UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

July 25, 2012

Mr. George H. Gellrich, Vice President
Calvert Cliffs Nuclear Power Plant, LLC
Constellation Energy Nuclear Group, LLC
1650 Calvert Cliffs Parkway
Lusby, Maryland 20657-4702

SUBJECT: CALVERT CLIFFS NUCLEAR GENERATING STATION – NRC INTEGRATED INSPECTION REPORT 05000317/2012003 AND 05000318/2012003

Dear Mr. Gellrich:

On June 30, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Calvert Cliffs Nuclear Power Plant (CCNPP), Units 1 and 2. The enclosed inspection report documents the inspection results, which were discussed on July 13, 2012, with you and other members of your staff.

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

This report documents one NRC-identified finding and one self-revealing finding of very low safety significance (Green). Both of these findings were determined to involve violations of NRC requirements. However, because of the very low safety significance, and because they are entered into your corrective action program, the NRC is treating these findings as non-cited violations (NCVs) consistent with Section 2.3.2 of the NRC Enforcement Policy. If you contest any NCV in this report, 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 20555-0001; with copies to the Regional Administrator, Region 1; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Calvert Cliffs. In addition, 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 I; and the NRC Resident Inspector at Calvert Cliffs.

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

Sincerely,

/RA/

Glenn T. Dentel, Chief
Reactor Projects Branch 1
Division of Reactor Projects

Docket Nos.: 50-317, 50-318
License Nos.: DPR-53, DPR-69

Enclosure: Inspection Report 05000317/2012002 and 05000318/2012002
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

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Docket Nos.: 50-317, 50-318
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Enclosure: Inspection Report 05000317/2012002 and 05000318/2012002
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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos.:	50-317, 50-318
License Nos.:	DPR-53, DPR-69
Report No.:	05000317/2012003 and 05000318/2012003
Licensee:	Constellation Energy Nuclear Group, LLC
Facility:	Calvert Cliffs Nuclear Power Plant, Units 1 and 2
Location:	Lusby, MD
Dates:	April 1, 2012, through June 30, 2012
Inspectors:	S. Kennedy, Senior Resident Inspector E. Torres, Resident Inspector P. Kaufman, Senior Reactor Inspector D. Dodson, Resident Inspector, Ginna P. McKenna, Resident Inspector, Salem
Approved by:	Glenn T. Dentel, Chief Reactor Projects Branch 1 Division of Reactor Projects

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SUMMARY OF FINDINGS

IR 05000317/2012003, 05000318/2012003; 4/1/2012 – 6/30/2012; Calvert Cliffs Nuclear Power Plant (CCNPP), Units 1 and 2: Equipment Alignment and Maintenance Effectiveness.

This report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. Two Green findings, both of which were non-cited violations (NCVs), were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). The cross-cutting aspects for the findings were determined using IMC 0310, "Components Within the Cross-Cutting Areas." 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," Revision 4, dated December 2006.

Cornerstone: Mitigating Systems

- Green: The inspectors identified an NCV of 10 CFR 50, Appendix B, Criterion XI, "Test Control," because Constellation did not establish an operational test program for the engineered safety features actuation system (ESFAS) shutdown sequencers (SDSs). Specifically, on May 4, 2012, the inspectors determined that the licensee had never performed an operational test on the SDSs. The SDS supports the Loss of Offsite Power (LOOP) event in chapter 14 of the Updated Final Safety Analysis Report (UFSAR). Constellation's immediate corrective actions included entering the issue into their corrective action program (CAP), conducting an operability determination (OD), developing a procedure to test the SDSs online, and testing the SDSs. Planned corrective actions include submittal of a license amendment request to include the SDS testing in their technical specification (TS) requirements.

  The finding is more than minor because it is associated with the equipment performance attribute of the Mitigating System cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, when tested, one of the SDSs did not perform as designed. The SDS logic for the No. 24 4kV bus initiated start of the auxiliary feedwater (AFW) pump on the incorrect step. In addition, if left uncorrected the performance deficiency had the potential to lead to a more safety significant concern, in that, an SDS failure would go undetected until an actual demand during an LOOP. The inspectors evaluated the finding using Phase 1, "Initial Screening and Characterization," worksheet in Attachment 4 to IMC 0609, "Significance Determination Process," and determined the finding is of very low safety significance (Green) because the performance deficiency was not a design or qualification deficiency, did not involve an actual loss of safety function, did not represent actual loss of safety function of a single train for greater than its TS allowed outage time, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding has a cross-cutting aspect in the area of problem identification and resolution, CAP, because Constellation did not identify this issue completely, accurately, and in a timely manner commensurate with its safety significance. Specifically, within the last 3 years, Constellation had several opportunities to completely and accurately identify the SDS test program deficiency as a result of multiple sequencer

module replacements and through reviews of the emergency diesel generator (EDG) testing program (P.1.a per IMC 0310). (Section 1R04)

- Green: A self-revealing NCV of TS 5.4.1, "Administrative Controls – Procedures," was identified for the failure to establish and maintain adequate procedures for performing maintenance on pressurizer power operated relief valves (PORVs). Specifically, the maintenance procedure (purchase order) did not clearly prescribe acceptance criteria for the minimum acceptable clearances between the cage, guide, and the main disc. This resulted in the as left internal valves clearances being less than the minimum expected requirements. During disassembly, the valve disc of one of the PORVs (serial number BS07325) was stuck and had to be mechanically removed. Immediate corrective actions included entering this issue into the CAP, conducting an OD for the valves currently installed on both units, and conducting a past operability review of the PORVs that were removed. Planned corrective actions include updating the design specification and maintenance procedures to ensure that minimum allowable internal clearances are specified.

  This finding is more than minor because it is associated with the procedure quality attribute of the Mitigating System cornerstone and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, when the valve was removed and disassembled, the valve disc was found stuck and had to be mechanically removed, thereby impacting the reliability and operability of the valve during operation at power the previous cycle. A detailed engineering analysis was performed which supported past operability of the valve. The inspectors evaluated the finding using Phase 1, "Initial Screening and Characterization," worksheet in Attachment 4 to IMC 0609, "Significance Determination Process," and determined the finding is of very low safety significance (Green) because the performance deficiency was not a design or qualification deficiency, did not involve an actual loss of safety function, did not represent actual loss of safety function of a single train for greater than its TS allowed outage time, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event.

