



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406

October 29, 2007

EA 07-241

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 GENERATING STATION - NRC PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION REPORT NOS. 05000317/2007007 AND 05000318/2007007 AND EXERCISE OF ENFORCEMENT DISCRETION

Dear Mr. Spina:

On September 14, 2007, the U. S. Nuclear Regulatory Commission (NRC) completed a team inspection at Calvert Cliffs Nuclear Power Plant (CCNPP) Units 1 and 2. The enclosed report documents the inspection findings, which were discussed on September 14, 2007 with you and other members of your staff.

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

There were no findings of significance identified during this inspection. On the basis of the sample selected for review, the inspection team concluded that Constellation was generally effective in identifying, evaluating and resolving problems. Your staff identified problems and entered them into the corrective action program at a low threshold. The team determined that, in general, Constellation personnel prioritized and evaluated issues commensurate with the safety significance of the problems and implemented timely, effective corrective actions. Notwithstanding, the inspectors noted some problems with categorization of issues for evaluation, timeliness and quality of issue evaluation, and implementation of the maintenance rule program.

Additionally, the inspectors reviewed the circumstances relating to reactor coolant pressure boundary leakage from a reactor coolant pump cover heat exchanger from 2004 to 2006. Although this issue constitutes a violation of NRC requirements, in that any reactor coolant system boundary leakage at power constitutes a violation, the NRC concluded that Constellation Generation Group's actions did not contribute to the degraded condition, and the actions taken were reasonable to address this matter. As a result, the NRC did not identify a performance deficiency. Based on these facts, I have been authorized, after consultation with the Director, Office of Enforcement, and the Regional Administrator, to exercise enforcement

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discretion in accordance with Section VII.B.6 of the Enforcement Policy and refrain from issuing enforcement for this violation. A regional Senior Risk Analyst reviewed the risk associated with the issue and determined that the condition was of very low safety significance.

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

ADAMS is accessible from the NRC Web-site at www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

David C. Lew, Director
Division of Reactor Projects

Docket Nos. 50-317, 50-318
License Nos. DPR-53, DPR-69
Enclosure: Inspection Report 05000317/2007007 and 05000318/2007007
w/ Attachment: Supplemental Information

cc w/encl:

M. J. Wallace, President, Constellation Generation
J. M. Heffley, Senior Vice President and Chief Nuclear Officer
President, Calvert County Board of Commissioners
C. W. Fleming, Senior Counsel, Constellation Generation Group, LLC
J. Gaines, Director, Licensing
Director, Nuclear Regulatory Matters
R. McLean, Manager, Nuclear Programs
K. Burger, Esquire, Maryland People's Counsel
R. Hickok, NRC Technical Training Center
G. Aburn, SLO (2)

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No: 50-317, 50-318

License No: DPR-53, DPR-69

Report No: 05000317/2007007 and 05000318/2007007

Licensee: Constellation Generation Group, LLC

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

Location: Lusby, MD

Dates: August 24, 2007 through September 14, 2007

Team Leader: T. Walker, Senior Project Engineer, Division of Reactor Projects (DRP)

Inspectors: E. DiPaolo, Senior Project Engineer, DRP
M. Davis, Resident Inspector, Calvert Cliffs
A. Rosebrook, Project Engineer, DRP

Observer: J. Heinly, Reactor Engineer, DRP

Approved by: Mel Gray, Chief
Technical Support and Assessment Branch
Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000317/2007007 and 05000318/2007007; 08/24/2007 – 09/14/2007; Calvert Cliffs Nuclear Power Plant, Units 1 and 2; Problem Identification and Resolution.

This team inspection was performed by three regional inspectors and one resident inspector. No findings of significance were identified during this inspection. 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.

Overall Assessment of Licensee's Identification and Resolution of Problems

The inspection team concluded that Constellation was generally effective in identifying, evaluating and resolving problems. Calvert Cliffs' staff identified problems and entered them into the corrective action program (CAP) at a low threshold, and Constellation had taken actions to address previous NRC findings related to attention to detail in identifying issues. The team determined that, in general, Constellation appropriately screened issues for operability and reportability, and prioritized issues commensurate with the safety significance of the problems. Causal analyses appropriately considered extent of condition, generic issues, and previous occurrences. The inspectors determined that corrective actions addressed the identified causes and were typically implemented in a timely manner. Although the team determined that the implementation of the CAP at Calvert Cliffs was generally effective, the inspectors identified some instances in which CAP guidance was inconsistently implemented. In particular, the inspectors noted problems with categorization of issues for evaluation, timeliness and quality of issue evaluation, and implementation of the maintenance rule program.

The inspection team determined that operating experience information was appropriately considered for applicability, and corrective and preventive actions were taken as needed. Self-assessments, Quality and Performance Assessment audits, and other assessments were critical, thorough, and effective in identifying issues. Based on interviews, observations of plant activities, and reviews of the CAP and the Employees Concerns Program (ECP), the inspectors determined that site personnel were willing to raise safety issues and document them in the CAP.

A. NRC-Identified and Self-Revealing Findings

No findings of significance were identified.

B. Licensee-Identified Violations

None.

REPORT DETAILS

4. OTHER ACTIVITIES (OA)

4OA2 Problem Identification and Resolution

a. Assessment of the Corrective Action Program

(1) Inspection Scope

The inspection team reviewed the procedures describing Constellation's CAP at Calvert Cliffs. Constellation identified problems for evaluation and resolution by initiating condition reports (CRs) that were entered into the condition reporting system. The condition reports were subsequently screened for operability, categorized by significance, and assigned for further evaluation, resolution and/or trending.

The inspection team evaluated the methods for assigning and tracking issues to ensure that issues were screened for operability and reportability, prioritized for evaluation and resolution in a timely manner commensurate with their safety significance, and tracked to identify adverse trends and repetitive issues. In addition, the team interviewed plant staff and management to determine their understanding of and involvement with the corrective action program. The condition reports and other documents reviewed, as well as key personnel contacted, are listed in the Attachment to this report.

