

February 2, 2007

Mr. James A. Spina, Vice President
Calvert Cliffs Nuclear Power Plant, Inc.
Constellation Generation Group, LLC
1650 Calvert Cliffs Parkway
Lusby, Maryland 20657-4702

SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT - NRC INTEGRATED
INSPECTION REPORT 05000317/2006005 AND 05000318/2006005

Dear Mr. Spina:

On December 31, 2006, the US Nuclear Regulatory Commission (NRC) completed an inspection at Calvert Cliffs Nuclear Power Plant Units 1 and 2. The enclosed inspection report documents the inspection results, which were discussed on January 17, 2007, with Mr. J. Pollock 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). One of these findings was determined to involve a violation of NRC requirements. Additionally, a licensee-identified violation which was determined to be of very low safety significance is listed in the report. However, because of the very low safety significance and because these issues have been entered into your corrective action program, the NRC is treating these violations as non-cited violations (NCVs) consistent with Section VI.A.1 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 I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Calvert Cliffs Nuclear Power Plant.

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

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Sincerely,

/RA/

Brian J. McDermott, Chief
Projects Branch 1
Division of Reactor Projects

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

Enclosure: Inspection Report 05000317/2006005 and 05000318/2006005
w/ Attachment 1: Supplemental Information
w/ Attachment 2: Mitigating System Performance
Index Verification

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos. 50-317, 50-318

License Nos. DPR-53, DPR-69

Report Nos. 05000317/2006005 and 05000318/2006005

Licensee: Constellation Generation Group, LLC

Facility: Calvert Cliffs Nuclear Power Plant, Units 1 and 2

Location: Lusby, MD

Dates: October 1, 2006 through December 31, 2006

Inspectors: Silas Kennedy, Senior Resident Inspector
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Carey Bickett, Acting Senior Resident Inspector
Arthur Burritt, Senior Project Engineer
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Doug Tiff, Reactor Inspector
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Approved by: Brian McDermott, Chief
Projects Branch 1
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SUMMARY OF FINDINGS

IR 05000317/2006-005, 05000318/2006-005; 10/1/2006 - 12/31/2006; Calvert Cliffs Nuclear Power Plant, Units 1 and 2; Event Followup.

The report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. During the inspection period, the inspectors identified two Green findings, one of which was determined to be a non-cited violation (NCV). The significance of most findings is indicated by their color (Green, White, Yellow, Red) using 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," Revision 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Initiating Events

- Green. A Green self-revealing non-cited violation (NCV) of Technical Specification (TS) 5.4.1.a was identified for failure to adequately implement tagging procedures. This resulted in an unexpected reactor trip of Unit 2 during preparation for a maintenance activity involving a safety related offsite power supply. Operators did not conduct an adequate tagout review as required by procedures. Constellation entered the deficiency into their corrective action program for resolution. Immediate corrective actions included an Operations night order requiring a challenge review for complex electrical tagouts.

The finding is greater than minor because it is associated with the human performance and configuration control attributes under the Initiating Event Cornerstone. The finding is associated with an increase in the likelihood of initiating events in that a reactor trip actually occurred. This issue is of very low safety significance since it does not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment will not be available. The cause of this finding is related to the cross-cutting aspect in the area of human performance because operators did not fully consider the operational impact of work activities. (Section 4OA3.2)

Cornerstone: Mitigation Systems

- Green. The inspectors identified a Green finding for the failure to adequately implement post trip review procedures required by Generic Letter (GL) 83-28, "Required Actions Based on Generic Implications of Salem ATWS Events." Specifically, Constellation's post-trip review for the Unit 2 trip on November 16, 2006, failed to identify equipment deficiencies revealed during the trip. In addition, Constellation's post-trip review did not critically evaluate some aspects of operator performance and emergency procedure implementation. Prior to

restart of the Unit these issues were discussed with Constellation management. Constellation subsequently performed additional evaluations to address the shortcomings of the initial post-trip review and appropriately entered issues in the corrective action program for resolution.

The inspectors determined that Constellation's failure to perform an adequate post-trip review for the Unit 2 reactor trip on November 16, 2006, constitutes a performance deficiency and a finding. The finding is greater than minor because it affected the reliability objective of the Equipment Performance attribute under the Mitigating Systems Cornerstone. Specifically, the failure to identify and correct equipment or procedural deficiencies revealed during a plant trip will decrease the reliability of systems that respond to initiating events to prevent undesirable consequences. This finding has a cross-cutting aspect in the area of problem identification and resolution because Constellation did not identify multiple plant and procedure deficiencies during the initial post-trip review. (Section 4OA3.3)

B. Licensee-Identified Violations

Constellation identified a violation of very low safety significance that has been reviewed by the inspectors. Constellation has taken or planned corrective actions, which have been entered into their corrective action program. This violation and correction actions are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period at 100 percent power. On December 2, 2006, reactor power was reduced to 87 percent to support a planned surveillance of the main steam safety valves. The Unit returned to 100 percent power on December 3, 2006. On December 12, 2006, a manual reactor trip was performed due to a loss of load while replacing a relay card on the turbine control valve drawer. The Unit returned to 100 percent power on December 16, 2006. On December 18, 2006, the Unit entered into a forced outage to repair the 11 containment air cooler (CAC) motor. The Unit returned to 100 percent power on December 22, 2006, where it remained unchanged for the remainder of the inspection period.

Unit 2 began the inspection period at 100 percent power. On October 27, 2006, reactor power was reduced to 32 percent for planned maintenance activities on the containment sump and to clean condenser water boxes. The Unit returned to 100 percent power on October 28, 2006. On November 16, 2006, the unit experienced an automatic reactor trip due to a tagging error. The Unit returned to full power operation on November 21, 2006. On December 16, 2006, reactor power was reduced to 11 percent for planned maintenance on the main turbine voltage regulator. The Unit returned to 100 percent power on December 17, 2006 and remained at this power level for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection (711111.01)

Adverse Weather Seasonal Preparations - Cold Weather (1 Sample)

a. Inspection Scope

The inspectors performed a review of cold weather preparations before the onset of the cold weather season in order to evaluate the site's readiness for seasonal susceptibilities. This review included an assessment of Nuclear Operations Administrative Procedure NO-1-119, Seasonal Readiness. One risk significant system was selected for this inspection, the Unit 2, 21 refueling water tank (RWT) of the emergency core cooling system (ECCS). The inspectors assessed the effectiveness of Constellation's cold weather protection program to ensure that the 21 RWT would remain functional and available for plant shutdown during cold weather conditions as required by TS. The inspectors conducted discussions with control room operators, the cold weather preparation coordinator, and the system engineer to understand protective measures applicable to this system. Additionally, inspectors performed a partial field walk-down of the 21 RWT to evaluate the material condition and functionality of the freeze protection equipment (e.g., heat tracing, instrumentation, etc.) associated with the above component.

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b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05Q - 9 Samples)a. Inspection Scope

The inspectors conducted a tour of the nine areas listed below to assess the material condition and operational status of fire protection features. The inspectors verified that Constellation controlled combustibles and ignition sources in accordance with their administrative procedures and that fire detection and suppression equipment was available for use. The inspectors also verified that station personnel maintained passive fire barriers in good condition and that Constellation implemented compensatory measures for out-of-service, degraded, or inoperable fire protection equipment in accordance with their fire plan. Documents reviewed during the inspection are listed in Attachment 1.