  The finding has a cross-cutting aspect in the area of human performance, work practices, because personnel work practices did not support human performance. Specifically, Constellation did not ensure supervisory and management of oversight of work activities, including contractors, such that nuclear safety is supported. Critical dimensions affecting contractor work activities were not adequately captured in station processes, procedures, and work packages (H.4.c per IMC 0310). (Section 1R12)

Other Findings

None

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period in a refueling outage. On April 9, operators synchronized the unit to the grid. The unit reached 100 percent power on April 12. On April 17, operators reduced power to 95 percent for a reactor engineering surveillance. Operators returned the unit to 100 percent power on April 18. On April 30, operators reduced power to 93 percent for data acquisition computer maintenance. Operators returned the unit to full power the same day. On June 2, operators reduced power to 83 percent for main turbine valve testing. Operators returned the unit to 100 percent power the same day. The unit remained at or near 100 percent for the remainder of the inspection period.

Unit 2 began the inspection period at 100 percent power. On April 26, operators reduced power to 65 percent to conduct maintenance on the No. 21 steam generator feed pump (SGFP). Operators returned the unit to 100 percent power on April 28. On May 13, operators reduced power to 93 percent for data acquisition computer maintenance. The unit was returned to full power the same day. On June 9, operators reduced power to 87 percent to perform main turbine valve testing. Operators returned the unit to full power the same day. The unit remained at or near 100 percent power for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – Three Samples)

.1 Readiness for Seasonal Extreme Weather Conditions

a. Inspection Scope

The inspectors performed a review of Constellation's readiness for the onset of seasonal high temperatures. The review focused on the intake structure ventilation system and the EDGs. The inspectors reviewed the UFSAR, TS, control room logs, and the CAP to determine what temperatures or other seasonal weather could challenge these systems, and to ensure that Constellation personnel had adequately prepared for these challenges. The inspectors reviewed station procedures, including Constellation's seasonal weather preparation procedure, and applicable operating procedures. The inspectors performed walkdowns of the selected systems to ensure station personnel identified issues that could challenge the operability of the systems during hot weather conditions. Documents reviewed for each section of this inspection report are listed in the Attachment.

b. Findings

No findings were identified.

.2 Evaluate Readiness for Impending Adverse Weather Conditions

a. Inspection Scope

The inspectors reviewed the adverse weather preparations and mitigating strategies for impending adverse weather conditions associated with a tornado watch on June 1, 2012. This review included an assessment of what the predicted conditions were and of the actions taken by site personnel. The inspectors verified that the operator actions specified in the associated procedures maintained readiness of essential equipment and systems to preclude weather induced initiating events.

b. Findings

No findings were identified

.3 Summer Readiness of Offsite and Alternate Alternating Current (AC) Power Systems

a. Inspection Scope

The inspectors performed a review of plant features and procedures for the operation and continued availability of the offsite and alternate AC power system to evaluate readiness of the systems prior to seasonal high grid loading. The inspectors reviewed Constellation's procedures affecting these areas and the communications protocols between the transmission system operator and Constellation. This review focused on changes to the established program and material condition of the offsite and alternate AC power equipment. The inspectors assessed whether Constellation established and implemented appropriate procedures and protocols to monitor and maintain availability and reliability of both the offsite AC power system and the onsite alternate AC power system. The inspectors evaluated the material condition of the associated equipment by interviewing the responsible system manager, reviewing condition reports (CR) and open work orders (WOs), and walking down portions of the offsite and AC power systems including the 500 kilovolt (kV) and 4kV switchyards.

b. Findings

No findings were identified

1R04 Equipment Alignment

.1 Partial Walkdowns (71111.04Q – Three Samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- No. 11 service water (SRW) subsystem during No. 11 SRW pump maintenance on April 25, 2012
- No. 13 component cooling (CC) pump during No. 11 CC pump maintenance on April 25, 2012
- 2B EDG during 2A EDG maintenance on May 11, 2012

The inspectors selected these systems based on their risk-significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors reviewed applicable procedures, system diagrams, the UFSAR, TSs, CRs, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have impacted system performance of their intended safety functions. The inspectors also performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and were operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. The inspectors also reviewed whether Constellation staff had properly identified equipment issues and entered them into the CAP for resolution with the appropriate significance characterization.

b. Findings

No findings were identified.

.2 Full System Walkdown (71111.04S – Two samples)

a. Inspection Scope

On May 4 and May 17, 2012, the inspectors performed a complete system walkdown of accessible portions of the Unit 2 EDGs and the ESFAS, respectively, to verify the existing equipment lineup was correct. The inspectors reviewed operating procedures, surveillance tests, drawings, equipment line-up check-off lists, and the UFSAR to verify the system was aligned to perform its required safety functions. The inspectors also reviewed electrical power availability, component lubrication and equipment cooling, hangar and support functionality, and operability of support systems. The inspectors performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. Additionally, the inspectors reviewed a sample of related CRs and WOs to ensure Constellation appropriately evaluated and resolved any deficiencies.

b. Findings

Introduction: The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XI, “Test Control,” because Constellation did not establish an operational test program for the ESFAS SDS.

Description: On May 4, 2012, during review of the ESFAS, the inspectors identified that Constellation had not established an operational test program to assure proper operation of SDSs. The SDS automatically initiates the starting of safety related loads such as SRW pumps, saltwater (SW) pumps, instrument air compressors, control room air conditioning compressors, switchgear room air conditioning compressors, and the motor driven AFW pump. Sequencing is performed so that essential loads are started within the time limits of the appropriate safety analysis. The SDS supports the LOOP event in chapter 14 of the UFSAR. The analysis states, in part, “Once the EDG is up to speed, SDS starts loading the emergency busses with the vital equipment in a sequential

manner to avoid overloading the EDG." The inspectors determined that this safety function had not been periodically tested.

CCNPP ESFAS design has two sequencers: the loss of coolant incident (LOCI) sequencer and the SDS. The logic for both sequencers is on the same module. The LOCI sequencer starts automatically with a combination of a safety injection actuation signal and an undervoltage (UV) signal to the 4kV safety buses. The SDS starts automatically with a UV signal to the 4kV buses. The LOCI sequencer operation is part of CCNPP's TSs EDG surveillance requirements. However, SDS operation is not specifically included in CCNPP's TSs EDG surveillance requirements. The inspectors noted that the SDS testing is included in the Standard Technical Specifications – Combustion Engineering Plants (NUREG-1432, Revision 4).