The inspection team reviewed condition reports selected across the seven cornerstones of safety in the NRC's Reactor Oversight Program (ROP) to determine if site personnel properly identified, characterized, and entered problems into the CAP for evaluation and resolution. The inspection team selected items from the chemistry, emergency preparedness, engineering, maintenance, operations, physical security, radiation safety, and oversight programs to ensure that Constellation appropriately addressed problems identified in each functional area. The inspection team selected a risk-informed sample of condition reports that had been issued since the last NRC Problem Identification and Resolution (PI&R) inspection conducted in November 2005. The inspection team considered risk insights from the station's risk analyses to focus the sample selection and plant tours on risk-significant systems and components. Inspector samples focused on these systems, but were not limited to them. The corrective action review was expanded to five years for evaluation of the reactor coolant system, switchgear heating ventilation and air conditioning (HVAC), and the saltwater system.

The inspection team selected items from other processes at Calvert Cliffs station to verify that they were appropriately considered for entry into the CAP. Specifically, the team reviewed a sample of engineering requests, operator concerns items, operability determinations, maintenance orders (MOs), and engineering system health reports. The team also reviewed completed work packages to determine if issues identified during the performance of preventive maintenance were entered into the corrective action program. In addition, the team attended operations shift turnover meetings and accompanied auxiliary operators during rounds in the plant.

The inspection team reviewed condition reports to assess whether Constellation personnel adequately evaluated and prioritized identified problems. The issues reviewed encompassed the full range of evaluations, including root cause analyses, apparent cause evaluations, and common cause analyses. Condition reports that were assigned lower levels of significance which did not include formal cause evaluations were also reviewed by the inspection team to ensure they were appropriately classified. The inspection team observed daily condition report screening meetings and meetings of the Management Review Committee (MRC), in which Constellation personnel reviewed new condition reports for prioritization and assignment. The team's review included the appropriateness of the assigned significance, the scope and depth of the causal analysis, and the timeliness of resolution. The inspectors assessed whether the evaluations identified likely causes for the issues and identified appropriate corrective actions to address the identified causes. The inspection team also observed MRC and Corrective Action Review Board (CARB) meetings during which Constellation personnel evaluated root cause evaluations, as well as selected apparent cause evaluations and corrective action assignments. Further, the team reviewed equipment operability determinations, reportability assessments, and extent-of-condition reviews for selected problems.

The team reviewed the corrective actions associated with selected condition reports to determine whether the actions addressed the identified causes of the problems. The team reviewed condition reports for adverse trends and repetitive problems to determine whether corrective actions were effective in addressing the broader issues. The inspectors reviewed the timeliness in implementing corrective actions and their effectiveness in precluding recurrence for significant conditions adverse to quality. The team further reviewed condition reports associated with selected non-cited violations (NCVs) and findings to determine whether Constellation personnel properly evaluated and resolved the issues.

In Calvert Cliffs' mid-cycle assessment letter, dated August 31, 2007, the NRC determined that there was a cross-cutting theme in the area of problem identification associated with four of the findings identified during the assessment period. The cross-cutting theme involved attention to detail in identifying problems commensurate with their safety significance (P.1(a) as referenced in NRC Inspection Manual Chapter 0305). The inspection team evaluated Constellation's actions to address the cross-cutting theme. Specifically, the team reviewed the apparent cause evaluations and corrective actions planned or completed for the individual findings that contributed to the cross-cutting theme. The inspection team also reviewed common cause evaluations of the issues and assessments performed by selected departments.

- (2) Assessment
- (a) Identification of Issues

Based on the samples selected, the inspectors determined that Constellation staff were identifying problems and entering them into the CAP at a low threshold. In most cases,

problems were identified and characterized appropriately in condition reports. However, in some cases the inspectors determined that problems were not documented clearly and in sufficient detail to allow management to appropriately categorize and assign the issue for resolution. For example, in some instances actions that had already been taken to address the issue were not documented in the CR. As a result, some CRs that could have been promptly closed to track and trend, required additional action to assure that the issue was properly addressed. The inspectors observed managers at MRC meetings appropriately questioning and challenging condition reports that did not contain sufficient information. Constellation had recognized the need for improvements in this area, but at the time of the inspection, the team concluded that those actions were not yet consistently effective.

With regard to Constellation's actions to address the NRC findings related to attention to detail in identifying issues, the inspectors determined that apparent cause evaluations (ACEs) had been conducted for the individual findings and appropriate corrective actions had been taken or were planned to address the issues. Constellation initiated a common cause analysis (CCA) in April 2007 to collectively analyze the problem identification issues and appropriately initiated a second CCA in July 2007 when additional NRC findings with the same cross-cutting aspect were identified. When no commonalities were identified by the initial analysis for the second CCA, Constellation personnel appropriately expanded their review to include other issues that had been identified by other organizations. As a result, Constellation identified potential areas of concern in trending and implementation of the maintenance rule, and initiated actions to further evaluate these areas to identify needed actions.

While the inspectors determined that Constellation personnel took appropriate actions to address the individual findings related to problem identification, they observed that some of the actions had been taken outside of the CAP, and that problems with the ACEs for the individual issues and the first CCA had resulted in actions that were narrowly focused on the source of identification and documentation of the issues. As a result, the team concluded that Constellation missed opportunities to consider other issues that involved attention to detail and thoroughness in identification of problems. This reduced the effectiveness of the CCAs to identify the source of the problem identification common theme. Specifically:

- The causal information from the ACEs for the three issues evaluated in the first CCA did not address the NRC identified issue related to problem identification. (The problems with the apparent cause evaluations for the individual issues are described in section 4OA2.a(2)(b).)
- Constellation identified "inadequate use of self-checks, peer checks, and supervisory checks to detect document deficiencies, which led to not recognizing that CRs needed to be written," as the common cause for the NRC identified problem identification issues. This cause focused on documentation deficiencies and failure to initiate CRs which did not appear to fit the three issues evaluated in the common cause analysis. Specifically, none of the individual issues involved failure to identify document deficiencies, and only one of the issues involved failure to write a CR.

