design basis. The team reviewed calculations for protective device settings to determine whether the feeder breakers were subject to spurious tripping, and whether the protective devices were selectively coordinated with upstream devices. The team reviewed maintenance schedules, vendor data, and procedures for breaker routine maintenance and overhauls to determine whether scheduled maintenance activities were consistent with vendor recommendations. The team reviewed recent corrective action documents and completed maintenance and testing records to determine whether there were any adverse operating trends. In addition, the team performed a visual inspection of the breaker to assess observable material condition and the presence of hazards.

b. Findings

Introduction: The team identified a Green NCV of 10 CFR 50.63, for the licensee's failure to test the station blackout (SBO) cross-tie components under loaded conditions. Since 1991, the licensee failed to verify the capability of the SBO crosstie and associated components to carry the required amperage during post installation tests or subsequent periodic maintenance tests.

Description: In 1991, Turkey Point installed a unit crosstie at the 4.16 kV level to comply with the SBO Rule (10 CFR 50.63). UFSAR, Section 8.2.2.2, states, in part, that the ability to align an alternate source of electrical power in 10 minutes during a station blackout event is provided by a cross-tie which allows the 4.16 kV switchgear of each unit to be connected together. The cross-tie is sized to carry 500 amperes which is the continuous Unit 4 EDGs' rated capacity. The 4.16 kV system has the capability via the cross-tie and the swing switchgear to connect any EDG with either the "A" or "B" switchgear of the opposite unit. The design provides the capability to perform this function from within the Control Room.

The licensee's periodic maintenance program for the cross-tie components included breaker functionality testing on an eighteen month frequency, and included an inspection of the breaker connections and a meggar check of the cross-tie cable on a fifty-four month frequency.

The team noted that the licensee did not apply an electrical load to the SBO components during post installation testing that was performed in 1991. Additionally, the team noted that since 1991, the licensee's periodic maintenance program does not apply an electrical load to confirm the capability of the cross-tie components to carry the required load during an SBO event. The team determined that the licensee's failure to load the components since 1991 is a failure to provide reasonable assurance that the components are capable of fulfilling their safety function during a SBO event. Loading the SBO cross-tie is the most effective method to demonstrate that the system (terminations, breakers, cable, etc.) will be able to perform their design basis function. This issue was entered into the licensee's corrective action program as AR 1676402 and 1680428 to establish a method and frequency for loading the SBO cross-tie cable. Additionally, during the inspection the licensee performed resistance checks of the cable with favorable results.

Analysis: The team determined that the licensee's failure to perform adequate post installation testing and periodic testing as required by the licensee's commitment to RG 1.155, "Station Blackout," was a performance deficiency. This finding was more than minor because it affected the Mitigating Systems cornerstone attribute of Equipment Performance and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems and components that respond to initiating events to preclude undesirable consequences (i.e. core damage). Specifically, since the installation of cross-tie components to meet SBO requirements, the licensee failed to test the components in a loaded condition. The lack of testing resulted in a reduced reliability of the SBO cross-tie. In accordance with NRC IMC 0609.04, "Initial Screening and Characterization of Findings," the team conducted a Phase 1 SDP screening and determined the finding to be of very low safety significance (Green) because it was not a design issue resulting in loss of function, did not represent an actual loss of a system safety function, did not result in exceeding a TS allowed outage time, and did not affect external event mitigation. The team determined that no cross cutting aspect was applicable to this performance deficiency because this finding was not indicative of current licensee performance.

Enforcement: 10 CFR 50.63, states, in part, that nuclear power plants must be able to withstand for a specified duration and recover from a station blackout. RG 1.155, Sections 3.3.6 states, in part, that a system or component added specifically for a SBO event that initial tests should be performed to verify that modifications were performed properly. RG 1.155, Sections 3.3.7 states, in part, that a system or component added specifically for a SBO event, should be inspected, maintained, and tested periodically to demonstrate equipment operability and reliability.

Contrary to the above, since 1991, the licensee failed to perform appropriate initial tests and periodic tests to demonstrate equipment operability and reliability to withstand and recover from a station blackout. Specifically, the licensee has not verified the capability of the cross-tie components to carry the required amperage via SBO cross-tie components. Because this finding was of very low safety significance and because it was entered into the licensee's CAP as AR 1676402 and AR 1680428, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy and is being designated as NCV 05000250, 251/2011008-06, Failure to Test the SBO Cross-Tie under Loaded Conditions

.2.11 Refueling Water Storage Tank (RWST) Valves 870A and B

a. Inspection Scope

The inspectors reviewed applicable portions of the plant TS, UFSAR, DBDs, system descriptions, and system lesson plans to identify design basis requirements for manual RWST cross-tie valves 870A and 870B. Component walkdown of valves 870A&B were conducted to verify that the installed configurations would support the design basis function under accident conditions and had been maintained to be consistent with design assumptions. The inspectors conducted a non-intrusive visual inspection of valves 870A&B to verify that potentially degraded material conditions were being appropriately addressed. The inspectors reviewed operational and maintenance history to verify that potentially degraded conditions were being appropriately addressed. Operating procedures were reviewed to verify that component operation and alignments were consistent with design and licensing basis assumptions. The inspectors examined maintenance rule documentation to verify that the valves were properly scoped, and monitored. Vendor documentation, system health reports, preventive and corrective maintenance history, and corrective action system documents were reviewed in order to verify that potential degradation was monitored or prevented.

b. Findings

No findings were identified.

.2.12 3A HHSI Pump

a. Inspection Scope

The team reviewed the plant's TS, UFSAR, DBDs, and P&IDs to establish an overall understanding of the design bases of the pumps. Design calculations and site procedures were reviewed to verify that the design bases and design assumptions had been appropriately translated into these documents. Component walk downs were conducted to verify that the installed configurations would support their design bases function under accident/event conditions and had been maintained to be consistent with design assumptions. 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/or analyses validated component operation under accident/event conditions. Vendor documentation, preventive and corrective maintenance history, and corrective action system documents were reviewed to verify that potential degradation was being monitored.

b. Findings

See Section 1R21.2.2

.2.13 Turbine Plant Cooling Water Isolation Valves (TPCW) - 4882/4883

a. Inspection Scope

The team reviewed the plant TS, UFSAR, DBDs, and P&IDs to establish an overall understanding of the design bases of pneumatically operated valves (POV) 4882 & 4883. The team reviewed records of surveillance testing, maintenance activities, and applicable corrective actions to verify that potential degradation was being monitored and prevented or corrected. The team also conducted interviews with plant personnel to discuss the history of valve testing, maintenance, and corrective actions that had been completed. The team also conducted a visual inspection of all valves to verify that any degraded material conditions were being appropriately addressed. The team also examined documentation to verify that the valves were properly scoped, and monitored in the maintenance rule program.