The inspectors determined that within the last several years, the licensee had at least four opportunities to identify test control issues related to the SDS. In 2008, the 2B EDG LOCI sequencer failed to maintain the design 5 second interval between each of its six steps. The clock failure was attributed to an integrated circuit NAND gate on the module. The LOCI/SDS module was replaced under WO C220082745. Although the LOCI sequencer logic was tested following replacement of the module, the SDS was not tested to verify proper operation. In 2009, during surveillance test STPO-04B-2, "B Train Integrated Engineered Safety Features Test," the No. 23 AFW pump started late in step 6 of the LOCI sequence. The conclusion from the test results were that step 6 of the LOCI sequencer and the time delay pick up relay for the No. 23 AFW pump malfunctioned. The LOCI/SDS module was replaced under WO C2200901338. Again, the LOCI logic was tested following module replacement but the SDS was not tested to verify proper operation. In 2010, during the performance of STPO-08B-2, "Test of 2B DG and 4 kV Bus 24 LOCI Sequencer," the LOCI sequencer steps 1 through 5 blocked lights did not illuminate as expected. Constellation replaced the LOCI/SDS module under WO C90801337. The SDS was not tested to verify proper operation. In addition, after the dual unit trip in 2010, Constellation assigned corrective action, CA-2011-000142, as part of CR-2010-007157 to review EDG testing procedures and determine if testing methods would detect degradation in operating margin before it would impact its ability to perform its safety function. The lack of SDS testing was not identified as part of this review.

Constellation's immediate corrective actions included entering the issue into their CAP as CR-2012-004971, conducting an OD, developing a procedure to test the SDSs online, and testing the SDSs. Of the four SDSs tested, one of the sequencers did not perform as designed. The SDS logic for the No. 24 4kV bus initiated start of the AFW pump on the incorrect step. Constellation evaluated this degraded condition against the ability of the 2B EDG to meet its required frequency, voltage, and recovery responses during a design basis event and concluded that the 2B EDG would not be adversely affected by this condition. Planned corrective action includes submittal of a license amendment request to include SDS EDG testing in their TS surveillance requirements (CR-2012-005253).

Analysis: The inspectors determined that Constellation's failure to establish an operational testing program in accordance with 10 CFR 50, Appendix B, Criterion XI, to assure that ESFAS SDS will operate as designed during a LOOP event to support operability of the EDGs was a performance deficiency that was within Constellation's ability to foresee and correct, and should have been prevented. The finding is more than

minor because it was associated with the equipment performance attribute of the Mitigating System cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, when tested, one of the SDSs did not perform as designed. The SDS logic for the No. 24 4kV bus initiated start of the AFW pump on the incorrect step. In addition, if left uncorrected the performance deficiency had the potential to lead to a more safety significant concern, in that, an SDS failure would go undetected until an actual demand during an LOOP. The inspectors evaluated the finding using Phase 1, "Initial Screening and Characterization," worksheet in Attachment 4 to IMC 0609, "Significance Determination Process," and determined the finding is of very low safety significance (Green) because the performance deficiency was not a design or qualification deficiency, did not involve an actual loss of safety function, did not represent actual loss of safety function of a single train for greater than its TS allowed outage time, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event.

The finding has a cross-cutting aspect in the area of problem identification and resolution, CAP, because Constellation did not identify this issue completely, accurately, and in a timely manner commensurate with its safety significance. Specifically, within the last 3 years, Constellation had several opportunities to completely and accurately identify the SDS test program deficiency as a result of multiple sequencer module replacements and through reviews of the EDG testing program (P.1.a per IMC 0310).

Enforcement: 10 CFR 50, Appendix B, Criterion XI, "Test Control," states in part, a test program shall be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents. The test program shall include, as appropriate, proof tests prior to installation, preoperational tests, and operational tests during nuclear power plant or fuel reprocessing plant operation, of systems, structures, and components (SSCs). Contrary to the above, prior to May 4, 2012, Constellation failed to establish an operational test program for the SDSs. Specifically, without an operational testing program, an SDS failure will go undetected until an actual demand during a LOOP. Constellation's immediate corrective actions included entering the issue into their CAP as CR-2012-004971, conducting an OD, developing a procedure to test the SDSs online, and testing the SDSs. Because this violation was of very low safety significance (Green) and Constellation entered the issue into their CAP (CR-2012-004971), this violation is being treated as an NCV, consistent with the Enforcement Policy. **(NCV-05000317/318/2012003-01: Failure to Establish Testing Program for Engineered Safeguards Features Actuation System Shutdown Sequencer)**

1R05 Fire Protection

.1 Quarterly Inspection (71111.05Q – Six Samples)

a. Inspection Scope

The inspectors conducted a tour of the areas listed below to assess the material condition and operational status of fire protection features. The inspectors verified that Constellation controlled combustible materials and ignition sources in accordance with

administrative procedures. The inspectors verified that fire protection and suppression equipment was available for use as specified in Constellation's fire plan, and passive fire barriers were maintained in good material condition. The inspectors also verified that station personnel implemented compensatory measures for out of service, degraded or inoperable fire protection equipment, as applicable, in accordance with procedures.

- Unit 1 CC pump room, fire area 15, room 228 on May 9, 2012
- Unit 2 CC pump room, fire area 12, room 201 on May 9, 2012
- Unit 1 5' fan room, fire area 14, room 225 on May 9, 2012
- Unit 2 5' fan room, fire area 13, room 204 on May 9, 2012
- Unit 1 1B EDG room, fire area 30, room 421 on May 18, 2012
- Unit 2 cable spreading room, fire area 17, room 302 on June 13, 2012

b. Findings

No findings were identified.

.2 Fire Protection – Drill Observation (71111.05A – One sample)

a. Inspection Scope

The inspectors observed a fire brigade drill scenario conducted on June 4, 2012, that involved a fire in the hydrogen tank storage area. The inspectors evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that Constellation personnel identified deficiencies, openly discussed them in a self-critical manner at the debrief, and took appropriate corrective actions as required. The inspectors evaluated specific attributes as follows:

- Proper wearing of turnout gear and self-contained breathing apparatus
- Proper use and layout of fire hoses
- Employment of appropriate fire-fighting techniques
- Sufficient fire-fighting equipment brought to the scene
- Effectiveness of command and control
- Search for victims and propagation of the fire into other plant areas
- Smoke removal operations
- Utilization of pre-planned strategies
- Adherence to the pre-planned drill scenario
- Drill objectives met

The inspectors also evaluated the fire brigade's actions to determine whether these actions were in accordance with Constellation fire-fighting strategies.

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – Two samples)

.1 Internal Flooding Review

a. Inspection Scope

The inspectors reviewed the UFSAR, the site flooding analysis, and plant procedures to assess susceptibilities involving internal flooding. The inspectors also reviewed the CAP to determine if Constellation identified and corrected flooding problems and whether operator actions for coping with flooding were adequate. The inspectors also focused on intake structure area to verify the adequacy of equipment seals located below the flood line, floor and water penetration seals, watertight door seals, common drain lines and sumps, sump pumps, level alarms, control circuits, and temporary or removable flood barriers.

b. Findings

No findings were identified.