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- The extent of condition review was limited to a review of CR initiation rates with a focus on the source of CR initiation (i.e., CRs identified by NRC or organizations other than the responsible department) and did not consider other issues involving problem identification that were self-revealing or identified by the responsible department.
- The review of site operating experience considered events related to documentation deficiencies rather than issues involving failure to identify problems (the subject of the common cause analysis).
- Nine departments were assigned actions to perform reviews to address the conclusion that some site groups needed to strengthen their efforts to self-identify problems before they become self-revealing or are identified by other organizations (e.g. NRC). The effectiveness of these reviews was limited in that: 1) departments were identified based on CR self-identification rates without consideration of the significance of issues or the nature of department activities; 2) several of the nine departments did not perform CR reviews based on their determination that they did not meet the selection criteria for the action; 3) the actions assigned to the departments did not address identification of problems before they become self-revealing; and 4) most departments limited their reviews to the type of CRs that caused them to be selected.
- Although the scope of the second CCA was expanded, that review only considered CRs identified by NRC or organizations other than the responsible department and did not consider other issues involving problem identification that were self-revealing or identified by the responsible department.

The inspection team determined that Constellation was appropriately trending equipment and programmatic issues. The inspectors observed that personnel were identifying trends at low levels, and the team did not identify trends or repetitive issues that Constellation had not self-identified. However, the inspectors noted that there were some inconsistencies in understanding of responsibilities and processes for trending among plant personnel. For example, in several instances managers at the MRC meeting had different understandings of trending requirements for hardware-only CRs. As a result of the second common cause analysis for the problem identification issues, Constellation identified issues in trending and planned to further evaluate the site trending program to determine if changes were needed.

(b) Prioritization and Evaluation of Issues

The inspection team determined that, in general, Constellation appropriately prioritized and evaluated issues commensurate with the safety significance of the problem. CRs were screened for operability and reportability, categorized by significance (“hardware only” or “programmatic” Categories I through IV), and assigned to a department for evaluation and resolution. The various condition report screening and management review groups considered human performance issues, radiological safety concerns, repetitiveness, and adverse trends in their reviews.

Prioritization

Although items were generally categorized for evaluation and resolution commensurate with the significance of the issues, inspectors determined that guidance for categorization may not be sufficiently definitive for consistent implementation. For example, the inspectors observed that the MRC was frequently identifying “hardware only” CRs that should have been categorized as “programmable” CRs. The inspectors also observed that while the definitions for the “programmable” CR categories were tied to the significance of the issue (i.e., the acceptability of recurrence of the issue), most of the examples provided in the CAP procedure did not involve conditions that reflected risk insights. In particular, examples for Category II or III were not provided which could be correlated closely to plant risk. This was notable because causal evaluations are only performed for Category II or higher issues. The inspectors identified the following examples of issues that were not prioritized commensurate with the significance of the issue:

- IRE-024-101 involving failure to address an NRC finding involving saltwater strainer operation was categorized as Category III. The CR for the original issue (IRE-017-018) was appropriately categorized as Category II and an apparent cause evaluation was performed. The inspectors determined that it would have been appropriate to categorize the CR to revise the ACE for the original issue at the same level to ensure that the NRC finding was addressed in a timely manner commensurate with its significance.
- IRE-023-188 involving failure to install fire dampers in accordance with vendor instructions was improperly categorized as Category III which did not require a causal evaluation. The inspectors determined that actions had been taken to understand the issue and assess the extent of condition; however, these actions were taken outside of the CAP since an apparent cause evaluation was not performed.
- In January 2007, Constellation received the results of a hydrostatic test that indicated that the 11B reactor coolant pump (RCP) seal cooler and pump cover heat exchanger had been leaking at a very low level from 2004 until the pump was replaced in 2006. The leakage was RCS pressure boundary leakage and, as such, was a violation of Technical Specifications. (LER 50317/2007-001, “Reactor Coolant System Pressure Boundary Leakage in Pump Cover Heat Exchanger,” is discussed in more detail in section 4OA3.) Although this met the criteria for a Category I CR, IRE-019-549, which documented the results of the hydrostatic test, was categorized as a Category III CR, and the condition was not evaluated further. Constellation relied on evaluations conducted previously to conclude that the conditions that apparently caused the leak were only applicable to the 11B RCP that had been replaced. As a result, Constellation did not document their basis for no further evaluation or extent of condition review of the problem.

Although Constellation did not fully evaluate and document actions to address the RCS pressure boundary leakage, the inspectors determined that current

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measures in place (continuous and batch component cooling water (CCW) radiation monitoring, and RCP vibration monitoring) were sufficient to detect leakage. Additionally, vendor analysis identified this failure mechanism to be a leak before break phenomenon, as such it could be detected and corrective actions could be executed in a timely fashion. The inspectors also considered Constellation's determination that the conditions that caused the leakage on the 11B RCP were not applicable to the other RCPs to be reasonable.

The deficiencies identified in categorization of CRs did not constitute violations of NRC requirements because appropriate reviews were completed outside the CAP.

Evaluation

Based on the samples reviewed, the inspectors determined that operability and reportability determinations were performed when conditions warranted and the evaluations supported the conclusions. However, the inspectors identified discrepancies associated with the operability evaluation for one of the issues reviewed. Specifically:

- IRE-023-303 documented that the 12 CCW pump inboard motor bearing was making an abnormal noise. The reasonable expectation for continued operability (RECO) documented in the CR stated that the issue was not an immediate concern based on a non-licensed operator's judgment. Vibration data for the pump motor was obtained and evaluated 11 days after the initiation of the CR. The data showed that the motor bearing was degraded and that it should be scheduled for replacement. The team concluded that vibration data reasonably should have been obtained earlier and factored into the RECO conclusion. During the inspection, Constellation personnel initiated IRE-025-058 related to the need for vibration monitoring program improvements.

Constellation procedures require that root cause analyses (RCAs) and ACEs be completed within 30 days; however, extensions can be granted with management approval. The team observed that extensions were routinely granted, and that, in some cases, there were delays in CARB or MRC review of evaluations, significantly extending the time for completion of the evaluations. In a few cases, the inspectors determined that delays in completing causal evaluations contributed to the problems identified with the common cause analyses for the problem identification issues, discussed in section 40A2(a)(2)(a). For example:

- IRE-017-018 was written in September 2006, to evaluate whether manual flushes of the saltwater strainers were indicative of improper strainer operation. The ACE for the issue was not completed until February 2007, because the CR was extended multiple times. As a result, the ACE was not completed until shortly before the refueling outage and was approved by engineering management without CARB review. This was a missed opportunity to identify that the ACE did not address the performance deficiency related to problem identification that was the basis for the NRC finding. (This issue is discussed in more detail below.)