- 2A Emergency Diesel Generator (EDG) Room
- Unit 1 Intake Structure
- Unit 2 Fan Equipment Pump Room
- Unit 1 Fan Equipment Pump Room
- Unit 1 Component Cooling (CC) Water Pump Room
- Unit 2 Cable Spreading Room
- Unit 1 Cable Spreading Room
- Unit 2 45' Switchgear Room
- Unit 1 45' Switchgear Room

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07 - 1 Sample)a. Inspection Scope

The inspectors reviewed Constellation's program for maintenance and testing of risk-important heat exchangers in the service water system. Specifically, the review included the program for testing and analysis of the 22A service water heat exchanger (SRWHX). The inspectors observed the physical condition of the heat exchanger during the cleaning activities and verified that the frequency of inspection was sufficient to detect degradation prior to loss of heat removal capabilities below design requirements. Based on this review, the inspectors concluded that the licensee's testing verified continued operability of the 22A SRWHX, and that this safety related component was operable and capable of performing its design basis function. Documents reviewed are listed in Attachment 1.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11Q - 1 sample)a. Inspection Scope

On October 30, 2006, the inspectors observed a licensed operator simulator training scenario to assess operator performance and the adequacy of the licensed operator training program. The training scenario involved a loss of condenser vacuum requiring operators to perform a manual trip of the reactor after implementation of AOP - 7G. Following the trip, equipment failures occurred resulting in a loss of auxiliary feedwater pumps and a vital 4kV bus. The inspectors focused on high-risk operator actions performed during implementation of the abnormal and emergency operating procedures, emergency plan (EP) and classification of the event. The inspectors evaluated the clarity and formality of communications, the completion of appropriate actions in response to alarms, the performance of timely control board operations and manipulations, and the oversight and direction provided by the shift manager.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

Quarterly Review (71111.12Q - 4 samples)

a. Inspection Scope

The inspectors reviewed the four samples listed below for items such as: (1) appropriate work practices; (2) identifying and addressing common cause failures; (3) scoping in accordance with 10 CFR 50.65(b) of the maintenance rule (MR); (4) characterizing reliability issues for performance; (5) trending key parameters for condition monitoring; (6) charging unavailability for performance; (7) classification and reclassification in accordance with 10 CFR 50.65(a)(1) or (a)(2); and (8) appropriateness of performance criteria for structures, systems, and components (SSCs) classified as (a)(2) and/or appropriateness and adequacy of goals and corrective actions for SSCs classified as (a)(1).

- Unit 1 Control Room HVAC
- Unit 1 13kV Transformer
- Unit 1 Main Steam Safety Valves (MSSVs)
- Unit 1 CAC Motors

b. FindingsUnit 1 Main Steam Safety Valves

The inspectors reviewed the MSSVs surveillance test and identified that some of the MSSV as found lift settings exceeded TS limits for individual valve setpoints. However, the lift settings did not exceed MR performance criteria established by Constellation. The inspectors questioned the basis of the established performance criteria for the MSSV lift setpoint to determine the acceptability of the limits. Constellation initiated IRE-019-372 to evaluate the basis for the MSSV lift setpoint value and to review previous surveillance test results against the established goal. This issue is unresolved pending the completion of Constellation's evaluation and the inspectors' review of the evaluation. **(URI 05000317/2006005-01: Main Steam Safety Valves Maintenance Rule Performance Criteria and Monitoring).**

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 - 4 samples)a. Inspection Scope

The inspectors reviewed the following four activities to verify that station personnel performed the appropriate risk assessments prior to removing equipment for work. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The inspectors compared the risk assessments and risk management actions performed by station procedure NO-1-117, "Integrated Risk Management," to the requirements of 10 CFR 50.65(a)(4), the recommendations of NUMARC 93-01, Revision 2, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," and approved station procedures. In addition, the inspectors assessed the adequacy of Constellation's identification and resolution of problems associated with maintenance risk assessments and emergent work activities.

- Unit 1 Component Cooling Heat Exchanger Relief Valve Maintenance
- Unit 2 Voltage Regulator Replacement
- Unit 1 4kV Transformer Outage
- Unit 2 13kV Transformer Outage

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15 - 4 samples)a. Inspection Scope

For the four operability evaluations described below, the inspectors evaluated the technical adequacy of the evaluations to ensure that Constellation properly justified TS operability and that the subject component or system remained available such that no

unrecognized increase in risk occurred. The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR) to verify that the system or component remained available to perform its intended function. In addition, the inspectors reviewed compensatory measures implemented to verify that the measures worked as stated and that they were adequately controlled. The inspectors also reviewed a sample of Condition Reports (CRs) to verify that Constellation identified and corrected any deficiencies associated with operability evaluations.

- 1A EDG Room Fan Temperature Switches (IRE-017-387)
- Non-Conservative Core Operating Limits Report (COLR) Curve (IRE-017-571)
- Unit 2 Main Steam Safety Valves (MSSV) (IRE-018-525)
- Pressurizer Safety Valve (RV-200) due to a degraded compression screw (IRE-018-803)

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17 - 1 Sample)

a. Inspection Scope

The inspectors reviewed engineering service package (ESP) No. ES199700364, Supplements 000 through 004, which was initiated to prevent water hammer in the Service Water System by starting the service water pumps earlier in the loading sequence of the emergency diesel generator. This modification was performed in support of resolution to Generic Letter (GL) 96-06, "Assurance of Equipment Operability and Containment Integrity During Design-Basis Accident Conditions." The inspectors reviewed the modification package, 10 CFR 50.59 screening, and post-maintenance tests against the system design basis documentation to verify the modifications had not affected system operability. The inspectors also reviewed documentation to ensure that the simulator had been modified to reflect the current plant configuration. The documents reviewed are listed in Attachment 1.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19 - 3 samples)

a. Inspection Scope

The inspectors reviewed the three post-maintenance tests 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 function(s) 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 function(s).

- Unit 1 Component Cooling Heat Exchanger Relief Valve (MO# 1200601945)
- Unit 2 Power Operated Relief Valve (PORV) ERV-402 (MO# 2200503527)
- Unit 2 Safety Relief Valve RV-200 (MO# 1200604325)

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities (71111.20 - 3 Samples)

a. Inspection Scope

The inspectors reviewed three samples of the following forced outages:

- Unit 2 reactor trip during a maintenance activity on November 16, 2006
- Unit 1 manual reactor trip associated with a failed wire in the turbine control valve circuitry on December 12, 2006
- Unit 1 forced outage to repair the 11 CAC that failed on December 18, 2006

These forced outages were reviewed for compliance to TS requirements and approved procedures, conduct of outage risk evaluations, configuration control, and maintenance of key safety functions. The documents reviewed during the inspection are listed in the Attachment 1. During these forced outages, the inspectors monitored licensee control of the outage activities listed below:

- Shutdown Risk Evaluations
- Reactor Startup and Criticality
- Plant Startup
- Power Ascension

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23 - 3 samples)

a. Inspection Scope

The inspectors reviewed three temporary modifications to verify that safety systems did not depart from the design basis and system established criteria. The inspectors reviewed the associated 10 CFR 50.59 screening against the system design bases documentation, including the UFSAR and TS. The inspectors walked down each

modification to verify that proper configuration control was maintained to ensure continued system operability. In addition, the inspectors verified that Constellation controlled the modification in accordance with the requirements of procedure MD-1-100, "Temporary Alterations."