.2 Annual Review of Cables Located in Underground Bunkers/Manholes

a. Inspection Scope

The inspectors conducted an inspection of underground bunkers/manholes subject to flooding that contain cables whose failure could disable risk-significant equipment. The inspectors performed walkdowns of risk-significant areas, including manholes MH-21 and MH-72 containing EDG and station blackout diesel cables, to verify that the cables were not submerged in water, that cables and/or splices appeared intact, and to observe the condition of cable support structures. When applicable, the inspectors verified proper sump pump operation and verified level alarm circuits were set in accordance with station procedures and calculations to ensure that the cables will not be submerged. The inspectors also ensured that drainage was provided and functioning properly in areas where dewatering devices were not installed.

b. Findings

No findings were identified.

1R07 Heat Sink Performance (711111.07A – One sample)

a. Inspection Scope

The inspectors reviewed the No. 12B SRW heat exchanger to determine its readiness and availability to perform its safety functions. The inspectors reviewed the design basis for the component and verified Constellation's commitments to NRC Generic Letter 89-13. The inspectors reviewed the results of previous inspections of the No. 12B SRW heat exchanger. The inspectors discussed the results of the most recent inspection with engineering staff and reviewed pictures of the as-found and as-left conditions. The inspectors verified that Constellation initiated appropriate corrective actions for identified

deficiencies. The inspectors also verified that the number of tubes plugged within the heat exchanger did not exceed the maximum amount allowed.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11 – Two samples)

.1 Quarterly Review of Licensed Operator Requalification Testing and Training

a. Inspection Scope

The inspectors observed licensed operator simulator training on May 2, 2012, which included a reactor manual trip from full power using abnormal operating procedure AOP-3G, "Malfunction of the Main Feedwater System," implementation of emergency operating procedure EOP-0, "Post Trip Immediate Actions," and EOP-3," Loss of All Feedwater." The inspectors observed licensed operators response to a steam leak in Unit 1 AFW pump room, a trip of the No. 11 SGFP, a manual reactor trip and a loss of all Feedwater to No. 11 and No. 12 steam generators. The inspectors evaluated operator performance during the simulated event and verified completion of risk significant operator actions, including the use of abnormal and emergency operating procedures. The inspectors assessed the clarity and effectiveness of communications, implementation of actions in response to alarms and degrading plant conditions, and the oversight and direction provided by the control room supervisor. The inspectors verified the accuracy and timeliness of the emergency classification made by the shift manager and the TS action statements entered by the shift technical advisor. Additionally, the inspectors assessed the ability of the crew and training staff to identify and document crew performance problems.

b. Findings

No findings were identified.

.2 Quarterly Review of Licensed Operator Performance in the Main Control Room

a. Inspection Scope

The inspectors observed a reduced inventory evolution in preparation for reactor coolant system vacuum fill and the start up of reactor coolant pumps on Unit 1 on April 4 and 5, respectively. The inspectors observed infrequently performed test or evolution briefings, pre-shift briefings, and reactivity control briefings to verify that the briefings met the criteria specified in CNG-OP-1.01-2001, "Communications and Briefings." Additionally, the inspectors observed test performance to verify that procedure use, crew communications, and coordination of activities between work groups similarly met established expectations and standards.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12Q – Two Samples)

a. Inspection Scope

The inspectors reviewed the sample listed below to assess the effectiveness of maintenance activities on SSCs performance and reliability. The inspectors reviewed system health reports, CAP documents, maintenance WOs, and maintenance rule basis documents to ensure that Constellation was identifying and properly evaluating performance problems within the scope of the maintenance rule. For each sample selected, the inspectors verified that the SSC was properly scoped into the maintenance rule in accordance with 10 CFR 50.65 and verified that the (a)(2) performance criteria established by Constellation staff was reasonable. As applicable, for SSCs classified as (a)(1), the inspectors assessed the adequacy of goals and corrective actions to return these SSCs to (a)(2). Additionally, the inspectors ensured that Constellation staff was identifying and addressing common cause failures that occurred within and across maintenance rule system boundaries.

- Unit 1 pressurizer PORV cage dimension out of tolerance on June 25, 2012
- No. 21 SRW pump thrust end bearing failure on June 18,2012

b. Findings

Introduction: A self-revealing Green NCV of TS 5.4.1, "Administrative Controls – Procedures," was identified for the failure to establish and maintain adequate procedures for performing maintenance on pressurizer PORVs. Specifically, the maintenance procedure (purchase order) did not clearly prescribe acceptance criteria for the minimum clearances between the cage, guide, and the main disc. As a result, when the valve was disassembled, the disc was found stuck in the guide.

Description: On March 13, 2012, the two pressurizer PORVs removed from Unit 1 during the refueling outage were found to have cage dimensions that were out of tolerance. During disassembly, the valve disc of one of the PORVs (serial number BS07325) was stuck and had to be mechanically removed, thereby impacting the operability and reliability of the valve at power. Constellation conducted a detail analysis of expected internal valve clearances at differing temperatures and concluded that sufficient clearances were maintain between the valve disc and guide through the full range of required modes and the valve would have been free to open and close. The valve disc of the other PORV (serial number BY77325) was found to be tight in the guide and the guide was tight in the cage, but both were able to be removed by hand.

The inspectors reviewed the apparent cause evaluation and conducted an independent review of the issue. The inspectors concluded that the cause of the PORV BS07325 to stick was insufficient clearances between the valve cage and valve guide during reassembly of the valve following maintenance in March 2009. A review of the records (purchase order 424644) indicated that the as left cage inner diameter was 2.4993 inches versus a required minimum cage diameter of 2.5000 inches. This resulted in clearances between the cage and the guide below minimum requirements and did not provide sufficient margin to account for any dimensional changes caused by cage deformation that may occur during the operating cycle due to the release of residual stresses in the valve body. The residual stresses are a result of the welding processes during manufacture of the valve body. The inspectors determined that the maintenance

procedure was inadequate because it did not provide acceptance criteria for critical internal valve dimensions and clearances.

Immediate corrective actions included entering this issue into the CAP, conducting an OD for the valves currently installed on both units, and conducting a past operability review of the PORVs that were removed. Planned corrective actions include updating the design specification and maintenance procedures to ensure that minimum allowable internal clearances are specified.