The inspectors determined that, in general, issues were evaluated commensurate with the significance of the issue. Causal analyses appropriately considered extent of condition, generic issues, and previous occurrences. For example, Constellation performed a root cause analysis to address configuration control problems during tagging related activities. In IR 2006-005, NRC inspectors noted that this issue had been longstanding and corrective actions had not been effective. During this inspection, the team observed that Constellation's RCA for the configuration control issues was thorough, and additional corrective and preventive actions had been identified. While additional problems with configuration control have occurred, these problems have been less frequent and of lower safety significance. Comprehensive RCAs had also been conducted for broad issues involving equipment reliability and dose management.

Based on the evaluations reviewed, the team determined that in most cases reasonable causes were identified for the issues being evaluated, and corrective actions addressed the identified causes. However, in a few cases, the inspectors determined that the causal analysis problem statements did not accurately describe the deficiencies and, as a result, the identified causes did not address the full scope of the problems. The problems with the causal evaluations contributed to the narrowly focused actions taken in response to the first CCA for the problem identification issues as described in section 40A2.a(1)(a). Notwithstanding the problems with the causal evaluations, the inspectors determined that appropriate actions had been taken, in some cases outside of the CAP, to address the problem identification issues. Specifically:

- NCV 2006004-02 was written for Constellation personnel's failure to initiate a CR to document performance of the SRW heat exchanger salt water strainers during high debris loading and failure to assess the operability of the strainers. Although this performance deficiency was included in the description of the issue in the ACE for IRE-017-018, the stated intent of the analysis was to determine if there were any incidents where the SRW strainers required external assistance from operations to deal with the debris. The ACE focused on justifying operability of the strainers and did not address the failure of the operators to identify the potential misoperation of the strainers or to initiate a CR for the anomalous indications which was required by the saltwater strainer alarm response procedure.

The documented corrective actions for IRE-017-018 were limited to reviewing the operations logs procedure to ensure the guidance was sufficient, but the inspectors observed that, separate from this CR, operations management had taken actions to reinforce expectations for initiation of CRs for anomalous conditions and the need for procedure compliance. Additionally, a new fleet procedure established an expectation to conduct end-of-shift reviews, which included documentation of new or significant conditions discovered during the shift and ensuring that CRs were written for the issues. Based on these actions, the inspectors concluded that the NRC finding related to failure to initiate a CR for saltwater strainer issues had been addressed.

- NCV 2006005-03 was written for Constellation personnel's failure to identify equipment deficiencies, and critically evaluate operator performance and emergency procedure implementation in the post-trip review conducted for a trip in November 2006. IRE-018-513 was written to improve the post-trip review process for complicated reactor trips. The direct cause was determined to be an inadequate procedure. The inspectors observed that the causal evaluation problem statement was based on the conclusion that the post-trip review was adequate. However, the basis for this conclusion was not documented in the CAP.

Although Constellation assumed the cause of the failure to identify issues during the post-trip review was due to inadequacies in the procedure without a formal causal evaluation, the inspectors concluded that the corrective actions taken to improve the post-trip review procedure were reasonable to address the NRC finding for failure to fully identify deficiencies during the post-trip review.

(c) Effectiveness of Corrective Actions

The inspection team determined that corrective actions were generally appropriate to address identified issues and typically completed in a timely manner. Most corrective actions were required to be completed within six months and controls were placed on long term corrective actions to ensure they were completed within a reasonable time frame. Actions to prevent recurrence were identified and effectiveness reviews were conducted for more significant issues.

Although most corrective actions reviewed were timely, the team identified aspects in which procedure requirements may be sufficient to reasonably ensure timely corrective actions. For example, the team noted that the CAP procedures did not provide timeliness requirements for further evaluations beyond the causal evaluation that may be needed to establish corrective actions. The team also noted that although there was an expectation for responsible departments to act promptly to establish corrective actions for Category III ("broke/fix") CRs and establish action items within the CAP to ensure that the actions were completed in a timely manner, the inspectors determined that this expectation was not implemented consistently by the responsible departments. In some cases actions were tracked outside the CAP or were not established promptly. For example:

- IRE-024-101 was written on July 19, 2007, to revise the ACE for IRE-017-018 involving saltwater strainer flushes to address the NRC identified performance deficiency related to problem identification. The inspectors determined that because the CR for this issue was prioritized as Category III, timely action had not been taken to address the issue. Specifically, although the original issue was one of the inputs to the ongoing evaluations of the problem identification issues, at the time of the inspection, the CR had been recently reassigned to the appropriate department and action had not yet been taken to determine needed actions or formally reevaluate the original issue.

Although most corrective actions appeared to be effective, the inspectors determined that actions to address repetitive problems with implementation of the maintenance rule (10 CFR 50.65) had not been effective in preventing additional problems. In the past

two years, four NCVs were identified associated with Constellation's implementation of the maintenance rule (MR) program. Three of the four NCVs included missed identification of Maintenance Rule Functional Failures (MRFFs). Corrective actions to address these issues included changes to the MR program implementation procedure and improvements to clarify MRFF definitions. The team concluded that corrective actions had not been fully effective to ensure timely and accurate MRFF determinations. Specifically, Constellation missed four additional MRFF determinations after corrective actions were implemented:

- In February 2006, a Unit 2 power operated relief valve (PORV) failed to shut during an as found lift test. Constellation personnel identified this condition as an MRFF in March 2007.
- In November 2006, a Unit 1 PORV failed to shut following a plant scram. Constellation personnel identified this condition as an MRFF in March 2007.
- In November 2006, a Unit 1 primary system safety valve (PSSV) lifted below the setpoint. Following the event, the PSSV was replaced and failed three consecutive as found lift checks. The resident inspectors identified this condition as an MRFF in June 2007.
- In January 2007, it was identified that there had been RCS pressure boundary leakage in the 11B RCP cover heat exchanger from June 2004 to April 2006. In August 2007, during this inspection, the inspectors identified this condition as an MRFF.

The team determined that Constellation personnel's failure to identify the MRFFs in a timely manner did not comply with the MR implementation procedure, ER-1-103. However, the missed MRFFs did not constitute violations of 10 CFR Part 50.65; therefore, the failures were of minor significance and are not subject to NRC enforcement action. As a result of the expanded CCA of problem identification issues, Constellation personnel initiated a condition report to investigate whether a common cause problem exists in the MR program.