b. Findings

.2.14 Emergency Diesel Generator (EDG) 4A and 4B Fuel Oil Supply

a. Inspection Scope

The team reviewed the UFSAR, TS, DBD, and P&IDs to establish an overall understanding of the design bases of the EDG with special emphasis on the fuel oil supply and delivery system. Design calculations and site procedures were reviewed to verify that the design bases and design assumptions had been appropriately translated into these documents. The team reviewed system modifications to verify that the modifications did not degrade the component's performance capability and were appropriately incorporated into relevant drawings and procedures. The team focused on vulnerability to flooding. Component walkdowns were conducted to verify that the installed configurations would support their design bases function under accident, flood, and loss of offsite power conditions and had been maintained to be consistent with design assumptions. Operating procedures were reviewed to verify that component operation and alignments were consistent with design and licensing bases assumptions. Test procedures and results were reviewed against the design bases to verify that acceptance criteria for tested parameters were supported by calculations or other engineering documents and that tests and analyses served to validate component operation under accident and loss of offsite power conditions. Vendor documentation, preventive and corrective maintenance history, and corrective action system documents were reviewed to ascertain that potential degradation was monitored or prevented and that component rework and replacement was consistent with equipment qualification life.

b. Findings

No findings were identified.

.2.15 Unit 3 Load Center and Switchgear Rooms - Alternate Cooling Function

a. Inspection Scope

The team reviewed the UFSAR, PI&Ds, design specifications and design basis temperature limits for electrical components in the load center and switchgear room to establish an overall understanding of the alternate cooling function. The team reviewed calculations, analyses, and modifications to verify the capability of the alternate cooling function to remove the required heat loads during postulated events. The team reviewed the operating procedure to verify the adequacy of guidance for manual operator actions. Additionally, the team performed a walkdown to verify the feasibility of implementing the alternate cooling strategy.

b. Findings

See Section 1R21.2.2

.3 Operating Experience (4 Samples)

a. Inspection Scope

The team reviewed four operating experience issues for applicability at the Turkey Point Nuclear Plant. The team performed an independent applicability 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 1988-14. Potential Problems with Electrical Relays [General Electric HFA and HGA Relays]
- NRC Information Notice 2007-09, Equipment Operability Under Degraded Voltage Conditions
- H. B. Robinson, LER 2010-005-00: EDG Inoperable Due to Inverter Failure
- NRC Information Notice IN 2010-09, Importance of Understanding Circuit Breaker Control Power Indications

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA6 Meetings, Including Exit

On September 8, 2011, the team presented the inspection results to Mr. M. Kiley and other members of the licensee's staff. Proprietary information that was reviewed during the inspection was returned to the licensee.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel:
S. Bell, Mechanical Design Engineer
S. Chaviano, Design Engineering Supervisor
J. Garcia, Engineering Manager
R. Everett, Licensing
R. Tomonto, Licensing Manager

NRC personnel
B. Desai, Chief, Engineering Branch Chief 1, Division of Reactor Safety, RII
S. Stewart, Senior Resident Inspector, Turkey Point

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened and Closed

05000250 & 251/2011008-01	NCV	Failure to Verify or Check the Adequacy of Design for Safety-Related Components with Four Examples (Section 1R21.2.2)
05000250 & 251/2011008-03	NCV	Failure to Maintain Adequate Records to Support Acceptance Criteria in Design Calculations (Section 1R21.2.4.b.1)
05000250 & 251/2011008-04	NCV	Inadequate Voltage Calculations (Section 1R21.2.4.b.2)
05000250 & 251/2011008-05	SL-IV	Failure to Update the UFSAR to Reflect Changes to the Unit 3 Fuel Oil Storage and Transfer System (Section 1R21.2.8)
05000250 & 251/2011008-06	NCV	Failure to Test the SBO Cross-Tie under Loaded Conditions (Section 1R21.2.10)

Opened

05000250 & 251/2011008-02	URI	Molded Case Circuit Breaker Testing (Section 1R21.2. 3)