Analysis: The inspectors determined that Constellation's failure to establish and maintain adequate procedures for performing maintenance on pressurizer PORVs was a performance deficiency that was within their ability to foresee and correct, and should have been prevented. This finding is more than minor because it is associated with the procedure quality attribute of the Mitigating System cornerstone and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, when the valve was removed and disassembled, the valve disc was found stuck and had to be mechanically removed, thereby impacting the reliability and operability of the valve during operation at power the previous cycle. A detailed engineering analysis was performed which supported past operability of the valve. The inspectors evaluated the finding using Phase 1, "Initial Screening and Characterization," worksheet in Attachment 4 to IMC 0609, "Significance Determination Process," and determined the finding is of very low safety significance (Green) because the performance deficiency was not a design or qualification deficiency, did not involve an actual loss of safety function, did not represent actual loss of safety function of a single train for greater than its TS allowed outage time, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event.

The finding has a cross-cutting aspect in the area of human performance, work practices because personnel work practices did not support human performance. Specifically, Constellation did not ensure supervisory and management of oversight of work activities, including contractors, such that nuclear safety is supported. Critical dimensions affecting contractor work activities were not adequately captured in station processes, procedures, and work packages (H.4.c per IMC 0310).

Enforcement: TS 5.4.1, "Administrative Controls - Procedures," required that written procedures shall be established, implemented, and maintained in accordance with the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A. Regulatory Guide 1.33, Revision 2, Appendix A, Section 9, "Procedures for Performing Maintenance," states that maintenance that can affect the performance of safety-related equipment should be properly preplanned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances.

Contrary to the above, prior to April 17, 2012, Constellation failed to establish and maintain maintenance procedures for reassembly of a pressurizer PORV. Specifically, the maintenance procedure (purchase order) did not clearly prescribe acceptance criteria for the minimum clearances between the cage, guide, and the main disc. This resulted in internal valves clearance being less than the minimum expected standards. When the valve was removed and disassembled in March 2012, the valve disc was found stuck and had to be mechanically removed, thereby impacting the reliability and operability of the valve during operation at power the previous cycle. Immediate

corrective actions included entering this issue into the CAP, conducting an OD for the valves currently installed on both units, and conducting a past operability review of the PORVs that were removed. Because this violation was of very low safety significance (Green) and Constellation entered the issue into their CAP (CR-2012-003148), this violation is being treated as an NCV, consistent with the Enforcement Policy. **(NCV-05000317/318/2012003-02: Failure to Establish and Maintain Adequate Procedures for Maintenance on Pressurizer Power Operated Relief Valves)**

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – Five Samples)

a. Inspection Scope

The inspectors reviewed station evaluation and management of plant risk for the maintenance and emergent work activities listed below to verify that Constellation performed the appropriate risk assessments prior to removing equipment for work. The inspectors selected these activities based on potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that Constellation personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. When Constellation performed emergent work, the inspectors verified that operations personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work and discussed the results of the assessment with the station's probabilistic risk analyst to verify plant conditions were consistent with the risk assessment. The inspectors also reviewed the TS requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

- Unplanned maintenance on No. 21 switchgear room heating, ventilation, and air conditioning system on April 24, 2012
- Planned maintenance on No. 21 battery charger on May 1, 2012
- Planned maintenance on 2B EDG on May 7, 2012
- Planned maintenance on 1A EDG on May 21,2012
- Unplanned No. 12 SRW header inoperable due to loss of flushing capability of the No. 12A/12B SRW heat exchanger SW strainers on June 7, 2012

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – Six Samples)

a. Inspection Scope

The inspectors reviewed ODs for the following degraded or non-conforming conditions:

- No. 13 charging pump gear reducer oil level was found low (CR-2012-004161) on April 10, 2012
- No. 21 SRW pump outboard bearing abnormal oil appearance (CR-2012-004682) on April 30, 2012
- EDG SDS testing requirements not met (CR-2012-004971) on May 8, 2012

- Unit 2 pressurizer safety valve operability determination revision 11 (CR-2009-003660) on May 10, 2012
- Unit 1 spurious trip of reactor trip circuit breakers 1, 2, 5, and 6 (CR-2012-005519) on May 24, 2012
- 1A EDG fuel injection line mounting bracket missing bolts (CR-2012-005590) on May 30, 2012

The inspectors selected these issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the ODs to assess whether TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TSs and UFSAR to Constellation's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled by Constellation. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18 – Two samples)

Permanent Modifications

a. Inspection Scope

The inspectors reviewed the permanent modifications listed below to determine whether the modifications affected the safety functions of systems that are important to safety. The inspectors verified that the design bases, licensing bases, and performance capability of the affected systems were not degraded by the modification. In addition, the inspectors reviewed modification documents associated with the upgrade and design change, including operational impact design evaluation, installation and testing instructions, and drawings changes associated with the modifications.

- Engineering change package ECP11-000232, Jumper contacts to indicate No. 21 SGFP high pressure stop valve closed due to valve degraded condition
- Engineering service package ES200800149, Replace the 2A EDG heating, ventilation, and air conditioning temperature controller

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (PMT) (71111.19 – Six Samples)

a. Inspection Scope

The inspectors reviewed the PMTs for the maintenance activities listed below to verify that procedures and test activities ensured system operability and functional capability. The inspectors reviewed the test procedure to verify that the procedure adequately tested the safety functions that may have been affected by the maintenance activity, that the acceptance criteria in the procedure were consistent with information in the applicable licensing basis and/or design basis documents, and that the procedure had been properly reviewed and approved. The inspectors also witnessed the test or reviewed test data to verify that the test results adequately demonstrated restoration of the affected safety functions.

- Replace reactor coolant system 11B cold leg temperature transmitter (TT112CB) (WO C91477056, C91423719) on May 2, 2012
- Repair No. 21 switchgear heating, ventilation, and air conditioning unit (WO C91423944) on May 4, 2012
- Replace No. 13 SW pump discharge check valve (1-SW-111) (WO C90625225) on May 15, 2012
- Replace 1A EDG engine driven fuel oil pump (WO C91095176) on May 23, 2012
- Adjust No. 11 AFW pump governor (WO C91898066) on May 31, 2012
- Replace timer relay 2RY2A415/2/SSB1 for No. 23 AFW motor driven pump (WO C91522940) on June 14, 2012

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – Six Samples)

a. Inspection Scope

The inspectors observed performance of surveillance tests and/or reviewed test data of selected risk-significant SSCs to assess whether test results satisfied TSs, the UFSAR, and Constellation procedural requirements. The inspectors verified that test acceptance criteria were clear, tests demonstrated operational readiness and were consistent with design documentation, test instrumentation had current calibrations and the range and accuracy for the application, tests were performed as written, and applicable test prerequisites were satisfied. Upon test completion, the inspectors considered whether the test results supported that equipment was capable of performing the required safety functions. The inspectors reviewed the following surveillance tests:

- PSTP 02, Initial approach to criticality and low power physics testing, on April 10, 2012
- STPO-073A-2, SW pump and check valve quarterly operability test on April 19, 2012 (In-service testing)
- STPO-065C-2, 22 SRW valve quarterly operability test on April 24, 2012
- STPM-551C-0, Battery chargers No. 21 and No. 13 operability test on May 1, 2012
- STP-M-212B-1, Channel B reactor protection system functional test on May 7, 2012

- STP-M-212B-2, Channel B reactor protection system functional test on May 17, 2012

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06 – One sample)

.1 Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine CCNPP emergency drill on May 2, 2012, to identify any weaknesses and deficiencies in the classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the simulator and technical support center to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the station drill critique to compare inspector observations with those identified by Constellation staff in order to evaluate Constellation's critique and to verify whether Constellation's staff was properly identifying weaknesses and entering them into the CAP.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

Safety Systems Functional Failures (SSFF) (Two samples)

a. Inspection Scope

The inspectors reviewed Constellation submittal for the SSFF performance indicators for both Unit 1 and Unit 2 for the period of January 2011 through March 2012. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in Nuclear Energy Institute document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed licensee event reports submitted within the last year to independently determine how many SSFF occurred. Also, selected safety systems maintenance rule functional failure documentation was reviewed to determine if additional SSFF occurred.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152 – One Sample)

.1 Routine Review of Problem Identification and Resolution Activities

a. Inspection Scope

As required by Inspection Procedure 71152, "Problem Identification and Resolution," the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that Constellation entered issues into the CAP at an appropriate threshold, gave adequate attention to timely corrective actions, and identified and addressed adverse trends. In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the CAP and periodically attended CR screening meetings.

b. Findings

No findings were identified.

.2 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a semi-annual review of site issues, as required by Inspection Procedure 71152, "Problem Identification and Resolution," to identify trends that might indicate the existence of more significant safety issues. In this review, the inspectors included repetitive or closely-related issues that may have been documented by Constellation outside of the CAP, such as trend reports, performance indicators, major equipment problem lists, system health reports, maintenance rule assessments, and maintenance or CAP backlogs. The inspectors also reviewed Constellation's CAP database for the first and second quarters of 2012 to assess CRs written in various subject areas (equipment problems, human performance issues, etc.), as well as individual issues identified during the NRC's daily CR review (Section 4OA2.1). The inspectors reviewed Constellation quarterly trend report for the first quarter of 2012, conducted under CNG-CA-1.01-1007, "Performance Improvement Program Trending and Analysis," to verify that Constellation personnel were appropriately evaluating and trending adverse conditions in accordance with applicable procedures.

b. Findings and Observations

No findings were identified.

In general, Constellation identified trends and appropriately addressed the trends within their CAP. However, the inspectors noted some examples where Constellation did not write trending CRs for adverse trends in accordance with CNG-CA-1.01-1007. For example, the inspector noted a number of CRs related to annunciator card failures, SW/SRW heat exchanger flow transmitter issues, and post accident monitoring system reliability issues. Although the issues were captured by the system health reports and/or long term asset management plan, adverse trend CRs were not written.

4OA5 Other Activities

.1 Temporary Instruction 2515/182, Review of the Industry Initiative to Control Degradation of Underground Piping and Tanks, Phase I (One Sample)

a. Inspection Scope

The licensee's buried piping and underground piping and tanks program was inspected in accordance with paragraphs 03.01.a through 03.01.c of the Temporary Instruction (TI) and was found to meet all applicable aspects of the Nuclear Energy Institute document 09-14, Revision 1, as set forth Table 1 of the TI.

.2 Institute of Nuclear Power Operations (INPO) Report Review

a. Inspection Scope

The inspectors reviewed the final report for the INPO plant assessment of CCNPP conducted in October 2010. The inspectors reviewed these reports to ensure that any issues identified were consistent with NRC perspectives of Constellation performance and to determine if INPO identified any significant safety issues that required further NRC follow-up.

b. Finding

No findings were identified.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On July 13, 2012, the inspectors presented the inspection results to Mr. George H. Gellrich, Vice President, and other members of Constellation staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Constellation Personnel
G. Gellrich, Site Vice President
C. Costanzo, Plant General Manager
J. Beasley, Supervisor, Engineering
K. Bodine, Supervisor, Engineering
J. Galbreath, Senior Engineer
M. Giacini, Manager, Operations
D. Lauver, Director, Licensing
K. Mills, General Supervisor, Shift Operations
C. Neyman, Senior Engineering Analyst, Licensing
T. Riti, General Supervisor, System Engineering
A. Simpson, Supervisor, Licensing
J. Stanley, Manager Engineering Services
E. Kreahling, Principal Engineer

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened and Closed

05000317/318/2012003-01	NCV	Failure to Establish Testing Program for ESFAS SDS (Section 1R04)
05000318/2012003-02	NCV	Failure to Establish and Maintain Adequate Procedures for Maintenance on Pressurizer Power Operated Relief Valves (Section 1R12)

Discussed

05000317/318/2515/182	TI	Review of the Industry Initiative to Control Degradation of Underground Piping and Tanks, Phase 1 (Section 4OA5)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures
AOP-7M, Major Grid Disturbances, Revision 1
Operations Administrative Policy 91-09, Communications for Load Reduction or Outage, Change 16
NO-1-119, Seasonal Readiness, Revision 00600
EP-1-108, Severe Weather Preparation, Revision 00300
ERPIP-3.0, Immediate Actions, Revision 04901

Condition Reports
CR-2012-004543

Miscellaneous
SA-2011-000184, "Post Summer Assessment 2011"
SA-2012-000118, "Pre Summer Assessment 2012"

Section 1R04: Equipment Alignment

Procedures
CNG-CA-1.01-1000, Corrective Action Program, Revision 00600
EOP-00-2, Post Trip Immediate Actions, Revision 01100
OI-21A, 2A Diesel Generator, Revision 19
SA-1, Fire Protection Program, Revision 7
SA-1-102, Fire Protection/Appendix R Compensatory Actions, Revision 00400
OI-21B-2, 2B Diesel Generator, Revision 19
OI-16, Component Cooling System, Revision 32
OI-15, Service Water System, Revision 45
OI-34, Engineered Safety Features Actuation System, Revision 21
ETP 12-005, Functional Check of #11 4kV Bus Shutdown Sequencer, Revision 00200
STPO-04A-2, A Train Integrated Engineering Safety Features Test, Completed on 03/21/95 and 05/05/95
CNG-AM-1.01-1017, Performance Monitoring Program, Revision 00100
EN-1-136, CCNPP Relay Reliability Process, Revision 00000
CNG-AM-1.01-1000, Equipment Reliability Process, Revision 00500
CNG-AM-1.01-1018, Preventive Maintenance Program, Revision 00700