(3) Findings

No findings of significance were identified in the areas of problem identification, prioritization and evaluation of issues, and effectiveness of corrective action.

b. Assessment of the Use of Operating Experience

(1) Inspection Scope

The team selected a sample of industry operating experience issues to confirm that Constellation had evaluated the operating experience information for applicability to Calvert Cliffs and had taken appropriate actions, when warranted. Operating experience (OE) documents were reviewed to ensure that underlying problems associated with the

issues were appropriately considered for resolution via the corrective action process. The inspection team also observed routine plant activities to determine if industry operating experience was considered during the performance of routine and infrequently performed activities. A list of the specific documents reviewed is included in the Attachment to this report.

(2) Assessment

The inspectors determined that Constellation appropriately considered industry operating experience information for applicability, and used the information for corrective and preventive actions to identify and prevent similar issues. Constellation personnel conducted barrier analyses for applicable issues and initiated CRs for additional reviews and corrective actions as necessary. The team assessed that OE was being appropriately applied and lessons learned were communicated and incorporated into plant operations. The team noted that Management Review Committee review of barrier analyses of OE items provided for consistency in the quality of the evaluations.

The team observed that industry operating experience was routinely considered during the performance of plant activities. For example, during shift briefing activities, relevant industry operating experience was reviewed and discussed before the commencement of shift activities. Additionally, operating experience was reviewed during the daily meeting of plant staff and considered for applicability to the site.

(3) Findings

No findings of significance were identified in the area of operating experience.

c. Assessment of Self-Assessments and Audits

(1) Inspection Scope

The team reviewed a sample of QP&A audits, including the most recent audit of the corrective action program, departmental self-assessments, and assessments conducted by independent organizations. These reviews were performed to determine if problems identified through these assessments were entered into the CAP, when appropriate, and whether corrective actions were initiated to address identified deficiencies. The effectiveness of the audits and assessments was evaluated by comparing audit and assessment results against self-revealing and NRC-identified findings and observations made during the inspection. A specific list of documents reviewed is included in the attachment to this report.

The team also reviewed the most recent Nuclear Safety Culture Assessment, dated January 2006. The inspectors reviewed the assessment report and discussed actions

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taken and planned with Constellation management in order to determine if appropriate action had been taken to address identified issues.

(2) Assessment

The team concluded that self-assessments, Q&PA audits, and other assessments were critical, thorough, and effective in identifying issues. Through review of these audits and self assessments, the team noted that they were performed in a methodical manner, were staffed by personnel knowledgeable in the area, and went into sufficient depth. In a number of cases, corrective action program issues identified by the team had already been identified by Q&PA or through department self-assessments.

In most cases, deficiencies uncovered were promptly entered into the CAP for evaluation and corrective actions associated with the issues were implemented commensurate with their significance. The only notable exception involved one of the NRC findings associated with problem identification. Specifically:

- During a self-assessment of the CAP in June 2007, licensing personnel identified that some condition reports for NRC findings had been closed without licensing department review to ensure the finding had been addressed. The self-assessment identified that, in one case, the causal analysis did not address the specific performance deficiency associated with an NRC finding involving saltwater strainer operation. A condition report to address the issue (IRE-024-101) was written in July 2007, and, as a result of the one month delay, actions had not been taken at the time of the inspection. This contributed to the problems noted in the first common cause analysis (discussed in section 4OA2.a(2)(a)) for the problem identification issues.

The team noted that the Nuclear Safety Culture Assessment revealed insights into the safety culture of the site workforce. Results of the assessment were evaluated and appropriate actions had been taken to address the identified issues.

(3) Findings

No findings of significance were identified associated with assessments and audits.

d. Assessment of Safety-Conscious Work Environment

(1) Inspection Scope

During interviews and discussions with station personnel, the inspectors assessed whether workers were willing to enter issues into the corrective action program or raise safety concerns to their management and/or the NRC. The inspectors held discussions with staff and supervisors regarding use of the corrective action program, work processes, and other problem identification and resolution activities. The team reviewed the ECP to assess whether employees were willing to use the program as an alternate path for raising concerns. Several ECP issues and evaluations were reviewed with respect to maintaining and promoting a safety-conscious work environment and to verify that issues affecting nuclear safety were being appropriately addressed. The team

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assessed licensee management sensitivity to a safety-conscious work environment through inspection activities, discussions with management and licensee personnel, and attendance at various meetings.

(2) Assessment

Based on interviews, observations of plant activities, and reviews of the CAP and ECP, the inspectors determined that site personnel were willing to raise safety issues and document them in the CAP. Individuals actively utilized the CAP as evidenced by the high number of issues entered into the program. The team noted that CRs had been written by a variety of personnel, from workers to managers. ECP evaluations were thorough and appropriate actions were taken to address issues.

(3) Findings

No findings of significance were identified related to the safety conscious work environment at Calvert Cliffs.

4OA3 Event Follow-up (IP 71153)

(Closed) LER 50-317-2007-001-00,"Calvert Cliffs Unit 1 Reactor Coolant System Pressure Boundary Leakage in Pump Cover Heat Exchanger"

In September 2004, Plant Chemistry personnel identified that Unit 1 CCW system tritium level increased between June 2004 and September 2004. Chemistry analysis identified short lived radio-nuclides confirming that the source of the leakage was RCS fluid. The leakage rate was very low (approximately 0.016 gallons/day) and well within Technical Specification limits for unidentified leakage. A troubleshooting plan was developed to attempt to identify the source of the leakage. The reactor coolant pump (RCP) seal coolers, the RCP thermal barriers, and the letdown heat exchanger were identified as potential sources of the leakage.

In 2006 during the next refueling outage (RFO), Constellation replaced the 11B RCP and sent it to Flow Serve for refurbishment. In January 2007 a hydrostatic test of the seal cooler and pump cover heat exchanger identified that the pump cover heat exchanger was the source of the leakage. When the licensee was informed of these results, they evaluated the issue for reportability and appropriately issued LER 50-317/2007-001,"Reactor Coolant System Pressure Boundary Leakage in Pump Cover Heat Exchanger," dated March 19, 2007. This LER reported that Calvert Cliffs had been in violation of Technical Specification 3.4.13.a, which limits pressure boundary leakage to zero, from June 2004 until the 2006 RFO.