LIST OF DOCUMENTS REVIEWED

Calculations
EC-089, DC Control Loop Lengths, Rev. 8
EC-193, Adequacy of Equipment Voltages During Station Blackout, Rev. 1
5177-311-EB-05, Determine DC Voltage on 4KV Class…, 7/8/1986
5177-272-E-06, 125V DC Actuated Control Circuits…, Rev. 0
PTN-3FSE-07-001, Unit 3 Safety-related AC Electrical Distribution PSB-1…, Rev. 1
PTN4- FE-PCSA-1991-0806, Overcurrent Protection – Station Blackout Tie, Rev. 0
PTN-BFJE-90-004, Potential Emergency Diesel Generator (EDG) KW Loading …, Rev. 1
PTN-BFJE-92-028, Valve Actuator Motor Thermal Overload Heater Sizing, Rev. 22
PTN-BFJE-90-006, Motor Operated Valve Voltage Drop Calculations GL 89-10, Rev. 26
PTN-BFJM-90-079, NRC Generic Letter 89-10 MOV Actuator Evaluation, Rev. 31
PTN-BFJE-94-002, Battery Size and Voltage Drop Calcs for Stationary Batteries …, Rev. 7
EC-127, Ampacity and Voltage Drop, Rev. 5
EC-128, Ampacity and Voltage Drop, Rev. 5
EC-138, Switchgear, Load Center and MCC Load Study, Rev.4
EC-043, Cable Sizing Calculation New Emergency Diesel Generator Building, Rev. 6
18712-473-E-01, DC Voltage Drop Calculation for Safe Shutdown Components, Rev. 1
18712-115-E-02, Spare Station Battery System Short Circuit, Rev. 1
EC-136, Existing Stationary Battery Cell Sizing and Voltage Drop Calculation, Rev. 4,
5177-462-E-03, Station Battery Loading Study, Rev. 1,
21701-523-E-01, Unit 3 Load Centers Undervoltage Relay Set Points, Rev. 1
21701-523-E-02, Verification of Degraded Voltage Relay Protection …, Rev. 0
5177-311-E-04, Voltage Drop for A.C. & D.C. Control Circuits for Unit 3 (PC/M 83-154), Rev. 1
EC-144, Allowable Cable Lengths for AC Control Circuits, Rev. 2
EC-145, PSB-1 Voltage Analysis for Electrical Auxiliary System, Rev. 5
PTN 3 FE PCSA 1991 0613, Ground Detecting Alarm – Grounding Trans, Rev. 0
PTN-BFJE-91-017, Turkey Point Units 3 & 4 Fast Transfer, Rev. 0
PTN-BJFE-91-019, AC Emergency Power System Coordination Calculation, Rev. 11
PTN-BJFE-92-021, Turkey Point Units 3 & 4 Load Centers – Undervoltage …, Rev. 0
PTN-BFJM-90-079, NRC Generic Letter 89-10 MOV Actuator Evaluation, Rev. 31
PTN-BFSE-08-001, Vital Inverter Output Loading 3(4)Y01, 3(4)Y02, 3(4)Y05, 3(4)Y07, Rev. 0
PTN-BFSE-90-006, Motor Operated Valve Voltage Drop Calculations, Rev. 26
M12-342-01, Cooling Requirements for the Load Center and Switchgear Rooms, Rev. 3
PTN-3FJC-92-001, EDG Radiator Exhaust Duct, Rev. 0
PTN-BFSM-98-0010, AFW Pump NPSH Assessment, Rev. 1
M08-584-01, EDG Fuel Oil Day Tank Depletion / Fill Timing Calculation During Automatic Level or Manual Control, Rev. 0
53-20L.6000, EDG Diesel Fuel Oil Storage Tank Required Capacity, Rev. 0
PTN-BFJM-92-012, Aux Feedwater System PIPE-FLO/NET-FLO Computer Model, Rev. 0
PTN-BFJM-90-074, Diesel Oil Storage Tank Capacity, Rev. 0
87-263.6005, Diesel Fuel Oil Transfer Pump Net Positive Suction Head …, Rev. 0
PTN-3FJM-92-004, Unit 3 EDG Fuel Oil Storage Tank Supply, Rev. 0
87-263.6002, Maximum Pressure on Fuel Oil Day Tanks 4A and 4B, Rev. 0
M08-388-05, Surveillance Procedure Requirements for Diesel Fuel Oil Transfer Pumps, Rev. 0
PTN-BFJM-90-079, NRC GL 89-10 MOV Actuator Evaluation, Rev. 31
5610-062-DB-001, SI System NPSH Design Bases, Rev. 9
M12-383-01, Refueling Water Storage Tank Vortex Calculation, Rev. 2
PTN-ENG-SEMS-11-075, Flow Effect on Determining RWST Submergence, Rev. 0
SE/SS-FPL-2079, SIS Total Injection Flow At RCS Pressures, 11/02/1994

PTN-BFJM-90-076, NRC GL 89-10 MOV Design Basis DP Determination, Revs. 15 and 18
PTN-BFJM-90-077, NRC Generic Letter 89-10 MOV Thrust Determination, Rev. 16
PTN-BFJM-90-079, NRC Generic Letter 89-10 MOV Actuator Evaluation, Revs. 5 and 31
PTN-BFJM-92-020, Velan – MOV Vendor Calculation, Rev. 0

Completed Procedures
4-OSP-005.1, SBO Breaker Operability Test, 6/13/2010
3-OPS-005.1, SBO Breaker Operability Test, 6/13/2010
4-OSP-206.1, Inservice Valve Testing – Cold Shutdown, 9/19/2011
3-OSP-203.1, Train A Engineered Safeguards Integrated Test, 4/5/09
3-OSP-203.2, Train B Engineered Safeguards Integrated Test, 4/3/09
0-OSP-062.2, Safety Injection System In-service Test, 7/01/2011
0-OSP-062.2, Safety Injection System In-service Test, 5/22/2011
0-OSP-062.2, Safety Injection System In-service Test, 5/28/2011
0-OSP-062.2, Safety Injection System In-service Test, 1/11/2011
0-OSP-062.2, Safety Injection System In-service Test, 2/25/2011
4-OSP-062.4, Safety Injection Full Flow Test, 11/01/2009
4-OSP-062.4, Safety Injection Full Flow Test, 3/27/2009
4-NOP-019.1, Intake Cooling Water System, 6/18/2011
4-NOP-019.1, Intake Cooling Water System, 11/08/2008
4-OSP-062.4, Safety Injection System – Full Flow Test, 04/09/2011
4-OSP-206.4, Inservice Valve Testing/Refueling, 03/23/2011

Completed Work Orders
10-015, Perform Routine Relay Calibration and Associated Equipment Maintenance, 6/9/2010
07-013, Perform Routine Relay Calibration and Associated Equipment Maintenance, 9/9/2009
10-029, Perform Maintenance on Transformer, 7/7/2010
10-026, Switchyard Primary Battery Bank Op Test, 12/17/2010
10-027, Switchyard Secondary Battery Bank Op Test, 12/17/2010
09-037, Perform Maintenance on Transformer, 9/22/2009
09-007, Perform Maintenance on Transformer, 2/3/2009
08-009, Perform Maintenance on Transformer, 2/6/2008
40002004, 3AA22 Breaker Inspection #4SU TX to 3A Bus, 9/21/2010
38001016, AD07 Breaker Inspection D-D Tie, 6/12/2010
36024372, 3AD07 Breaker Inspection, 9/10/2008
31003770, AD07 Breaker Inspection D-D Tie (Swap), 8/7/2002
30013637, Perform Breaker Inspection (3AD07), 3/22/2001
38010010, Perform Breaker Inspection for 4AA05, 9/23/2009
34001985, Breaker Maintenance 4AB05 Startup Transformer, 11/15/06
39023104, Breaker Maintenance 4AB05 Startup Transformer, 4/2/2011
38024250, 4AA22 Breaker Inspection, 10/13/2009
35021667, Mode 5 Required PMTS, 11/27/2006
36019740, CV-3-2831 Overhaul AOV Actuator, 10/18/2010
36024367, Breaker Inspection 3AA17 3A/3D Bus Tie, 2/14/2009
36024369, AD06 Breaker Inspection, 1/8/2009
36024372, 3AD07 Breaker Inspection, 9/11/2008
36024399, Breaker Inspection 3AB19 3B/3D Bus Tie, 1/19/2010
36024407, 3AD06 Perform Cubicle Inspection, 9/13/2008
36024410, AD01 Cubicle Inspection, 9/13/2008
37009845, 4AD06 GTD for 4AB19 Cubicle Inspection, 4/15/2008