- Installation of Mesh on the Baffle Wall Screen Panels
- 11 CAC Inlet Control Valve Handswitch Modification
- Isolate Air to 21 ECCS Pump Room Air Cooler Outlet Valve

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness (EP)

1EP2 Alert and Notification System (ANS) Evaluation

a. Inspection Scope (71114.02 - 1 Sample)

An onsite review was conducted to assess the maintenance and testing of the licensee's ANS. During this inspection, the inspectors interviewed corporate and site EP staff responsible for implementation of the ANS testing and maintenance. Issue reports (IRs) pertaining to the ANS were reviewed for causes, trends, and corrective actions. The inspectors further discussed with the licensee the ANS siren system and its performance since installation in 2003. The inspectors reviewed the licensee's original ANS design report to ensure compliance with those commitments for system maintenance and testing. The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 2. Planning standard, 10 CFR 50.47(b)(5) and the related requirements of 10 CFR 50 Appendix E were used as reference criteria.

b. Findings

No findings of significance were identified.

1EP3 Emergency Response Organization (ERO) Staffing and Augmentation System

a. Inspection Scope (71114.03 - 1 Sample)

A review of Calvert Cliff's ERO augmentation staffing requirements and the process for notifying the ERO was conducted. This was performed to ensure the readiness of key staff for responding to an event and to ensure timely facility activation. The records from call-in drills and one recent mustering drill were reviewed. The inspectors reviewed procedures and IRs associated with the ERO notification system and drills. The inspectors interviewed personnel responsible for testing the ERO augmentation process. The inspectors compared qualification requirements to the training records for a sample of ERO members. The inspectors also verified that the EP department staff

were receiving required training as specified in the emergency plan. The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 3. Planning standard, 10 CFR 50.47(b)(2) and related requirements of 10 CFR 50 Appendix E were used as reference criteria.

b. Findings

No findings of significance were identified.

1EP4 Emergency Action Level (EAL) and Emergency Plan Changes

a. Inspection Scope (71114.04 - 1 Sample)

Prior to this inspection, the NRC had received and acknowledged changes made to the Calvert Cliffs Emergency Plan and implementing procedures. The licensee developed these changes in accordance with 10 CFR 50.54(q), and determined that the changes did not result in a decrease in effectiveness to the Plan. The licensee also determined that the Plan continued to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR 50. During this inspection, the inspectors conducted a sampling review of Constellation's 10 CFR 50.54(q) screenings for the changes made to the Plan that could potentially result in a decrease in effectiveness, especially the changes made to the backup meteorological data system. This review did not constitute NRC approval of the changes and, as such, the changes remain subject to future NRC inspection. Also, the NRC reviewed the licensee's EAL scheme for logic and consistency, and the licensee's transition to the Nuclear Energy Institute (NEI) 99-01, Revision 4, EALs. The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 4. The requirements in 10 CFR 50.54(q) were used as reference criteria.

b. Findings

No findings of significance were identified.

1EP5 Correction of Emergency Preparedness Weaknesses

a. Inspection Scope (71114.05 - 1 Sample)

The inspectors reviewed self-assessments and audit reports to assess the licensee's ability to evaluate their performance and programs. The inspectors especially reviewed Constellation's progress in recovering the Emergency Preparedness program from the "Red" functional rating that had been assigned by the site Quality and Performance Assessment Group in a past assessment. The inspectors reviewed IRs initiated by Constellation at Calvert Cliffs from drills, self-assessments, and audits, and attended the EP portion of a Nuclear Safety Review Board onsite meeting. The inspectors additionally reviewed the EP aspects of the November 16, 2006, reactor trip and depressurization event. This inspection was conducted according to NRC Inspection Procedure 71114, Attachment 5. Planning standard, 10 CFR 50.47(b)(14) and the related requirements of 10 CFR 50 Appendix E were used as reference criteria.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES (OA)

4OA1 Performance Indicator (PI) Verification (71151)

.1 Initiating Events Cornerstone (6 Samples)

a. Inspection Scope

The inspectors reviewed Constellation's performance indicator program to evaluate, collect and report information on three performance indicators (PIs). The performance indicators were reviewed for the period of April 2004 through March 2005. These dates account for the period that was not assessed during implementation of the Mitigating System Performance Index (MSPI). The inspectors used the guidance provided in NEI 99-02, Revision 4, "Regulatory Assessment Performance Indicator Guideline" to assess the accuracy of Constellation's collection and reporting of PI data. The inspectors reviewed licensee event reports (LERs), monthly operating reports, CCNP power history charts, NRC inspection reports, and operator narrative logs. The PI review for the period of April 2005 through March 2006 was documented in IR 2006003.

- Unit 1 and 2 Unplanned Scrams per 7000 Critical Hours
- Unit 1 and 2 Unplanned Scrams with Loss of Normal Heat Removal
- Unit 1 and 2 Unplanned Power Changes per 7000 Critical Hours

b. Findings

No findings of significance were identified.

.2 Mitigating Systems Cornerstone (2 Samples)

a. Inspection Scope

The inspectors sampled Constellation submittal of Safety System Functional Failures (SSFF) PI for CCNPP Units 1 and 2. The PIs were reviewed for the period of July 2004 through March 2005. These dates account for the period that was not assessed during implementation of the MSPI. The inspectors used the guidance provided in NEI 99-02, Revision 4, "Regulatory Assessment Performance Indicator Guideline" to assess the accuracy of PI data collected and reported. The inspectors reviewed Constellation's PI data and plant records associated with the SSFF PI that included LERs, selected operator logs, and system health reports. The performance indicator review for the period of April 2005 through March 2006 was documented in IR 2006003.

b. Findings

No findings of significance were identified.

.3 Barrier Integrity Cornerstone (4 Samples)a. Inspection Scope

The inspectors reviewed Constellation's performance indicator program to evaluate, collect and report information on four PIs. The performance indicators were reviewed for the period of April 2004 through September 2006. The inspectors used the guidance provided in NEI 99-02, Revision 4, "Regulatory Assessment Performance Indicator Guideline" to assess the accuracy of Constellation's collection and reporting of PI data. The inspectors reviewed LERs, monthly operating reports, CCNPP power history charts, NRC inspection reports, and operator narrative logs.

- Unit 1 and 2 RCS Specific Activity
- Unit 1 and 2 RCS Identified Leak Rate

b. Findings

No findings of significance were identified.

.4 Emergency Preparedness Cornerstone (3 Samples)a. Inspection Scope

The inspectors reviewed data for the EP PIs which are: (1) Drill and Exercise Performance (DEP); (2) ERO Drill Participation; and (3) (ANS) Reliability. The inspectors reviewed supporting documentation from drills and tests in the fourth quarter of 2005 and the first three quarters of 2006, to verify the accuracy of the reported data. The review of these PIs was conducted in accordance with NRC Inspection Procedure 71151. The acceptance criteria used for the review were 10 CFR 50.9 and NEI 99-02, Revision 4, "Regulatory Assessment Performance Indicator Guidelines."

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152).1 Review of Items Entered Into the Corrective Action Program (CAP)

The inspectors performed a daily screening of items entered into Constellation's CAP as required by Inspection Procedure 71152, "Identification and Resolution of Problems." The review facilitated the identification of potentially repetitive equipment failures or specific human performance issues for follow-up inspection. This was accomplished by

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reviewing the description of each new CR and attending screening meetings.