Operation of Calvert Cliffs Unit 1 from June 2004 to April 2006 with RCS pressure boundary leakage is prohibited by Technical Specification (TS) 3.4.13. However this issue is not a performance deficiency because it was not reasonable for the licensee to foresee and prevent the problem. The issue is more than minor because it is associated with the RCS Equipment and Barrier Performance attribute of the associated Barrier Integrity cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radio-nuclide releases caused by accidents or events.

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The risk associated with the issue was determined using Inspection Manual Chapter (IMC) 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations." The inspectors screened the issue and determined that RCS leakage is considered a Loss-of-Coolant Accident (LOCA) initiator and is evaluated using the Initiating Event Criteria in Appendix A. Assuming worst case degradation, the leakage would not result in exceeding the Technical Specification limit for identified RCS leakage (10 gpm) nor would the leakage have likely affected other mitigation systems resulting in a total loss of their safety function. As a result, this issue would screen as very low safety significance (Green).

Because this issue is of very low safety significance (Green) and it has been determined that it was not reasonable for Constellation to be able to foresee and prevent this leakage, and as such no performance deficiency exists, the NRC has decided to exercise enforcement discretion in accordance with VII.B.6 of the NRC Enforcement Policy and refrain from issuing enforcement action for the violation of Technical Specifications (EA-07-241). This LER is closed.

4OA6 Meetings, Including Exit

On September 14 and October 26, 2007, the team presented the inspection results to Mr. James Spina and other members of his staff, who acknowledged the observations. The inspectors confirmed that no proprietary information reviewed during inspection was retained by the team.

ATTACHMENT: Supplemental Information

In addition to the documentation that the inspectors reviewed (listed in the Attachment), copies of information requests given to Constellation personnel are in ADAMS under accession number ML072990154.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Constellation

P. Amos, Director, Performance Improvement
C. Boyer, Supervisor FIN Team
P. Beavers, Supervisor, Primary Systems Engineering
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K. Green, Maintenance Rule Coordinator
S. Henry, Supervisor System Engineering
W. Holston, Training Manager
M. Jones, Document Control Supervisor
P. Jones, Performance Improvement Coordinator, Radiation Protection
D. Murphy, Supervisor, Balance of Plant Engineering
J. Phifer, Employee Concerns Program Manager
P. Pieringer, General Supervisor, Engineering Design
J. Pollock, Plant General Manager
L. Richards, Supervisor, Component Specialist Unit
T. Riti, Acting General Supervisor Shift Operations
K. Robinson, Maintenance Manager
W. Rummel, Operations Department Performance Improvement Coordinator
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J. Wilson, Operations Procedures Work Group Leader
J. Wynn, Senior System Engineer

NRC

G. Dentel, Branch Chief, DRP
S. Kennedy, Senior Resident Inspector
J. Clifford, Deputy Division Director, DRP
W. Cook, Senior Reactor Analyst

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Closed

LER 50-317-2007-001-00 Calvert Cliffs Unit 1 Reactor Coolant System Pressure Boundary
Leakage in Pump Cover Heat Exchanger

LIST OF DOCUMENTS REVIEWED

Assessments and Audits

Calvert Cliffs Unit 2 Refueling Outage C2R17 Performance Assessment
 CCNP Quality and Performance Assessment Quarterly Report - Second Quarter 2007,
 7/20/07
 CCNP Quality and Performance Assessment Quarterly Report - First Quarter 2007,
 4/23/07
 CCNP Quality and Performance Assessment Quarterly Report - Fourth Quarter 2006,
 1/17/07
 CCNP Quality and Performance Assessment Quarterly Report - Third Quarter 2006,
 11/2/06
 Engineering Trend Report - Second Quarter 2007
 QA-2003-00204
 QA-2003-00208
 QA-2003-00203
 Q&PA Assessment Report 2005-202, "Assessment of Corrective Action Program - Trending"
 12/16/05
 Q&PA Assessment Report 2006-056, "2004 Plant Evaluation (PL.1-1)," 6/13/06
 Q&PA Assessment Report 2006-065, "Corrective Actions (CA) associated with Condition
 Reports (CRs)," 6/19/06
 Q&PA Assessment Report 2006-071, "Assessment of Operational Decision Communications,"
 7/14/06
 Q&PA Assessment Report 2007-002, "Radiation Worker Practices," 2/2/07
 Q&PA Assessment Report 2007-031, "Corrective actions associated with closed Cat I and II
 condition reports (CRs)," 6/14/07
 Q&PA Assessment Report 2007-032, "Readiness for ePIC implementation at Calvert Cliffs"
 6/27/07
 Q&PA Assessment Report 2007-037, "Corrective Action reviews associated with Category I and
 II Condition Reports," 6/14/07
 Q&PA Assessment Report 2007-044, "Independent Assessment of Site's readiness for NRC
 Problem Identification and Resolution Inspection," 7/2/07
 CAP-07-01-C, "Corrective Action Program," 3/1/07
 Operations Self-Assessment Report – Second Quarter 2007
 Operations Department Self-Assessment and Benchmarking Schedule - 2007
 Operations Trend Report – Second Quarter 2007
 RPP-06-01-C, "Radiation Protection," 12/12/06
 SEC-06-01-C, "Security/Access Authorization/Fitness for Duty," 9/21/06
 Self-Assessment Benchmarking Report, "Infrequent Test or Evolution," 5/21/2007
 Self-Assessment Benchmarking Report, "Plant Operator Continuing Training Programs,"
 July 2007
 Self-Assessment Benchmarking Report, "Verification Practices," July 20, 2007
 Self-Assessment Report SA200500218, "Operations Self Assessment Program," 9/11/06
 Self-Assessment Report SA200600001, "Nuclear Safety Culture," 1/31/06
 Self-Assessment Report SA200600025, "Drill and Exercise Qualification/Requalification
 Program," 12/29/06
 Self-Assessment Report SA200600069, "Nuclear Security Section Human Performance