37014803, MOV-3-1403, Valve Did not Stroke Open, 7/11/2007
37014965, Need to Replace Aux Starter Contact, 7/13/2007
37024082, Replace Cubicle Front Panel Meter, 3/24/2009
37024083, 3AA17 Replace Cubicle Front Panel Meter, 10/7/2010
37024104, 4AB19 Replace Cube Front Panel Meter, 3/30/2011
37024105, 4AA17 Replace Cubicle Meter, 11/4/2009
37024196, Inspect ABB Type L2 Switches MOC/TOC, 6/11/2010
37024199, Inspect ABB Type L2 Switches MOC/TOC, 9/12/2008
37024630, Repair Coating Deficiencies-CR 03-2195, 11/5/2009
38001011, AD06 Breaker Inspect B-D Tie, 6/10/2010
38001012, AD06 Cubicle Inspect B-D Tie, 4/7/2010
38001014, AD01 Inspect Break A-D Tie, 6/10/2010
38001015, AD01 Inspect Cub A-D Tie, 6/13/2010
38001349, D Bus/Inspect & Clean, 6/23/2010
38002043, 4KV Bus A/B Ship Breaker to Vendor, 8/13/2009
38006768, MOV-3-1403 Grease Inspect/ Stem Lube, 1/5/2009
38012197, CV-3-2816 Overhaul AOV Actuator, 4/10/2009
38012263, 3AD06 GTD for #AB19 Cubicle Inspection, 3/27/2009
38012263, 3AB19 Cube Inspection B/D Bus Tie, 3/26/2009
38018902, Replace All 4D SWGR Lens Caps, 6/11/2010
38019538, CV-3-2831: Install Transducers, 6/8/2009
38019541, CV-3/2816: Install Transducers, 3/5/2009
38024249, 4AD01 GTD for 4AA17 Cubicle Inspection, 11/8/2009
38024249, 4AA17 Replace 152X Relay, 11/4/2009
39000419, Replace A, B, and C CTs, 12/06/2009
39000423, Replace A, B and C CTs, 12/8/2009
39013199, EQ-MOV-3-1403 MOV & Grease Inspection, 3/15/2010
39015349, CV-3-2831 Calibrated AOV Actuator, 10/21/2010
39022661, 174 Relay is Deteriorated, 11/5/2009
40002098, 3AD01 GTD to Support 3AA17 Cube Inspection, 8/30/2010
40002098, 3AA17 Cubicle Inspection 3A/3D Bus Tie, 10/10/2010
40011393, Cubicle Elevator Clutch not Lining Up, 5/5/2011
36024411, 033FYP05AD07C 4KV Cubicle Inspection, 9/13/2008
36022854, Install Pammona Jacks, 4/7/2010
38001016, AD07 Breaker Inspect D-D Tie, 6/12/2010
38001017, AD07 Breaker Inspect D-D Tie, 6/13/2010
39000424, Replace A, B, and C CTs, 6/12/2010
35021423, FIC-626 CCW from RCP Thermal Barriers, 11/11/2006
38023937, FIC-626 CCW from RCP Thermal Barriers, 11/1/2009
36008871, MOV-626 OPR O/V & MOV Static Test, 11/9/2006
37016451, MOV-4-626 Grease Inspect Stem Lube, 4/16/2008
38023910, MOV-4-626 MOV & Grease Inspection, 11/1/2009
35021423, FIC-626 CCW from RCP Thermal Barriers, 11/11/2006
38023937, FIC-626 CCW from RCP Thermal Barriers, 11/1/2009
35012814 01, Undervoltage Relay for Bus A, component 127-A1, 11/04/05
35012814 02, Undervoltage Relay from S/U Transformer X03, component 127-B1, 11/04/05
35028497 01, Undervoltage Relay for Bus A, component 127-A1, 10/14/06
35028497 02, Undervoltage Relay from S/U Transformer X03, component 127-B1, 10/14/06
35028497 03, Comp Tag Change to 127-4A1 per CRN-I-4384, Component 127-A1, 11/11/06
38017903 01, Undervoltage Relay for Bus A, component 127-4A1, 09/03/08
36025970 01, Undervoltage Relay from S/U Transformer X03, component 127-4B1, 11/27/06

36025970 02, Undervoltage Relay from S/U Transformer X03, component 127-4B1, 11/29/06
36001399 01, 3B Static Inverter 24MO : Inspt, 4/27/07
37011411 01, CVT Inspection 3Y02A, 7/7/08
38006779 01, 3B Static Inverter 24MO : Inspt, 7/10/04
40001560 01, CVT Inspection 3Y02A, 2/16/11
40001561 01, 3Y02A-Measure the CVT output voltage, 9/2/10
40036727 01, 3Y02A-Measure the CVT output voltage, 2/16/11
38019880 02, Test Starter 30806 at Reduced Voltage, 8/28/08
37025061-01, 4K4A EDG 24 Month PM Activity, 06/01/2009
4003829601, Hand Hold Plates Loose, 8/13/2010
4001290301, Strainer Needs Mechanical Cleaning, 7/16/2010
3902461501, Leak Test Affected Flange, 12/10/2009
3802404701, Replace Valve and Bolting POV-3-4882, 4/06/2009
WO 40013333, MOV-4-626 Overhaul Operator, 04/12/2011

Corrective Action Documents
00431602, Evaluation of EDG Operation within Tech Spec Limits,
00481739, Under Frequency /Over Frequency Operation of the EDGs
00457849, ABB Current Transformer in the 3D SWGR are Aging
01649834, Manual Cycling of Breakers per AR 457259 not Implemented,
2005-14614, the 4KV Under Voltage Relays 127-A1 and 127-A2
00476123, 2010 -10654 - IN 2010-09 Importance of Understanding Circ
00447741, IN 2007-34, Operating Experience Regarding Electrical Circuit Breakers
AR 585803-28, Training Brief 11-46
AR 00482116 Anomalies During Loop Coincident with Safety Injection
AR 00444940, 480V Load Center Water Leak in Room
AR 00470006, Plastic tarp above UV Panels 3C467 and 3C468
AR 00509562, Unit 3A/B Load Center Water Intrusion
AR 01671434, Starter Testing for Degraded Voltage Pick-up & Drop-out
00477106, Single Failure Vulnerability During Hot Leg Recirc. MOV 843 A/B,
00460620, Response to IN 2008-20
00405253, Latent Error Discovered in ICW Pump NPSH Assessment
01613794, 4C ICW Pump Failed IST Test
00470723 Unsat Results While Performing Inspection of MOV
00522759 Grease Leaking from MOV-4-626 Motor Operator
00556147/CR 2009-8162, Oil Leak on MOV-4-626 Clutch
1997-1377, 4-721C Failed Exercise Closing Test