.2 Annual Sample Review (2 Samples)

Clearance Order Boundaries

a. Inspection Scope

The inspectors selected CR (IRE-009-106) and supporting documents associated with corrective actions for Unit 1 NCV 05000317/2005005-01, Failure to Establish Adequate Clearance Order Boundaries. This issue involved a loss of component cooling water (CCW) to the reactor coolant pumps on October 25, 2005. The reports were reviewed to ensure that the full extent of the issue was identified, an appropriate evaluation was performed and appropriate corrective actions were specified, prioritized and implemented. The inspectors evaluated the reports against the requirements of Constellation's corrective action program. Cognizant Operations personnel were interviewed with respect to the effectiveness of the implementation of corrective measures.

b. Findings and Observations

No findings of significance were identified. CR IRE-011-076 and its root cause investigation sufficiently documented the cause of the tagging issue that caused a loss of component cooling water to the reactor coolant pumps. However, the inspectors identified that an extent of condition review was not performed on other structures, systems, and components as required by CNG-CA-1.01-1004, Category I Root Cause Analysis. In addition, the inspectors noted that short term compensatory actions and long term corrective actions were not effective at preventing similar events from occurring on February 22, 2006, and November 16, 2006. The February 2006 event was dispositioned in IR 2006002 as NCV 05000317/2006002-02, Failure to Establish Adequate Physical Boundaries For RCP Maintenance. The November 2006 event is discussed in section 4OA3 of this report. Following the February 2006 event and additional configuration control issues, Constellation initiated a new root cause analysis to investigate the site wide management of the configuration control program. These challenges are further discussed in Section 4OA2.3 of this report.

ASME Code Requirements for Inservice Testing Program (IST)

a. Inspection Scope

The inspectors performed an in-depth review of Constellation corrective actions taken to resolve a non-conforming condition of the American Society of Mechanical Engineers (ASME) code requirements related to their Inservice Testing (IST) Program. This issue involved maintenance that affected hydraulic or mechanical parameters reference values on the auxiliary feedwater (AFW) and ECCS pumps. Constellation did not establish new reference values or reconfirm the previous reference values following maintenance that affected the pumps as required by the ASME Operation and

Maintenance (OM) Code for inservice testing. The corrective actions were reviewed to ensure that the full extent of the issue was identified, an appropriate evaluation was performed and appropriate corrective actions were specified, prioritized and implemented. The inspectors evaluated these actions against the requirements of Constellation's corrective action program and 10 CFR Part 50, Appendix B. Constellation personnel were interviewed with respect to the effectiveness of the implementation of these corrective measures.

b. Findings

No findings of significance were identified.

.3 Semi-Annual Trend Review (1 sample)

a. Inspection Scope

The inspectors performed a semiannual review to identify trends that might indicate the existence of a more significant safety issue. The inspectors reviewed CCNPP Units 1 and 2 performance indicator monthly reports, CRs, system health reports, quality assurance audits, self-assessment reports, maintenance reports, and NRC IRs and interviewed key personnel to evaluate if a trend existed.

b. Assessment and Observations

The inspectors noted a trend related to problems Constellation has encountered in maintaining configuration control during tagging related activities. The inspectors noted that this issue has been longstanding and corrective action to date has not been effective as evidenced by a recent Unit 2 reactor trip due to a tagging error. The inspectors noted that Constellation's ineffective implementation of the configuration control process is related to the lack of in-depth tagout reviews and a lack of understanding of current plant configuration status. Constellation has acknowledged a challenge in the area of plant configuration control and initiated a root cause analysis associated with IRE-013-623, Plant Configuration Control Integration Challenges in May 2006. The resident inspectors will continue to follow this issue within the framework of the baseline inspection program.

40A3 Event Followup

.1 (Closed) LER 05000317/318/2005-003-001, Overpower Condition Resulting from Non-Conservative Flow Correction Factors

In February 2004, Westinghouse issued Technical Bulletin TB-04-04, which recommended verification of the Crossflow Ultrasonic Feedwater Flow Measurement system by an independent means. In response to this Technical Bulletin, Constellation used various methods, including evaluation of thermal performance data and feedwater tracer testing, to validate the operation of their ultrasonic feedwater flow measurement system. Tracer testing results indicated that the main feedwater flow venturi correction

factors calculated using these ultrasonic flow meters had been set non-conservatively low. As a result, Constellation discovered that both units had operated at levels that exceeded maximum licensed thermal power since the time these correction factors were installed in July 2003. Upon discovery of the overpower condition, Constellation immediately adjusted the correction factors to 1.000, which effectively removed the ultrasonic flow meters from service.

This finding is more than minor because it affected the design control attribute of the barrier integrity cornerstone in that the feedwater flow correction factors had been set non-conservatively low and fuel clad thermal limits were challenged by operating in excess of 100 percent rated thermal power. Because reactor power did not exceed 102 percent power, both units were not operated in an unanalyzed condition. Inspectors determined this finding to have very low safety significance (green) using Appendix A of the Inspection Manual Chapter 0609, "Significance Determination Process." This licensee-identified finding involved a violation of Calvert Cliffs Unit 1 and Unit 2 license condition 2.C.(1), "Maximum Power Level." Constellation documented this event and associated actions, including the apparent cause evaluation, in condition report IRE-008-149. The enforcement aspects of this finding are discussed in Section 4OA7 of this report. This LER is closed.

.2 Unit 2 Reactor Trip - November 16, 2006

a. Inspection Scope

On November 16, 2006, the inspectors responded to a Unit 2 event that involved a reactor trip during preparation for a maintenance activity. Due to a tagging error, the turbine valves closed resulting in a reactor trip on high reactor coolant system (RCS) pressure. All control rods fully inserted in response to the reactor trip. One power operated relief valve (PORV), which opened to control RCS pressure, remained open for longer than expected (approximately 90 seconds). During the shutdown, plant workers replaced the pressurizer PORV that malfunctioned. One pressurizer safety valve was also replaced due to suspected seat leakage. The inspectors discussed the reactor trip with operations, engineering, and Constellation's management personnel to gain an understanding of the event and assess followup actions. The inspectors reviewed operator actions taken in accordance with licensee procedures and reviewed system indications to verify that actions and system responses were as expected. The inspectors also reviewed Constellation's initial investigation to assess the detail of the review and adequacy of the root cause and proposed corrective actions prior to restart. Inspectors observations were compared to the requirements specified in the Calvert Cliffs procedures listed in the Attachment 1.

b. Findings

Introduction. A Green self-revealing NCV of TS 5.4.1.a was identified for failure to adequately implement tagging procedures. This resulted in an unexpected reactor trip of Unit 2 during preparation for a maintenance activity involving a safety related offsite

power supply. Operators did not conduct an adequate tagout review as required by procedures.

Description. On November 16, 2006, at 12:18 a.m., Calvert Cliffs Unit 2 experienced an automatic reactor trip from full power due to the unexpected closure of main turbine valves during preparation for a maintenance activity. The licensee's preliminary investigation found that the event was caused by an electrical maintenance tagout that was not adequately reviewed for operational impacts.

The inspectors reviewed Constellation's initial investigation associated with this event and agreed that the cause of the reactor trip was due to an inadequate performance of a tagout review required by procedure NO-1-112, Safety Tagging. Step 5.10.C of NO-1-112 requires the senior safety tagger to ensure the adequacy of the tagout, for both personnel safety and equipment protection. The licensed operator who reviewed the tagout questioned the intent of a note in the design document concerning loss of power effects on the turbine control system but did not follow up to resolve his question. On November 16, the loss of power due to implementation of the tagout impacted the turbine control system and initiated the plant transient.

Analysis. The performance deficiency associated with this event is a failure to conduct an adequate tagout of safety related components in accordance with procedures. The finding is greater than minor because it is associated with the human performance and configuration control attributes under the Initiating Event Cornerstone. The finding is associated with an increase in the likelihood of initiating events in that a reactor trip actually occurred. This issue is of very low safety significance due to the finding does not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment will not be available. The licensee entered this deficiency into their corrective action program under IRE-018-341. The cause of this finding is related to the cross-cutting aspect in the area of human performance because operators did not fully consider the operational impact of work activities.