Program,” 8/30/06
 Self-Assessment Report SA200600110, “Line Ownership of 3R Condition Reports,” 7/31/06
 Self-Assessment Report SA200600104, “Review of Category II Milestones > 180 Days Old,”
 4/6/06
 Self-Assessment Report SA200600146, “Annual Review of Equipment Related Clock
 Resets/Critical Component Failures,” 10/13/2006
 Self-Assessment Report SA200700057, “CAP PI&R Inspection Prep,” 6/8/07
 Self-Assessment Report SA200700058, “Problem Identification and Resolution Self-
 Assessment Report,” 6/25/07
 Self-Assessment Report SA200700085, “Review of Hardware Only condition reports that were
 increased to programmatic CRs by MRC after screening committee review,” 8/29/07

Condition Reports

| | | | |
|-------------|-------------|-------------|-------------|
| IR4-003-178 | IRE-013-623 | IRE 019-662 | IRE-022-615 |
| IR4-003-180 | IRE 013-680 | IRE-019-664 | IRE-022-832 |
| IR4-004-854 | IRE 014-222 | IRE-019-697 | IRE-022-849 |
| IR4-005-990 | IRE 014-242 | IRE-019-698 | IRE-022-911 |
| IR4-005-991 | IRE-014-413 | IRE-019-767 | IRE-023-053 |
| IR4-006-126 | IRE-014-492 | IRE-019-861 | IRE-023-188 |
| IR4-009-053 | IRE-014-771 | IRE-019-938 | IRE-023-303 |
| IR4-023-550 | IRE-014-775 | IRE-019-942 | IRE-023-304 |
| IR4-023-529 | IRE-014-881 | IRE-020-052 | IRE-023-320 |
| IR4-026-926 | IRE 015-030 | IRE-020-093 | IRE-023-357 |
| IRE-000-260 | IRE 015-094 | IRE-020-094 | IRE 023-457 |
| IRE-001-860 | IRE-015-188 | IRE 020-200 | IRE-023-659 |
| IRE-002-513 | IRE 015-235 | IRE-020-329 | IRE-023-796 |
| IRE-003-997 | IRE-015-330 | IRE 020-377 | IRE 023-847 |
| IRE-007-180 | IRE-015-351 | IRE-020-431 | IRE 023-848 |
| IRE-007-184 | IRE-015-406 | IRE-020-790 | IRE-023-870 |
| IRE-007-185 | IRE 015-760 | IRE-020-813 | IRE-023-878 |
| IRE-007-394 | IRE 015-787 | IRE-020-846 | IRE-023-898 |
| IRE-007-872 | IRE-015-878 | IRE-020-884 | IRE-023-910 |
| IRE 008-095 | IRE-015-923 | IRE-020-892 | IRE-023-931 |
| IRE-008-929 | IRE-016-662 | IRE-021-047 | IRE 023-932 |
| IRE 009-026 | IRE-016-655 | IRE 021-085 | IRE-023-947 |
| IRE-009-106 | IRE 016-685 | IRE-021-087 | IRE 024-018 |
| IRE 009-246 | IRE-016-727 | IRE-021-088 | IRE-024-052 |
| IRE-009-248 | IRE 016-789 | IRE-021-136 | IRE-024-947 |
| IRE-009-263 | IRE 016-870 | IRE-021-190 | IRE-024-053 |
| IRE-009-264 | IRE 016-911 | IRE-021-201 | IRE-024-069 |
| IRE 009-298 | IRE-016-955 | IRE 021-269 | IRE-024-078 |
| IRE 009-307 | IRE-017-018 | IRE-021-342 | IRE-024-101 |
| IRE-009-394 | IRE-017-120 | IRE-021-357 | IRE 024-113 |
| IRE 009-458 | IRE-017-121 | IRE-021-362 | IRE-024-142 |
| IRE-009-486 | IRE-017-439 | IRE-021-411 | IRE 024-202 |
| IRE 009-579 | IRE-017-440 | IRE-021-432 | IRE-024-207 |
| IRE 009-626 | IRE-017-487 | IRE-021-435 | IRE-024-286 |

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| | | | |
|-------------|-------------|-------------|--------------|
| IRE 009-654 | IRE-017-668 | IRE-021-443 | IRE-024-351 |
| IRE-009-695 | IRE-017-671 | IRE 021-444 | IRE-024-352 |
| IRE-009-737 | IRE-017-672 | IRE-021-655 | IRE-024-405 |
| IRE-009-948 | IRE-017-673 | IRE-021-657 | IRE-024-454 |
| IRE 009-980 | IRE-017-674 | IRE-021-661 | IRE-024-529 |
| IRE-010-221 | IRE 017-740 | IRE-021-725 | IRE-024-569 |
| IRE-010-412 | IRE 017-764 | IRE-021-728 | IRE-024-632 |
| IRE-010-614 | IRE-017-882 | IRE-021-738 | IRE-024-695 |
| IRE-010-662 | IRE 018-042 | IRE-021-751 | IRE-024-723 |
| IRE-010-905 | IRE-018-067 | IRE 021-806 | IRE-024-750 |
| IRE-011-148 | IRE-018-101 | IRE-021-853 | IRE-024-864 |
| IRE 011-314 | IRE-018-298 | IRE-021-855 | IRE-024-917 |
| IRE-011-450 | IRE-018-341 | IRE-021-913 | IRE-024-947 |
| IRE-011-454 | IRE 018-347 | IRE-022-025 | IRE-024-953 |
| IRE 011-601 | IRE 018-411 | IRE-022-059 | IRE-024-966 |
| IRE-011-690 | IRE 018-451 | IRE-022-119 | IRE-024-975 |
| IRE 011-711 | IRE-018-513 | IRE-022-121 | IRE-024-991 |
| IRE-011-719 | IRE 018-804 | IRE-022-232 | IRE-025-015* |
| IRE-011-762 | IRE-018-817 | IRE-022-233 | IRE-025-058* |
| IRE-011-985 | IRE-018-868 | IRE-022-256 | IRE-025-172* |
| IRE 012-059 | IRE 018-885 | IRE-022-284 | IRE-025-177* |
| IRE-012-096 | IRE 018-968 | IRE 022-285 | IRE-025-268* |
| IRE-012-148 | IRE-018-975 | IRE-022-344 | IRE-025-293* |
| IRE-012-231 | IRE 019-013 | IRE-022-394 | IRE-025-331* |
| IRE 012-607 | IRE-019-028 | IRE-022-395 | IRE-025-334* |
| IRE 012-636 | IRE-019-047 | IRE-022-399 | IRE-025-335* |
| IRE 012-731 | IRE-019-120 | IRE-022-421 | IRE 025-347 |
| IRE-012-812 | IRE-019-121 | IRE-022-431 | IRE-025-396* |
| IRE-012-818 | IRE-019-143 | IRE-022-506 | IRE-025-503 |
| IRE 012-887 | IRE-019-443 | IRE-022-586 | |
| IRE-013-398 | IRE 019-549 | IRE-022-568 | |