Drawings
5610-T-E-1592, 125 D.C. & 120V Instrument A.C. Electrical Distribution, Sheet 1, Rev. 44
5613-E-11, Electrical 125V DC & 120V Instrument AC, Sheet 1, Rev. 18
5613-E-11, Electrical 125V DC & 120V Instrument AC, Sheet 2, Rev. 15
5614-E-11, Electrical 125V DC & 120V Instrument AC, Sheet 1, Rev. 12
5614-E-11, Electrical 125V DC & 120V Instrument AC, Sheet 2, Rev. 20
5613-E-26, Feedwater & Condensate AFW Pump Steam Supply …, Sheet 12F, Rev. 9
5613-E-26, Feedwater & Condensate AFW Pump Steam Supply…, Sheet 12E, Rev. 9
5613-E-26, Feedwater & Condensate AFW Pump Steam Supply… Sheet 12D, Rev. 5
5613-M-3022, Emergency Diesel Engine and Oil System DG 3A Fuel Oil, Sheet 3, Rev. 21
5613-E-1605, Battery 3A & 3B Load Profiles, Rev. 12
5613-E-27, Mechanical Auxiliaries Intake Cooling Water Pump 3A Breaker 3AA19, Rev. 7
5613-E-26, Feedwater & Condensate AFW Pump Steam Supply D.C. MOV-3-1403, Rev. 9

5613-T-L1, Bus 3A Loss of Voltage and Bus Stripping, Sheet 13, Rev. 8
5613-E-11, Electrical 125V DC & 120V Instrument AC, Sheet 1, Rev. 18
5613-E-25, RCP Thermal Barrier CCW Isolation MOV-3-626, Sheet 33A1, Rev. 3
5613-E-25, RCP Thermal Barrier CCW Isolation MOV-3-626, Sheet 33A, Rev. 4
5613-E-27, Mechanical Auxiliaries ICW Pump 3A Breaker 3AA19, Sheet 2A, Rev. 7
5614-E-10, Motor Control Centers 4A, NV4A, 4B, NV4B, 4C, NV4C, Sheet 1, Rev. 52
5610-T-E-1591, Operating Diagram Electrical Distribution, Rev. 60
5613-E-26, FW and Condensate Circulating Water Pump 3B1 Breaker 3AB16, SH 4C, Rev. 6
5613-E-26, FW and Condensate Circulating Water Pump 3B1 Breaker 3AB16, SH 4C1, Rev. 0
5613-E-26, FW and Condensate Circulating Water Pump 3B1 Breaker 3AB16, SH 4C2, Rev. 0
5613-E-339, 4160V Switchgear Bus 3B, Rev. 2
5613-E-5-6, Indoor Metal Clad Switchgear Bus No. 3B, Rev. 1
5613-E-26, FW and Condensate Circulating Water Pump 3B2 Breaker 3AB18, SH 4D, Rev. 8
5613-E-26, FW and Condensate Circulating Water Pump 3B2 Breaker 3AB18, SH 4D1, Rev. 0
5613-E-26, FW and Condensate Circulating Water Pump 3B2 Breaker 3AB18, SH 4D2, Rev. 1
5613-E-28, Electrical Auxiliaries Diesel Generator Breaker 3AB20, SH 8B, Rev. 4
5613-E-28, Electrical Auxiliaries Diesel Generator Breaker 3AB20, SH 8B1, Rev. 4
5610-T-L1, Logic Diagram Secondary System Condensate Pumps 3A, 3B, 3C, Rev. 5
5613-E-26, FW and Condensate Condensate Pump 3P6B Breaker 3AB21, SH 3B, Rev.5
5613-E-26, FW and Condensate Condensate Pump 3P6B Breaker 3AB21, SH 3B1, Rev.0
5613-E-28, Electrical Auxiliaries 4160 Volt Bus 3B Bus Clearing, SH 20B, Rev.5
5610-T-E-1591, Operating Diagram Electrical Distribution, SH 1, Rev. 62
5613-E-28, Electrical Auxiliaries Load Center 3C Feeder Breaker 3AA14, SH 5B, Rev. 4
5613-E-28, Electrical Auxiliaries Load Center 3C Feeder Breaker 3AA14, SH 5B1, Rev. 1
5613-E-28, Electrical Auxiliaries Loss of Voltage Bus 3A, SH 9A, Rev. 2
5613-E-9-11, 480V Load Center 3D (3B04) Rear View, Rev. 19
5610-E-9-6C, K600S/K1600S ITE/ABB Breaker …, SH. 1, 2 and 3 Rev. 0
5613-E-28, Electrical Auxiliaries MCC 3K Feeder Breaker 30407, SH 12D, Rev.3
PTN-C-07-091-001, Fuse Replacement for Alt. Shutdown Panel 3C264, SH 3 of 3, Rev. 0
5613-E-1605, Battery 3A & 3B Load Profile, Rev. 12
5610-T-E-1592, 125V D.C. & 120V Instrument A.C. Electrical Distribution, SH 1, Rev. 44
5610-E-28, Elementary Diagram Electrical Auxiliaries 7.5.KVA Vital Inverter …, Rev. 8
5610-T-E-1591, Operating Diagram Electrical Distribution, Rev. 62
5613-E-11, Single Line Diagram Electrical 125V DC & 120V Instrument AC, Rev. 18
5613-E-12, Single Line Diagram 125V DC & 120V Instrument AC, Rev. 9
5613-E-18 Sht. 1, Aux. Start-up Transformer Metering & Relay Schematic Bus 3A, Rev. 14
5613-E-18 Sht. 2, Aux. Start-up Transformer Metering & Relay Schematic Bus 3B, Rev. 14
5613-E-28 Sht. 11A, Electrical Auxiliaries 4160V Switchgear 3A …, Rev. 0
5613-E-28 Sht. 13A, Electrical Auxiliaries Metering and Relaying 480 V Load Center 3A, Rev. 5
5613-E-28 Sht. 13A1, Electrical Aux. Metering and Relaying 480 V Load Center 3A, Rev. 3
5613-E-28 Sht. 13B, Electrical Aux. Metering and Relaying 480 V Load Center 3B, Rev. 5
5613-E-28 Sht. 13B1, Electrical Aux. Metering and Relaying 480 V Load Center 3B, Rev. 5
5613-E-28 Sht. 13C, Electrical Auxiliaries Metering and Relaying 480 V Load Center 3C, Rev. 7
5613-E-28 Sht. 13C1, Electrical Aux. Metering and Relaying 480 V Load Center 3C, Rev. 5
5613-E-28 Sht. 13D, Electrical Auxiliaries Metering and Relaying 480 V Load Center 3D, Rev. 6
5613-E-28 Sht. 13D1, Electrical Aux. Metering and Relaying 480 V Load Center 3D, Rev. 6
5613-E-28 Sht. 1B, Electrical Aux. Auxiliary Transformer Breaker 3AB02, Rev. 8
5613-E-28 Sht. 1B1, Electrical Aux. Auxiliary Transformer Breaker 3AB02, Rev. 6
5613-E-28 Sht. 1B1, Electrical Auxiliaries Auxiliary Transformer Breaker 3AB05, Rev. 4
5613-E-28 Sht. 2B, Electrical Auxiliaries Auxiliary Transformer Breaker 3AB05, Rev. 8
5613-E-28 Sht. 9A, Elementary Diagram Electrical Auxiliaries Loss of Voltage Bus 3A, Rev. 2