Enforcement. TS 5.4.1.a requires that written procedures be established, implemented, and maintained covering activities specified in Regulatory Guide 1.33, Appendix A. Regulatory Guide 1.33, Appendix A, Item 1c requires that equipment control (tagging) procedures be implemented for safety related activities. Step 5.10.C of NO-1-112 requires that the senior safety tagger shall ensure the adequacy, for both personnel safety and equipment protection of the tagout. Contrary to the above, on November 16, 2006, operators did not conduct an adequate tagout review involving a safety related offsite power supply, which resulted in an unplanned reactor trip on Unit 2. Because this failure to conduct an adequate tagout review is of very low safety significance and has been entered into Constellation's corrective action program (IRE-018-341), this violation is being treated as a non-cited violation consistent with Section VI.A.1 of the NRC Enforcement Policy. **(NCV 05000318/2006005-02: Inadequate Tagout Review Involving a Safety Related Offsite Power Supply)**

.3 Unit 2 Post-Trip Review - November 2006

a. Inspection Scope

The inspectors reviewed Constellation's response to a Unit 2 reactor trip on November 16, 2006. The inspectors discussed the reactor trip with Constellation's initial investigation team and assessed the team's actions to gather, review, and assess information about the reactor trip. The inspectors later reviewed Constellation's initial investigation results to assess the detail of its review and adequacy of the root cause and proposed corrective actions prior to restart. Inspector observations were compared to the requirements specified in the procedures listed in the Attachment 1.

b. Findings

Introduction. The inspectors identified a Green finding for the failure to adequately implement post trip review procedures required by Generic Letter (GL) 83-28, "Required Actions Based on Generic Implications of Salem ATWS Events." Specifically, Constellation's post-trip review for the Unit 2 trip on November 16, 2006, failed to identify equipment deficiencies revealed during the trip. In addition, Constellation's post-trip review did not critically evaluate some aspects of operator performance and emergency procedure implementation. Prior to restart of the Unit, these issues were discussed with Constellation management. Constellation subsequently performed additional evaluations to address the shortcomings of the initial post-trip review and appropriately entered issues in the corrective action program for resolution.

Description. On November 16, 2006, Calvert Cliffs Unit 2 experienced an automatic reactor trip from full power. Following a reactor trip, Constellation is required to perform a post-trip review evaluation in accordance with Nuclear Operations (NO) Administrative Procedure NO-1-111, Post-Trip Review. As specified in GL 83-28, this procedure requires a thorough and systematic evaluation of the reactor trip event to ensure that the response of safety-related equipment is fully understood prior to restart. The inspectors reviewed Constellation's post-trip evaluation and determined that the evaluation was not adequate because it failed to identify equipment deficiencies revealed during the trip. In addition, Constellation's post-trip review did not critically evaluate some aspects of operator performance and emergency procedure implementation. The inspectors' review identified that Constellation's post-trip evaluation did not:

- analyze the steam generator pressure data and determine that at least one or more of the MSSV lifted and subsequently reseated;
- identify or investigate potential operator issues such as why the PORV block valve was not closed to isolate a stuck open PORV;
- recreate the operator response to the event to verify actions were correct;
- identify that the RCP control bleed-off relief valve (2-RV-199) had lifted;
- identify or evaluate why the alarm typer did not list the solenoid for PORV 402 as de-energized;
- use FSAR or other design information to confirm the plant response was appropriate;
- identify that the main generator exciter drawer was degraded.

Enclosure

- identify that the reactor operator response checks were slowed when the operator was required to re-check all Control Element Assemblies (CEAs) inserted due to a CEA amber light not being lit; and
- identify Emergency Operating Procedure (EOP) problems such as the recommendation to transition to EOP-1 instead of EOP-5 or why acoustic monitor indications are not adequately addressed by EOPs;

Following discussions with the inspectors, Constellation evaluated the individual issues and deficiencies listed above and entered them into the corrective action process where appropriate.

Analysis. The inspectors determined that Constellation's failure to perform an adequate post-trip review for the Unit 2 reactor trip on November 16, 2006, constitutes a performance deficiency and a finding. The finding is greater than minor because it affected the reliability objective of the Equipment Performance attribute under the Mitigating Systems Cornerstone. Specifically, the failure to identify and correct deficiencies revealed during a plant trip will decrease the reliability of systems that respond to initiating events to prevent undesirable consequences. Traditional enforcement does not apply because the issue did not have any actual safety consequences or potential for impacting the NRC's regulatory function and was not a result of any willful violation of NRC requirements. This issue was reviewed using Appendix A of IMC 0609, "Significance Determination Process" and was determined to be of very low safety significance (Green) because the equipment deficiencies that were not identified during Constellation's review did not result in the loss of a safety function or inoperability of any mitigating systems. This finding has a cross-cutting aspect in the area of problem identification and resolution because Constellation did not identify multiple plant and procedure deficiencies during the post-trip review for the Calvert Cliffs Unit 2 trip on November 16, 2006.

Enforcement. Because no violation of regulatory requirements occurred and the finding was entered into the licensee's corrective action program (IRE-018-513), this issue is being treated as a finding. **(FIN 05000318/2006005-03: Inadequate Post-Trip Review)**

.4 Acoustic Monitors Response

On November 16, 2006, a loss of main turbine load due to a tagging error caused RCS pressure to increase. One power operated relief valve (PORV), which opened to control RCS pressure, remained open for longer than expected (approximately 90 seconds). In addition, one pressurizer safety valve potentially simmered. Constellation reported that the pressurizer safety valve did not open and the associated pressurizer safety valve acoustic monitoring indication was due to the close proximity of the PORV. The inspectors noted that the acoustic monitors, which are relied on by plant operators during implementation of emergency operating procedures, provided potentially ambiguous information. Calvert Cliffs' UFSAR states the requirement to provide the operator with unambiguous indication of RCS safety and relief valve position so that appropriate operator actions can be taken. This issue is unresolved pending completion of Constellation's root cause evaluation for this event and the vendor's inspection and

repair report for the pressurizer safety valve. (**URI 05000318/2006005-04: Acoustic Monitors Response**).

.5 Adequacy of Emergency Operating Procedures

In response to the November 16, 2006, reactor trip event, operators implemented emergency operating procedures (EOP) as required. During the event, PORV, which opened to control RCS pressure, remained open for longer than expected (about 90 seconds) due to a mechanical stem problem. The inspector noted that the PORV had closed prior to the operators having an opportunity to consider closing the PORV block valve to terminate the unwanted pressure reduction.

The inspector determined that Step 1.2 of EOP-0, Section D, "Verify the RCS Pressure and Inventory Control Safety Function is Satisfied," may not be adequate. EOP-0 is the entry procedure for all EOPs and was the only EOP used for the first 16 minutes following the reactor trip. This procedure provides immediate operator actions necessary to ensure that the plant is placed in a safe and stable condition. Step D.1.2 of EOP-0, requires, in part, that operators close the PORV block valve if a PORV is open and if pressurizer pressure is less than 2300 psia. The inspectors found that the acoustic monitor indications were the only method to diagnose the mechanically stuck open PORV during this event since the solenoid had appropriately de-energized in response to lowering pressurizer pressure. The inspector determined that EOP-0 does not provide explicit direction for the condition when the PORV indicates closed on the main control board (solenoid denergized), but acoustic monitors indicate that the PORV may be open. The ability for operators to diagnose a mechanically stuck open PORV is further complicated since a stuck open pressurizer safety valve would provide similar acoustic monitor indications due to the close proximity and common discharge piping of the PORVs and the safety valves.