Condition Reports
IRE-032-513

CR-2009-002150	CR-2011-011050	CR-2012-005253
CR-2010-002157	CR-2011-012353	CR-2012-005294
CR-2010-007157	CR-2012-001066	
CR-2011-008675	CR-2012-004971	

Work Orders
C91054645
C90801337
C220082745
C220091338
C220073768

Drawings
60727SH0001, Diesel Generator Cooling Water, Starting Air, Fuel, & Lube Oil Diesel No. 2A, Revision 60
60727SH0003, Diesel Generator Cooling Water, Starting Air, Fuel, & Lube Oil Diesel No. 2B, Revision 55
61058ASH0001, Logic Diagram Engineering Safety Features Actuation System, Revision 50
61403SH0109E, System Flow Sheet Shutdown Sequencer, Revision 3
63080SH0009, Schematic Diagram Salt Water Pump 23, Revision 25
60710SH0002, Component Cooling System, Revision 39
60710SH0001, Component Cooling System, Revision 44
62706SH0002, Service Water Cooling System Auxiliary Building and Containment, Revision 67

Miscellaneous
Unit 1 and 2 ICA, Interactive Cable Analysis, Revision 6
FP00002, Fire Hazards Analysis Summary Document, Revision 0000
NO-1-200, Control of Shift Activities, May 18, 2012
Purchase Order 423959, FTI Root Cause Analysis, Sequencer Module Assembly, 1628-1076, Revision A
Maintenance Strategy SIAS SUB CH A1-1 control relay 1RYAR-XK1
Maintenance Strategy 14 4kV BUS LOCI/SDS circuit card 1SEQBL-XA34
Combustion Engineering Standard Technical Specifications, Revision 4.0
ES-92-046, Diesel Generator LOCI and SD Sequence Voltage Profile, Revision 2

Section 1R05: Fire Protection

Procedures
FP-0002, Fire Hazards Analysis Summary Document, Revision 0
SA-1-100, Fire Prevention, Revision 01800
SA-1-102, Fire Protection/Appendix R Compensatory Actions, Revision 00400
SA-1-105, Fire Brigade Training, Revision 00101
OI-20A, Fire Protection Performance Evaluations and Fire Systems Inspections, Revision 01801
STPM-498-1, Cable Spreading Room Halon System Fire Detection Instruments Functional Test, Revision 00504
ERPIP-3.0, Immediate Actions, Revision 05001
99-01-EAL-TB, Calvert Cliffs Nuclear Power Plant Emergency Action Level Technical Basis Document, Revision 00401

Drawings
62152SH0001, Appendix ‘R’ Separation Requirements Aux Bldg. & Containment Structure Floor Plan at 45’-0”, Revision 11

Miscellaneous
FFSM, Unit 1 Cable Spreading Room, Revision 00200
Fire drill scenario: 12-03, Fire on Hydrogen Storage Tanks
FFSM, Hydrogen Storage Tanks, Revision 1

Section 1R06: Flood Protection Measures

Work Orders
C91443421

Miscellaneous
ES-001, Flooding, Revision 3

Section 1R07: Heat Sink Performance

Procedure
EN-1-327, Service Water Reliability Program (Generic Letter 89-13), Revision 00500

Drawing
84304, Circulating & Salt Water Cooling System, Revision 8

Miscellaneous
Unit 1 Service Water System Health Report (4/1/2012 – 6/30/2012)

Section 1R11: Licensed Operator Requalification Program

Procedures
CNG-OP-1.01-2001, Communication and Briefings, Revision 00100
CNG-OP-1.01-1000, Conduct of Operations, Revision 00600
NO-1-200, Control of Shift Activities, Revision 04902
AOP-3G, Malfunction of Main Feedwater System, Revision 12
EOP-0, Post Trip Immediate Actions, Revision 12
EOP-3, Loss of All Feedwater, Revision 13

Miscellaneous
Emergency Preparedness Exercise Scenario

Section 1R12: Maintenance Effectiveness

Procedures
CNG-AM-1.01-1023, Maintenance Rule Program, Revision 00100
NUMARC 93-01, Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants, Revision 2

Condition Reports
CR-2012-003120
CR-2009-007317

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures
Maintenance Rule Risk Assessment Guideline, Revision 7
CNG-OP-4.01-1000, Integrated Risk Management, Revision 00900
CNG-OP-4.01-1000 Attachment 9, High Risk Activity Plan, dated July 28, 2011
CNG-OM-1.01-1001, Shutdown Safety Management Program, Revision 00200
NO-1-103, Conduct of Lower Mode Operations, Revision 02901
NO-1-200, Control of Shift Activities, Revision 04902
EOOS Risk Monitor Guidelines – Senior Reactor Operators, Revision 1
EOOS Guidelines – Dominant Risk Activities, Revision 0
1K201-ALM, Service Water Heat Exchanger Alarm Manual, Revision 9
OI-22H, Switchgear Ventilation and Air Conditioning, Revision 22

Drawings
61080SH0020S, Schematic Diagram 12A/12B Service Water HTEX Strainers Control Panel 1C201, Revision 6
60708SH0002, Circulating Salt Water Cooling System, Revision 112
60708SH0003, Circulating Salt Water Cooling System, Revision 17

Condition Reports
IRE-031-765

CR-2012-005053	CR-2012-005434	CR-2012-012323
CR-2012-005906	CR-2012-004558	
CR-2012-004772	CR-2012-001619	

Miscellaneous
EOOS PRA Risk for Work Week 1216

Section 1R15: Operability Determinations and Functionality Assessments

Procedures
CNG-OP-1.01-1002, Conduct of Operability Determinations/Functionality Assessments, Revision 00101
CNG-CA-1.01-1000, Corrective Action Program, Revision 00400

Condition Reports
CR-2009-003660
CR-2012-004161
CR-2012-004682
CR-2012-004971
CR-2012-005519
CR-2012-005590

Section 1R18: Plant Modifications

Procedures
CNG-CM-1.01-1003, Design Engineering and Configuration Control, Revision 00400
CNG-CM-1.01-1004, Temporary Plant Configuration Change Process, Revision 00100
NEI 96-07, Guidelines for 10CFR 50.59 Implementation, Revision 1

Work Orders

Engineering Change Package
ECP-11-000232, Temp change to jumper contacts to indicate 21 SGFP HP stop valve closed due to valve degraded condition, Revision 0