5613-E-28 Sht. 9A1, Elementary Diagram Electrical Auxiliaries Loss of Voltage Bus 3A, Rev. 3
5613-E-28 Sht. 9A2, Elementary Diagram Electrical Auxiliaries Loss of Voltage Bus 3A, Rev. 6
5613-E-28 Sht. 9A3, Electrical Auxiliaries Loss of Voltage Bus 3A Relay Development, Rev. 4
5613-E-3, Single Line Diagram 4kV Switchgear 3A & 3B, Rev. 6
5613-E-315 Sht. 19, 4.16 KV Switchgear 3AA10 Start-Up Transformer, Rev. 3
5613-E-315 Sht. 41, 4.16 KV Switchgear 3AB08 Grounding Transformer, Rev. 0
5613-E-315 Sht. 80, 480V Load Center 3A Relay Settings, Rev. 3
5613-E-315 Sht. 81, 480V Load Center 3B Relay Settings, Rev. 3
5613-E-315 Sht. 82, 480V Load Center 3C Relay Settings, Rev. 3
5613-E-315 Sht. 83, 480V Load Center 3D Relay Settings, Rev. 3
5613-E-5, Single Line Diagram 480 Volt System Load Centers 3A, 3B, 3C, 3D & 3H, Rev. 12
5613-E-672, Inverter 3Y02 (3B) Load List (Panels 3P08, 3P23 and (3C228B), Rev. 15
5613-E-672, Inverter 3Y02(3B) Load List (Panels 3P08, 3P23 and 3C228B), Rev. 15
5613-E-675, Vital Inverter Loadings, Rev. 15
5613-E-T-L1 Sht. 12, Logic Diagram Emergency Bus Loading Logic Diagram, Rev. 1
5613-E-T-L1 Sht. 12A, Logic Diagram Emergency Bus Loading Logic Diagram, Rev. 2
5613-E-T-L1 Sht. 12B, Logic Diagram Emergency Bus Loading Logic Diagram, Rev. 1
5613-E-T-L1 Sht. 13, Logic Diagram Bus 3A Loss of Voltage and Bus Stripping, Rev. 8
5613-E-T-L1 Sht. 13A, Logic Diagram Bus 3B Loss of Voltage and Bus Stripping, Rev. 5
5614-M-16A-15, EDG Fuel Oil Day Tank, Sheet 1A and 1B, Rev. 0
5613-M-3022, Emergency Diesel Generator Engine and Oil System DG 3A Fuel Oil, Rev. 21
5613-M-3022, EDG Engine and Oil System DG 3B Fuel Oil, Rev. 16
5610-C-18-392, Condensate and Diesel Fuel Storage Tank, Rev. 5
SCS-5488, Delaval Drawing, Fuel Oil Transfer Pump, Rev. C
5610-M-3075, AFW System Turbine Drive for AFW Pumps, Sheet 1, Rev. 29
5610-M-3075, AFW System AFW Pumps, Sheet 2, Rev. 19
5613-M-3075, AFW System Steam to AFW Pump Turbines, Sheet 1, Rev. 17
5613-M-3075, AFW System Steam Auxiliary Feedwater to Steam Generators, Sheet 2, Rev. 13
5613-M-3018, Condensate Storage System, Sheet 1, Rev. 24
5614-M-3018, Condensate Storage System, Sheet 1, Rev. 25
5614-M-3022, EDG Engine and Oil System EDG 4A Fuel System, Rev. 7
5610-P-818-S, AFW System Outside Containment Stress Problem, Sheet 1 and 2, Rev. 3
5610-P-818-S, AFW System Outside Containment Stress Problem, Sheet 3, Rev. 2
5614-M-3062, Safety Injection System, Rev. 32
5613-M-3062, Safety Injection System, Rev. 36
5610-M-600-147, Charging Pump A Recirculation Check Valve, Rev. 0
5610-M-1200-54, 4" WDD-ASAS 1500 Gate Valve, Rev. 5
5613-M-3019, Intake Cooling Water System, Rev. 34
D-48025, Assembly Drawing POV 4882 and 4883, Rev. E
5610-C-18-393, RWST Nozzle Schedule, Rev. 5
5613-M-3022, Emergency Diesel Engine and Oil System DG 3A Fuel Oil, Sheet 3, Rev. 21
5613-M-3022, Emergency Diesel Engine and Oil System DG 3B Fuel Oil, Sheet 4, Rev. 16
5613-M-3030, Component Cooling Water System, Sheet 5, Rev. 19
5613-M-3062, Unit 3 Safety Injection System, Sheet 1, Rev. 36
5614-M-3062, Unit 4 Safety Injection System, Sheet 1, Rev. 32

Modifications
87-266, Swing Switchgear 4D and Transfer of ICW and CCW 4C Pumps, 12/21/1990
87-265, Swing Switchgear 3D and Transfer of ICW and CCW 3C Pumps, 6/30/1992
89-123, CCW Setpoint Changes, 12/31/1990
PC/M 91-128, 480V Undervoltage Protection Scheme Modification, Rev. 1, Supplement 1