The inspectors also determined that EOP-0 Section H, "Perform Diagnostic Actions," may not be adequate since during this event it indicated EOP-1 "Reactor Trip" would be the appropriate EOP to transition to, instead of EOP-5 "Loss of Coolant Accident (LOCA)" which was more appropriate due to the Safety Injection Actuation Signal (SIAS) actuation on low pressurizer pressure. The diagnostic table directs the use of EOP-1 when all critical safety functions are satisfied. During the November 16 event, the Inventory Control Safety Function was initially challenged as a result of a stuck open PORV resulting in a SIAS actuation. Nonetheless, before safety systems injected into the reactor, the faulty PORV self closed and pressurizer pressure slowly returned to 2300 psia satisfying the inventory control safety function. When operators used the EOP-0 diagnostic table, later in the event, they determined that inventory control safety function was met resulting a recommendation to implement EOP-1. Despite the diagnostic table result, operators used judgement and appropriately transitioned to and implemented EOP-5.

The adequacy of EOP-0 sections D and H is unresolved pending completion of Constellation's root cause evaluation for this event and NRC evaluation of IRE-019-013. (**URI 05000318/2006005-05: EOP-0 Issues Identified Following November 16, 2006 Trip**).

.6 Unit 1 Manual Reactor Trip - December 12, 2006

a. Inspection Scope

The inspectors responded to a manual reactor trip of Unit 1, which occurred on December 12, 2006. Operators manually tripped the reactor due to a loss of load while replacing two circuit cards on the turbine control valve drawer. The inspectors discussed the trip with operations, engineering, and Constellation management personnel to gain an understanding of the event and assess follow-up actions. The inspectors reviewed operator actions taken in accordance with Constellation procedures and reviewed system indications to verify that actions and system responses were as expected. The inspectors discussed the event with Constellation's prompt investigation team and assessed the team's actions to gather, review, and assess information leading up to and following the trip. The inspectors later reviewed the initial investigation report to assess the detail of the review and adequacy of the preliminary root cause and proposed corrective action prior to unit restart.

Constellation's investigation identified the root cause of the loss of load was a failed wire in the turbine control valve circuitry. The failed wire caused one of the control valves to close unexpectedly when one of the three channels was taken out of service during maintenance on the turbine control valve circuitry. Constellation replaced the failed wire and conducted an inspection of all of the turbine control valve junction boxes. Recommended long term corrective actions include setting up a planned maintenance activity to periodically inspect the junction boxes while on line and institute a software fix to detect this type of latent failure. The inspector observations was compared to the requirements specified in the procedures listed in Attachment 1.

b. Findings and Observations

No findings of significance were identified.

40A5 Other Activities

.1 (Closed) URI 05000317/2006004-003 1A EDG Ventilation Fan Performance

The inspectors reviewed an unresolved item (URI) opened to track the pending resolution of an issue associated with the 1A EDG room ventilation fan temperature switches. The inspectors identified that the 1A EDG room ventilation fan temperature switches were installed with the shipping protectors over the sensing element. This was observed during a 1A EDG surveillance test. During the test, inspectors noticed that with only one fan running the local temperature had reached 97 °F. The system design is such that at approximately 85 °F, the second ventilation fan starts and around 95 °F, the third ventilation fan starts so as to limit the room to a maximum design temperature of 120 °F. The inspectors discussed the observation with Constellation's staff, which subsequently determined that the fan temperature switches were installed with the shipping protectors over the sensing element which delayed the response time of the switches to start the room ventilation fans. The inspectors conducted follow-up inspections to resolve and review operability concerns.

On October 4, 2006, Constellation completed the past operability assessment and determined that the impact from the installed shipping protectors did not cause the EDG room temperature to exceed its maximum design limit. This was based on a review of temperature logs and the presence of an independent room temperature alarm which is set at 117 °F. The inspectors reviewed the past operability assessment and determined it to be adequate. The temperature logs and alarm room data did not identify temperatures greater than the maximum design limit of 120 °F. Both the temperature logs and alarm data are independent of the temperature switches, which had the shipping protectors installed over the sensing element. The inspectors concluded that since the room temperature never exceeded the design basis maximum temperature of 120 °F and prompt corrective actions were taken to remove the shipping protectors that this issue constituted a finding of minor significance.

.2 Temporary Instruction (TI) 2515/169, Mitigating System Performance Index Verification

a. Inspection Scope

The inspectors completed TI 2515/169 to validate MSPI data. The inspectors reviewed the MSPI basis document to verify that Constellation had accurately implemented guidance for voluntarily reporting unavailability and unreliability of selected mitigating safety systems. The inspectors validated the accuracy of the unavailability and unreliability input data used for both the twelve quarter period of baseline performance and the first reported results for the 2006 second quarter. On a sampling basis, the inspectors examined surveillance activities which, when performed, do not render the train unavailable due to activities greater than 15 minutes and due to credit for prompt operator recovery actions. Additionally, the inspectors independently confirmed the accuracy of the baseline planned unavailability, actual planned and unplanned unavailability, and the accuracy of the failure data (i.e., demand, run, and load) for the monitored components. Attachment 2 provides supplemental information regarding implementation of TI 2515/169.

b. Findings and Observations

No findings of significance were identified.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On January 17, 2007, the resident inspectors presented the inspection results to Mr. J. Pollock and other members of your staff who acknowledged the findings. The inspectors asked Constellation whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by the Licensee and is a violation of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as a Non-Cited Violation:

- Calvert Cliffs Nuclear Power Plant (CCNPP) Facility Operating License Numbers DPR-53 and DPR-69, License Condition 2.C.(1), Maximum Power Level, in part, states that the licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 2700 megawatts-thermal in accordance with the conditions specified herein. Contrary to this, both units operated in excess of licensed steady state reactor core power levels from July 2003 to September 2005 due to an application of non-conservative feedwater flow correction factors. Constellation entered this issue in their corrective action program under IRE-008-149. This finding is of very low safety significance because reactor power did not exceed the maximum analyzed steady state reactor core power level of 102 percent of rated thermal power, and therefore did not operate in an unanalyzed condition.

ATTACHMENT 1: SUPPLEMENTAL INFORMATION

ATTACHMENT 2: MITIGATING SYSTEM PERFORMANCE INDEX VERIFICATION

ATTACHMENT 1

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Constellation Personnel

J. Spina, Vice President
J. Pollock, Plant General Manager
D. Bauder, Operations Manager
G. Detter, Fleet Security and Emergency Preparedness Manager
E. Schinner, Calvert Cliffs Emergency Preparedness Manager
J. Gaines, Licensing Manager
M. Flaherty, Engineering Services Manager
S. Dean, Operations Supervisor
K. Mills, System Engineering Supervisor
D. Murphy, Balance of Plant Engineering Supervisor
A. Simpson, Principle Engineer
C. Dobry, Senior Engineer
K. Greene, Senior Engineer
T. Love, Senior Operator Instructor
K. Allor, Initial Training Supervisor
L. Richards, Component Specialist Supervisor
R. Camerson, Senior Engineering Analyst

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000317/2006005-01	URI	Main Steam Safety Valves Maintenance Rule Performance Criteria and Monitoring (Section 1R12)
05000318/2006005-04	URI	Acoustic Monitors Response (Section 4OA3.4)
05000318/2006005-05	URI	EOP-0 Issues Identified Following November 16, 2006 Trip (Section 4OA3.5)

Opened and Closed

05000318/2006005-02	NCV	Inadequate Tagout Review Involving a Safety Related Offsite Power Supply (Section 4OA3.2)
05000318/2006005-03	FIN	Inadequate Post-Trip Review (Section 4OA3.3)