ESP-ES200800149, Replace the 2A EDG HVAC temperature controller

Drawings
63079SH0061, Schematic Diagram Containment Overpressure Protection Aux. Relays, Revision 5
63079SH0014A, Schematic Diagram Condensate & Feedwater Turbine Trip & Reset Circuit 21 SGFP, Revision 5
61079SH0014B, Schematic Diagram Condensate & Feedwater Turbine Trip Reset Circuit 11 SGFP, Revision 4

Condition Reports
CR-2011-003201

Section 1R19: Post-Maintenance Testing

Procedures
E-10, Testing and Adjustment of Agastat Relays, Revision 00500
STPO-08A-1, Test of 1A DG and 11 4kV Bus LOCI Sequencer, Revision 27
STPO-73-A-1, Salt Water pump and Check Valve Quarterly Operability Test, Revision 02205
STPM-212-1, Channel 'B' Reactor Protection System Functional Test, Revision 00802
NO-1-208, Calvert Cliffs Operability and Maintenance Testing, Revision 01700
CNG-MN-4.01-GL002, Post Maintenance Test and Post Maintenance Operability Test Requirements guideline, Revision 00000

Condition Reports
CR-2012-006035
CR-2012-007157
CR-2011-009261
CR-2012-005544

Work Orders

C91477056	C91522940	C91423944
C91423719	C91095176	2200901338
C90625225	C91898066	

Drawings
63079SH0054B, Schematic Diagram Aux. Feedwater Motor Driven Pump 23, Revision 8

Miscellaneous
Maintenance Strategy No. 23 AFW pump timer, 2RY2A415/2/SSB1
152-2415/2/SS-B1, CCNP Protective Relay Setting Sheet No. 23 AWF pump Agastat Relay
DCALC D-M-92-038, Tornado Depressurization Analysis – Third Floor, Revision 2
Design Specification SP-784, Diesel Generator Project Safety Related Penetration Seals, Revision 1
DC-A-001-DG, Architectural Design Criteria, Revision 0

Section 1R22: Surveillance Testing

Procedures
PSTP 02, Initial Approach To Criticality And Low Power Physics Testing, Revision 03200
STPO-073A-2, Saltwater Pump and Check Valve Quarterly Operability Test, Revision 01705
STPO-065C-2 22 SRW Valve Quarterly operability test, Revision 00418
STPM-551C-0, Battery Charger s No. 21 and No.13 Operability Test, Revision 00501
STP-M-212B-1, Channel B Reactor Protection System Functional Test, Revision 00802
STP-M-212B-2, Channel B Reactor Protection System Functional Test, Revision 00702
OI-29, Salt Water System, Revision 58

Work Orders
C91424773

Condition Reports
CR-2012-004845
CR-2012-000659
CR-2012-004768
CR-2012-005206
CR-2012-004190

Drawing
62708SH0002, Circulating Water Cooling System, Revision 108
61030, Single Line Diagram Vital 120V AC & 125V DC Emergency 250V DC FSAR FIG No.8-5

Miscellaneous
E-89-007, SBO & LOCA Battery Duty Cycle-125VDC Bus 21, Revision 3

Section 1EP6: Drill Evaluation

Procedure
NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 6
AOP-3G, Malfunction of Main Feedwater System, Revision 12
EOP-0, Post Trip Immediate Actions, Revision 12
EOP-3, Loss of All Feedwater, Revision 13

Miscellaneous
Emergency Preparedness Exercise Scenario

Section 4OA1: Performance Indicator Verification

Procedure
NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 6

Miscellaneous
CCNP Unit 2 LER 2011-001-00, Pressure Boundary Leakage Caused by Primary Water Stress Corrosion Cracking
CCNP Unit 1 LER 2011-001-00, Reactor Trip Due to Phase to Phase Short Circuit on Main Transformer
CCNP Unit 2 LER 2011-002-00, Pressurizer Safety Valve Setpoint High Due to Increased Internal Friction

CCNP Unit 1 LER 2011-002-00, Technical Specification 3.0.3 Entry for Inoperable 125 VDC Channels
CCNP Unit 1 LER 2011-003-00, 1A Emergency Diesel Generator Inoperability Due to Water Intrusion
CCNP Unit2 LER 2011-002-01, Pressurizer Safety Valve Setpoint High Due to Setpoint Variation

Section 4OA2: Problem Identification and Resolution

Condition Reports
CR-2010-012276
CR-2012-002980

Procedures
CNG-CA-1.01-1007, Performance Improvement Program Trending and Analysis, Revision 00300

Miscellaneous
System Health Report, Saltwater System, 1st Quarter 2012
System Health Report, Annunciators, 1st Quarter 2012
System Health Report, Post Accident Monitoring, 1st Quarter 2012
Site Cognitive Trending, 1st Quarter 2012

Section 4OA5: Other Activities

Program Documents:
Fleet Engineering Standard, CNG-FES-047, Performance of Underground Pipe and Tank Management Program Activities, Revision 1
Fleet Administrative Procedure, CNG-AM-9.01-1000, Underground Pipe and Tank Management, Revision 00200
SA-2010-000059, Self-Assessment, Underground Piping Program Inspections, January 13, 2011
Program Health Reports, Underground Pipe and Tank for Periods 4/1-6/30/2012, 10/1-12/31/2011, and 4/1-6/30/2011

Miscellaneous Documents:
NRC Temporary Instruction 2515/182, 11/17/11; Review of the Implementation of the Industry Initiative to Control Degradation of Underground Piping and Tanks
NEI 09-14, Revision 1, December 2010; Guideline for the Management of Underground Piping and Tank Integrity

LIST OF ACRONYMS

AC	alternating current
ADAMS	Agency-Wide Documents Access and Management System
AFW	auxiliary feedwater
CAP	corrective action program
CC	component cooling
CCNPP	Calvert Cliffs Nuclear Power Plant
CFR	*Code of Federal Regulations*
CR	condition report
EDG	emergency diesel generator
ESFAS	engineered safety features actuation system
IMC	Inspection Manual Chapter
kV	kilovolt
LOCI	loss of coolant incident
LOOP	loss of offsite power
NCV	non-cited violation
NRC	Nuclear Regulatory Commission
OD	operability determination
PARS	publicly available records
PMT	post maintenance test
PORV	power operated relief valve
SDP	significance determination process
SDS	shutdown sequencer
SGFP	steam generator feed pump
SSC	systems, structures, and components
SRW	service water
SSFF	safety system functional failure
SW	saltwater
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
UV	undervoltage
WO	work order