PC/M 04-112, ERDADS Replacement, Rev. 001
PC/M 04-113, ERDADS Replacement, Rev. 001
PC/M 07-055, R-15 Steam Jet Air Ejector Monitor Replacement, Rev. 0
PC/M 08-025, Steam Dump to Atmosphere Control Upgrade, Rev. 1
PC/M 04-036, Oil Spill Prevent and Control Compliance for 40CFR112, 04/04/2005

Miscellaneous
WBS 04.05.05, Engineering Report Section 4.5.5, EDG System, 4/23/2010
5613-M-313, Turkey Point Unit 3, Rev. 59
FPL, IN-88-14: Potential Problems with Electrical Relays, 05/06/88
Report No. FOP 88-036, Potential Problems with Electrical Relays, 04/18/88
Report No. FOP-84-001, GE Service Advisory 721-PSM-174.1, PVD21B and PVD21D Seismic Capability, 01/04/84 (date distributed) with attached letter (11/08/83)
Report No. FOP 91-177, Status Indication of Control Power for Circuit Breakers used in Safety-Related Applications, 11/28/91
Report No. L-88-284, NRC Bulletin No. 88-03, Inadequate Latch Engagement in HFA type Latch Relays Manufactured by General Electric Company, 07/14/1988
TI No. 14, Technical Issue Resolution Summary, Seismic Capability of General Electric HGA Relays, 11/15/1989
Final Disposition Report for Loss of Voltage Relays, 08/29/05
Component Design Requirements, Emergency Power System, Rev. 8
003-EF-01, Maintenance Rule Bases Information for Instrument and Uninterruptible Power System – Class 1E Component Level
003-EF-03, Maintenance Rule Bases Information for Instrument and Uninterruptible Power System – Class 1E System Level
Letter L-82-65, Adequacy of Electrical Distribution System Voltages, 2/24/82
Letter L-82-211, Adequacy of Electrical Distribution System Voltages, 5/20/82
Letter L-83-1, Adequacy of Electrical Distribution System Voltages, 1/3/93
Letter L-92-097, Proposed License Amendments: 480V Load Centers Degraded Voltage Protection, 4/21/92
Spec-5610-E-8, 480V AC Motor Control Centers and 125V DC Distribution Switchgear, Rev. 8
Specification FLO 53-20.2005, Motor Control Centers, Rev. 3
Spec-5610-E-6B, Station Auxiliary Motors, Rev. 6
5610-003-DB-001, Design Basis Document Vital AC/DC System, Rev. 11
E1935, Solid State Controls Isolimiter, Rev. 001
A0534, ITE Imperial Motor Control Centers, Rev. 001
API/UPL 205/295, Magnetic Circuit Protectors, undated
V000472, Instruction & Maintenances Manual - Westinghouse Series 2100 Motor Control Center, Rev. 003
NRC Letter D.G. McDonald to J.W. Williams FPL, Amendment 104 to Facility Operating License No. DPR-31 and Amendment No. 98 to Facility Operating License No. DPR-41, 8/14/84
NRC Letter L. Raghavan to J.H. Goldberg FPL, Amendment 152 to Facility Operating License No. DPR-31 and Amendment No. 147 to Facility Operating License No. DPR-41, 8/20/92
JPE-LR-87-020, Safety Evaluation and Justification for Continued Operation with Loss of HVAC to DC Equipment and Inverter Rooms Units 3 and 4, Rev. 1
JPN-PTN-SENJ-92-003, Safety Assessment for Load Center and Switchgear Rooms HVAC Safety Classification, Rev. 0
5610-075-DB-002, Condensate Storage Tank, Rev. 9
Minimum Flow Evaluation, Service: Auxiliary Feedwater Pumps, Ingersol Rand 2-1/2 CNTAM-4, Turbine Driven, Rev. 1
PTN-ENG-SENS-98-047, Safety Evaluation for AFW Low-Flow Operating Restrictions, Rev. 1

PC/M 04-036, Oil Spill Prevention and Control Compliance for 40CFR112, Rev. 0
System 062-BQ, Maintenance Rule Scoping Basis Information
CRN-M-038, RWST Issues, Rev. 0
PTN-ENG-LRAM-00-0031, ICW Inspection Program Document, Rev. 4
Environmental Qualification Documentation Package, Rev. 8
PTN-ENG-LRAM-00-0031, ICW System Inspection Program, Rev. 4
3/4 A, B, C Sulzer Pump Curves Documents, Rev. 0
FPL Letter to NRC L-85-176 dated 5/10/85, Additional Information on Conformance with Regulatory Guide 1.97, Rev. 3
JPE-M-85-31, Substantial Safety Hazards Evaluation for Component Cooling Water System Overpressurization, Rev. 0
JPM 24-041-065-300/SEQ5A, Locally Isolate RCP Seal Cooling, 01/31/2007
JPN-PTN-SENS-92-044, Manual Override of MOV-*-626 During RCP Seal Failure, Rev. 1
JPN-PTN-SENS-95-050, Engineering Evaluation on the U3 Diesel Fuel Oil Transfer System, 09/27/1995
JPN-PTN-SENS-95-052, Safety Evaluation for Revision of Unit 3 Diesel Fuel Oil Transfer System Technical Specification Bases, Rev. 0
Maintenance Rule Bases Information, System 062-BQ, Safety Injection System
Minimum Flow Evaluation for Auxiliary Feedwater Pumps, Rev. 1
PTN-ENG-SENS-98-047, Safety Evaluation for AFW Pump Low-Flow Operating Restrictions, Rev. 1
SD-040/(SYS. 030), Component Cooling Water System Walkdown Guide, 08/24/1999
V000202, Section A626, Instruction Manual for Installation, Operation and Maintenance of Velan Motor Operated Bolted Bonnet Gate, Globe, Stop Check Valves, 1974
V000368, Section E135, Manually Operated Gate and Globe Valves, November 1971