Closed

05000317/318/2005003-001 LER Overpower Condition Resulting from Non-Conservative Flow Correction Factors (Section 4OA3.1)

05000318/2006004-03 URI 1A EDG Ventilation Fan Performance (Section 4OA5)

Discussed

05000317/2005005-01 NCV Failure to Establish Adequate Clearance Order Boundaries (Section 4OA2)

05000317/2006002-02 NCV Failure to Establish Adequate Physical Boundaries for RCP Maintenance (Section 4OA2)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather

Procedures

OI-3A, Revision 20, Safety Injection and Containment Spray
NO-1-119, Revision 0, Seasonal Readiness
NO-1-203, Revision 12, Operations Section Performance Evaluation (PE)

Condition Reports

IRE-009-323

Other

PE, 0-102-04-O-M, Revision 8, Freeze Protected Equipment
Calvert Cliffs UFSAR, Section 6.3.2.4, Revision 34, "Refueling Water Tank"
Calvert Cliffs UFSAR, Section 6.10, Revision 34, "Electrical Heat Tracing System"
Post Winter Assessment of Seasonal Readiness dated 6/8/2006
Pre Winter Assessment of Seasonal Readiness dated 9/14/2006
Pre Summer Assessment of Seasonal Readiness dated 3/15/2006

Section 1R05: Fire Protection

SA-1, Revision 6, Fire Protection Program
FP-0002, Revision 0, Fire Hazards Analysis Summary Document
Fire Fighting Strategies Manual, Revision 0
Calculation CA02243, Revision 1, Combustion Loading Analysis Report

Section 1R07: Heat Sink Performance

Procedures

SRWHX-4, Revision 9, Service Water Heat Exchanger Cleaning and Inspection

Work Orders

MO#2200602771, 22A Service Water Plate Heat Exchanger (PHE)

MO#2200603017, 22A Service Water Plate Heat Exchanger

Condition Reports

IRE-016-992

Other

15077-006-1001, Heat Exchanger Operational and Maintenance Manual

Section 1R11: Licensed Operator Requalification Program

Procedures

NO-1-200, Revision 32, Control of Shift Activities

OP-36, Revision 6, Evaluated Scenario

Condition Reports

IRE-018-225

Section 1R12: Maintenance Effectiveness

Procedures

NO-1-115, Revision 7, Operations Maintenance Coordination

NO-1-203, Revision 12, Operations Section Performance Evaluation

ER-1-103, Revision 1, Maintenance Rule Program Implementation

OI-22F, Revision 24, Control Room and Cable Spreading Rooms Ventilation

STP-M-3A-0, Revision 2, On-line Main Steam Safety Valve Testing

Condition Reports

IRE-011-601

Work Orders

MO#1200404746

MO#1200606127

MO#2200600605

MO#2200604009

Other

CCNP MR Scoping Document

PE 0-030-03-O-M, Revision 2, Control Room HVAC Load Test on 11 CR HVAC

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures

MN-1-123, Revision 17, Integrated Work Planning

NO-1-117, Revision 17, Integrated Work Management

OI-27B, Revision 16, 13.8 kV System

OI-27C, Revision 23, 4.16 kV System

Work Orders

MO#1200602981
MO#2200602653
MO#2200603140
MO#2200603141
MO#2200603142
MO#1200601945
MO#1200602100

Other

Integrated Work Schedule Week 0643
Integrated Work Schedule Week 0645

Section 1R15: Operability Evaluations

Procedures

NO-1-106, Revision 10, Functional Evaluation/Operability Determination
SD-103, Revision 2, Diesel Generator (DG) Ventilation Systems
CCNPP DWG 62429SH0001, Revision 5, HVAC Systems
CCNPP DWG 61-085-C, Revision 2, 1A EDG Room Ventilation Fan F-1
STP-M-3A-0, Revision 2, On-line Main Steam Safety Valve Testing

Condition Reports

IRE-004-334
IRE-013-825
IRE-014-209
IRE-017-387
IRE-017-571
IRE-018-525
IRE-018-803

Work Orders

MO#1200605244

Other

NEOP-13, Revision 28, Unit 1 Technical Data Book
CCNPP Memorandum, dated November 20, 2006, Reportability Review for IRE-017-571
CCNPP Memorandum, dated November 22, 2006, Period of Operation Impacted by Potentially
Non-conservative N-Factor Curve
CCNPP Operator Logs

Section 1R17: Permanent Plant Modifications

Work Orders

MO#2200303460, Service Water Pump 21
MO#1200300227, Service Water Pump 11
MO#1200201106, 1 ESFAS Act Relay PNL ZA

MO#8200300122, Modify Simulator LOCI Sequencer

Condition Reports
IR4-008-098

Other

Calculation CA05966, Revision 0, Operability Evaluation for SRW Penetration Anchors 25, 26, 27, 28, 29, 30, 31 & 32 due to the effects of GL 96-06 Water Hammer Loads
Calculation CA05968, Revision 0, Operability Evaluation of Containment Air Coolers due to the effects of GL 96-06 Water Hammer Loads
Review #97-001, Containment Air Coolers
ES199700364-001, Operability Analysis for GL 96-06
ES199700364-002, Modify LOCI Sequencer (Unit 2) to Support GL 96-06 Resolution
ES199700364-003, Modify LOCI Sequencer (Unit 1) to Support GL 96-06 Resolution
ES199700364-004, Correct Unit 2 Plant Computer Alarm Circuit for #21 & 22 SRP Pumps
Resolution of Generic Letter 96-06 Issues, July 19, 2004

Section 1R19: Post-Maintenance Testing

Procedures

NO-1-208, Revision 11, Nuclear Operations Post Maintenance Testing

Work Orders

MO#2200503527
MO#1200601945
MO#1200604325

Section 1R20: Refueling and Other Outage Activities

Procedures

NEOP-302, Revision 41, Estimated Critical Condition Unit 1
OP-2, Revision 5, Plant Startup From Hot Standby To Minimum Load

Section 1R23: Temporary Plant Modifications

Procedures

MD-1-100, Revision 13, Temporary Alterations
AOP-7A-2, Revision 12, Loss of Saltwater Cooling
OI-29-2, Revision 52, Saltwater System
EN-1-102, Revision 10, 10CFR 50.59 / 10 CFR 72.48 Reviews

Work Orders

MO#1200603752
MO#0200601751

Condition Reports

IRE-011-601
IRE-015-105
IRE-015-787
IRE-016-850
IRE-016-854
IRE-018-646
IRE-018-647

Other

TA-2-05-0013, Isolate Air to 21 ECCS Pump Room Air Cooler Outlet Valve
TA-1-06-0026, Epoxy Switch Knob on 1HS1581
TA-1-06-0021, Installation of Additional Mesh Material on Baffle Wall
TA-1-06-0022, Installation of Nylon Mesh at All Openings in the Intake Baffle Wall
ES200600431-000, ReviFailure of Honeywell "CMC" Type Hand Switches
Performance Evaluation (PE), 200600025

Section 1EP2: Alert and Notification System (ANS) Evaluation

System Description (SD)-100, Revision X, Plant Communications System
Preventive Maintenance List for Plant Communications System
Incident Reports related to ANS sirens, from 7/1/05 - 12/1/06
Plant Communications System Health Report
Federal Emergency Management Agency ANS acceptance letter, dated 2/11/2003
American Signal Corporation Design Report, Upgraded Public ANS, Calvert Cliffs Nuclear
Power Plant

Section 1EP3: Emergency Response Organization (ERO) Staffing and Augmentation System

Calvert Cliffs Emergency Response Plan, Section 3, Organization
Calvert Cliffs ERO Member Roster
Emergency Response Team Position Descriptions
Emergency Response Members Training Due Report, dated 12/4/06