<u>Procedures</u>
0-ADM-737, Post Maintenance Testing, Rev. 3A
PI-AA-102-1000, Significant Operating Experience Report (SOER) and INPO Event Report (IER) Process Implementation, Rev. 5, 05/25/11
PI-AA-102-1001, Operating Experience Program Screening and Responding to Incoming Operating Experience Guideline, Rev. 5, 04/28/11
PI-AA-102-1001-10000, Review INPO Operating Experience Action Request and Complete Assignments, Rev. 0, 10/03/08
PI-AA-102, Operating Experience Program, Rev. 3, 01/25/11
PI-AA-102-1002, Internal Operating Experience Guideline, Rev. 0, 03/03/09
PI-AA-102-1003, Sharing Operating Experience with Nuclear Industry, Rev. 1, 05/10/11
PI-AA-102-1005, Operating Experience Plant Information Center Data, Rev. 0, 05/06/09
O-PME-007.2, 480VAC Motor Control Center (MCC) Starter Maintenance, Rev. OA, 12/08/10
Training Brief, TB-11-46, Circuit Breaker Control Power Indications, 06/02/2011
O-ADM-737, Post Maintenance Testing, Rev. 3A, 07/07/11
O-PME-005.1, 4.16KV Bus Clearing Relay Test and Calibration, Rev. 1, 03/10/10
0-PM-077.04, Molded Case Circuit Breaker Testing, Rev. 1
0-PME-007.2, 480 VAC Motor Control Center (MCC) Starter Maintenance, Rev. 0A
0-PME-003.03, 7.5KVA Vital Inverter Maintenance, Rev. 8
0-PME-003.06, 10KVA Isolimiter Constant Voltage Transformer Maintenance, Rev. 0
0-PMR-006.11, Instructions for Testing and Independent Verification of General Electric Type IAV55C Relays, Rev.
0-PMR-006.15, Instructions for Testing and Independent Verification of Type ABB/ITE-27 Undervoltage Relays, Rev. 0

3-ARP-097.CR.J, Control Room Response – Panel J Window J1/6 4kV C Bus/XFMR Ground, Rev. 0
3-NOP-005.01, Normal Operating Procedure 4q60V Bus C, Rev. 0
3-ONOP-004.2, Loss of 3A 4KV Bus, Rev. 1
3-OSP-203.1, Train A Engineered Safeguards Integrated Test, Rev. 4
ENG-QI 1.5, Quality Instruction Nuclear Engineering Calculations, Rev. 12
0-ONOP-013, Loss of Instrument Air, Rev. 1
3-EOP-E-0, Reactor Trip or safety Injection, Rev. 3
3-NOP-070, Vital Load Center and Switchgear Rooms Chilled Water AC System, Rev. 3
3-EOP-ECA-0.0, Loss of All AC Power, Rev. 1
3-OSP-023.1, Diesel Generator Operability Test, Rev. 3
0-PMM-019.7, Basket Strainer Cleaning and Inspection, 1/24/2011
4-NOP-019, Intake Cooling Water System, Rev. 8A
0-OSP-201.2, SNPO Daily Logs, 7/07/2011
3-ONOP-004, Loss of Offsite Power, 9/04/2007
3-EOP-ES-1.1, SI Termination, Rev. 1
3-ONOP-004, Loss of Offsite Power, Rev. 0A
3-ARP-097.CR.A, Control Room Response - Panel A, Rev. 3
3-ARP-097.CR.F, Control Room Annunciator Response - Panel F, Rev. 6
3-EOP-ECA-0.0, Loss of All AC Power, Rev. 1
3-NOP-005, 4KV Busses A, B, and D, Rev. 0A
3-ONOP-004.1, Restoration Following Loss of Offsite Power, 09/04/2007
3-ONOP-004.2, Loss of 3A 4kV Bus, Rev. 1
3-ONOP-005.4, 4K Bus 3A, 3B, or 3D Ground, 12/13/2000
3-ONOP-041.1, Reactor Coolant Pump Off-Normal, Rev. 4
3-ONOP-092.2, Auxiliary Transformer Malfunction, 07/31/2000
3-ONOP-092.3, Startup Transformer Malfunction, Rev. 1
3/4-EOP-E-0, Reactor Trip or Safety Injection, Rev. 2
3/4-EOP-ECA-0.0, Loss of All AC Power, Rev. 1
3/4-EOP-ES-0.1, Reactor Trip Response, Rev. 2
3/4-EOP-FR-S.1, Response to Nuclear Power Generation/ATWS, 09/14/2008
3/4-NOP-075, Auxiliary Feedwater System, Rev. 3
4-OSP-206.1, Inservice Valve Testing – Cold Shutdown, Subsection 7.4, Rev. 3
ENG-QI 3.4, UFSAR Updating, Rev. 5
ENG-QI 2.1, 10 CFR 50.59 Applicability/Screening/Evaluation, Rev. 7

<u>Condition Reports Initiated Due to CDBI Activity</u>
01675539, 120 Vac and 125Vdc Molded Case Circuit Breakers
01676808, MR Function for System 003 – Protective Tripping Function of MCCB
01672459, Calculation for AFW NPSH
01676403, 10% CST level Limit for Replenishment
01677149, Degraded Voltage Relay Calculation
01673843, Motor Start Voltages Versus DVR Setpoint
01676754, Lack of Voltage Drop Calculations for Instrument AC Panel
01676661, MCC Contactor Voltages
01676402, Potential Improvements to SBO Cross-tie PMs and Testing
01680428, Load Testing of SBO Cross-tie Cable
01679078, UFSAR Update for PC/M 04-036 [Unit 3 Fuel Oil Storage Tank Modification]
01674790, HHSI Vortex Calculation not Current
01675544, Load Centers and Switchgear Room Back-up Cooling Function Ventilation
01679053, Switchgear Room Design Temperature Limit

01665760, PRA model Missing CCF for TPCW Isolation Valves
01668302, System 082 MR Basis Document Valves MOV 843 A/B
01670089, Evaluation of NRC INFO Notice 88-14 Inadequate
01670932, Missing QA Record for POV-3-4882/4883 Test
01672451, Unit 4 Diesel Oil Transfer Pump NPSH Issues
01675515, Assure HHSI Procedures Address Flow and Head Margin
01679030, Electrical Load List Drawings not Controlled as Calculations
01678711, Calculation Needs to be Made Official
01668689, AFW Pump Minimum Flow Requirements
01668995, Orientation of Isolation Switches [3AD07 and 4AD07]
01669042, Thermolag Debris Found on UV Relay Panels
01669063, Error in Design Bases Document, 5610-062-DB-002
01669383, Volume in the EDG Day Tank Minimum Alarm Could Not Be Validated
01670284, Unit 3 EDG Day Tanks not Fitted with Overflow Capability
01670164, Missing Record for WO 34011320
01670901, Cable Losses and Frequency not on SBO Load List
01672935, Unit 3 EDG Exhaust Fan Duct Support
01676032, Unit 3 EDG Exhaust Fan Support
01675098, AR 481739 Disposition has Clerical Error
01676333, PMCR; System 003; Implement Crit 1, PM [MCCB]
01676641, KVA Isolimiter Constant Voltage Transformer
01668302, System 062, MR Basis Document [MOV 843 A/B]