Section 1EP4: Emergency Action Level (EAL) and Emergency Plan Changes

PR-1-100, Preparation and Control of Calvert Cliffs Procedures
EP-1-100, Preparation and Control of the Emergency Response Plan
Calvert Cliffs EALs
All 10 CFR 50.54(q) screenings and evaluations performed, January 2005 - November 2006

Section 1EP5: Correction of Emergency Preparedness Weaknesses

All EP-related Issue Reports generated July 2005 - November 2006
Report of Audit EPP-05-01-C, Emergency Preparedness (10CFR50.54(t) audit), 8/31/05
Report of Audit EPP-06-01-C, Emergency Preparedness (10CFR50.54(t) audit), 9/29/06
CNO Policy #16, Quality and Performance Assessment Quarterly Report Response Process

Quality and Performance Assessment Quarterly Reports for 2005-2006
Emergency Preparedness Unit Self-Assessment Program Manual and all self-assessments,
January 2005 - November 2006
Emergency Preparedness Unit Key Performance Indicators, 2005 & 2006
NO-1-111, Post Trip Review for 11/16/06 Unit 2 Trip

Section 4OA1: PI Verification

RM-1-323, Preparation of Emergency Preparedness Cornerstone NRC Performance Indicators
Drill and Exercise Performance PI Data, October 2005 - September 2006
ERO Drill Participation PI Data, October 2005 - September 2006
Alert and Notification System Reliability PI Data, October 2005 - September 2006

Section 4OA2: Identification and Resolution of Problems

Root Cause Analysis Report, Configuration Management Challenges Resulting from Work
Management and Tagging Process Shortfalls
Root Cause Analysis Report, Unit 1 Component Cooling Water system momentarily aligned to
the containment sump
CNG-CA-1.01-1004, Revision 0001, Category I Root Cause Analysis

Condition Reports

IRE-013-623
IRE-009-106
IRE-011-762
IRE-013-584
IRE-019-127

Section 4OA3: Event Followup

Procedures

NO-1-112, Revision 30, Safety Tagging
NO-1-111, Revision 7, Post Trip Review
EOP-0, Revision 10, Unit 1 Reactor Trip Response
EOP-1, Revision 13, Reactor Trip

Condition Reports

IRE-008-149	IRE-018-411	IRE-018-526	IRE-018-887
IRE-018-341	IRE-018-493	IRE-018-574	IRE-018-888
IRE-018-373	IRE-018-513	IRE-018-606	IRE-018-906
IRE-018-402	IRE-018-525	IRE-018-885	

Other

Renewed Facility Operating License, Calvert Cliffs Nuclear Power Plant, Units 1 and 2
ESP ES200100656, "Use of CROSSFLOW Ultrasonic Flow Measurement System"
Unit 2 Reactor Trip Prompt Investigation

Westinghouse Technical Bulletin TB-04-4, "Information Regarding Recent CROSSFLOW Ultrasonic Flow Measurement System Performance Observations" dated 02/12/2004
 Unit 1 and Unit 2 Thermal Performance Data, 2003-2005
 Unit 1 Plant Monitoring Computer System Postmortem Report
 Unit 1 Manual Reactor Trip Prompt Investigation
 Unit 1 Control Room Logs
 Unit 1 Alarm History Logs

LIST OF ACRONYMS

ADAMS	Agency-wide Documents Access and Management System
AFW	Auxiliary Feedwater
ASME	American Society of Mechanical Engineers
ANS	Alert and notification System
AOP	Abnormal Operating Procedure
CAC	Containment Air Cooler
CAP	Corrective Actions Program
CC	Component Cooling
CCNPP	Calvert Cliffs Nuclear Power Plant
CCW	Component Cooling Water
CEA	Control Element Assembly
COLR	Core Operating Limits Report
CR	Condition Report
DEP	Drill and Exercise Performance
DG	Diesel Generator
DRP	Division of Reactor Projects
DRS	Division of Reactor Safety
EAL	Emergency Action Level
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
EHC	Electro-Hydraulic Control
EOP	Emergency Operating Procedures
EP	Emergency Plan
EP	Emergency Preparedness
ERO	Emergency Response Organization
ESP	Engineering Service Package
°F	Degrees Fahrenheit
GL	Generic Letter
HPSI	High Pressure Safety Injection
IMC	Inspection Manual Chapter
IR	Issue Report
IST	Inservice Test
Kv	Kilovolt
LOCA	Loss of Coolant Accident
LOCI	Loss of Coolant Incident
MSPI	Mitigating System Performance Index
MR	Maintenance Rule
MSSV	Main Steam Safety Valve

NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NO	Nuclear Operations
NRC	Nuclear Regulatory Commission
OA	Other Activities
ODCM	Offsite Dose Calculation Manual
OE	Operating Experience
OM	Operation Maintenance
PARS	Publicly Available Records
PI	Performance Indicator
PORV	Power Operated Relief Valve
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
RTP	Reactor Thermal Power
RWT	Refueling Water Tank
SDHX	Shutdown Cooling Heat Exchanger
SDP	Significance Determination Process
SIAS	Safety Injection Actuation Signal
SRWHX	Service Water Heat Exchanger
SSC	Systems, Structures, and Components
SSFF	Safety System Functional Failures
STP	Surveillance Test Procedure
TB	Technical Bulletin
TDAFW	Turbine Driven AFW
TI	Temporary Instruction
TS	Technical Specifications
TSAS	Technical Specification Action Statement
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item

ATTACHMENT 2

SUPPLEMENTAL INFORMATION

MITIGATING SYSTEM PERFORMANCE INDEX VERIFICATION

Question 1: For the sample selected, did the licensee accurately document the baseline planned unavailability hours for the MSPI systems?

Answer: Based on the sample selected, Constellation accurately documented the baseline planned unavailability hours for the MSPI systems. However, a revision to the baseline planned unavailability hours is being implemented because the steam driven Auxiliary Feedwater (AFW) pumps are now considered unavailable throughout their quarterly surveillance test. This is in response to the determination that the pumps should be considered unavailable whenever the AFW pump room watertight doors are open. The doors being opened during testing precludes Constellation from crediting operator actions in case of a high energy line break (HELB) in the turbine building. This information was not included in MSPI baseline document. The final impact for the MSPI should not be significant as the revised unavailable hours will also result in a higher baseline value that will offset the increase in actual unavailable hours.

Question 2: For the sample selected, did the licensee accurately document the actual unavailability hours for the MSPI systems?

Answer: Based on the sample selected, Constellation accurately documented the actual unavailability hours for the MSPI systems.

Question 3: For the sample selected, did the licensee accurately document the actual unreliability information for each MSPI monitored component?

Answer: Based on the sample selected, Constellation accurately document the actual unreliability information for each MSPI monitored component.

Question 4: Did the inspector identify significant errors in the reported data, which resulted in a change to the indicated index color? Describe the actual condition and corrective actions taken by the licensee, including the date when the revised PI information was submitted to the NRC.

Answer: Based on the sample selected, the inspectors identified no significant errors in the reported data that resulted in a change to the indicated index colors.

Question 5: Did the inspector identify significant discrepancies in the basis document which resulted in (1) a change to the system boundary; (2) an addition of a monitored component; or (3) a change in the reported index color? Describe the actual condition and corrective actions taken by the licensee, including, the date of when the bases document was revised.

Answer: Based on the sample selected, the inspectors identified no significant discrepancies in the basis document which resulted in (1) a change to the system boundary; (2) an addition of a monitored component; or (3) a change in the reported index color.