MRC or CARB grading sheets for the RCA or ACE for the following condition reports:

- IRE-018-885
- IRE-019-028
- IRE-021-190
- IRE-021-913
- IRE-022-025
- IRE-022-284

Drawings

Byron Jackson Pump, "Primary Nuclear Pump Drawing," Fig 1.1
Bryon Jackson Pump, "Primary Nuclear Pump Detail Thermal Barrier Heat Exchanger"
Drawing No. 60734, "Reactor Coolant Waste Processing Systems," Rev. 35

Drawing No. 60710, "Component Cooling System," Rev. 44

Drawing No. 63085SH0009E, "Switchgear Room HVAC Unit 21 Control," Rev. 4

Maintenance Work Orders

MO-1200702821
MO-2200702173
MO-1200502789
MO-1200502899
MO-1200503202
MO-2200502787
MO-2200703218

Non-Cited Violations and Findings

| | |
|----------------|---|
| NCV 2005004-01 | Inadequate Procedures for Offsite Power Availability |
| NCV 2005005-01 | Failure to Establish Adequate Clearance Order |
| NCV 2005005-02 | Safety Related Power Supply System a(2) Demonstration Invalidated |
| NCV 2005007-01 | Failure to Identify and Correct Unavailability Problems for the Turbine Driven AFW Pump |
| NCV 2006002-01 | Failure to Perform Evaluation for Repetitive Functional Failure |
| NCV 2006002-02 | Failure to Establish Adequate Physical Boundaries for RCP Maintenance |
| NCV 2006004-02 | Failure to comply with TS 5.4.1 for Salt Water Strainers |
| NCV 2006005-02 | Inadequate Tagout Review Involving a Safety-Related Offsite Power Supply |
| FIN 2006005-03 | Inadequate Post-Trip Review |
| NCV 2007002-02 | Failure to Adequately Implement FME Procedures and Controls |
| NCV 2007002-03 | Failure to Recognize That One or More Channels of the High Rate-of-Change Trip Function Was Inoperable |
| NCV 2007003-01 | Failure to implement TS 3.6.3 Required Actions for Containment Isolation Valves |
| NCV 2007003-02 | Failure to Demonstrate That the MSSV Performance Was Being Effectively Controlled per 10 CFR 50.65 a(2) |
| NCV 2007003-04 | Failure to Follow Procedures and Maintain Configuration Control During Reactor Fill |

Operability Determinations

Operability Determination 04-008R1, "U-1 & U-2 Containment Sump Strainers," Rev. 1
Operability Determination 06-002, "Regulating Group 2 CEA #21 Stuck," Rev. 0
Operability Determination 07-001R2, "1-FE-1121, 12 Steam Generator Feed Flow," Rev. 2
Operability Determination 07-002, "21 RCS Hot Leg Temp Input to RPS Channel "C," Rev. 0
Operability Determination 07-003R1, "1SI-615-MOV and 2SI-635-MOV," Rev. 1

Operability Determination 07-004R1, "22 AFW Pump Turbine Bearing Oil Level," Rev. 1
Operability Determination 07-005, "1A Diesel Generator Piston Failure," Rev. 0
Operability Determination 07-006, "1B Diesel Generator Lube Oil Leak," Rev. 0

Operating Experience Barrier Analysis Reviews

AIT# 4B200500470, "NRC Information Notice 2005-29, Steam Generator Tube and Support Configuration"
AIT# 4B200500496, "NRC Information Notice 2005-30, Safe Shutdown Potentially Challenged by Unanalyzed Internal Flooding Events and Inadequate Design"
AIT# 4B200600127, "NRC Information Notice 2006-06, Loss of Offsite Power and Station Blackout are More Probable During Summer Period"
AIT# 3R200602219, "Part 21 Notification related to Tyco Valves and Controls relief valve Springs"
AIT# 3R200701324, "Part 21 Notification from Velan, Inc. regarding piston check valves"
AIT# 4B200700185, "SEN 266," dated 8/10/07
AIT# 4B200700189, "NRC Information Notice 2007-20," dated 7/25/07

Policies, Procedures and Instructions

1C10-ALM, "ESFAS 13 Alarm Manual," Rev. 41
2K201-ALM, "Calvert Cliffs Nuclear Power Plant Unit 2 Service Water Heat Exchanger Alarm Manual," Rev. 7
CNG-CA-1.01, "Constellation Nuclear Generation Fleet Program Directive, Corrective Action Program," Rev. 1
CNG-CA-1.01-1001, "Constellation Nuclear Generation Fleet Administrative Procedure, Management Review Committee," Rev. 1
CNG-CA-1.01-1002, "Constellation Nuclear Generation Fleet Administrative Procedure, Corrective Action Review Board," Rev. 1
CNG-CA-1.01-1003, "Performance Improvement Coordinators," Rev. 1
CNG-CA-1.01-1004, "Constellation Nuclear Generation Fleet Administrative Procedure, Root Cause Analysis," Rev. 1
CNG-CA-1.01-1005, "Constellation Nuclear Generation Fleet Administrative Procedure, Apparent Cause Evaluation," Rev. 1
CNG-CA-1.01-1006, "Constellation Nuclear Generation Fleet Administrative Procedure, Common Cause Analysis," Rev. 1
CNG-CA-1.01-1010, "Use of Operating Experience," Rev. 0
CNG-CA-1.01-1011, "Management Observation Program," Rev. 0
CNG-CA-2.01-1000, "Constellation Nuclear Generation Fleet Administrative, Self-Assessment and Benchmarking Process," Rev. 0
CNG-AM-1.01-1001, "Equipment Reliability Clock Reset," Rev. 1
CNG-AM-1.01-1004, "Equipment Reliability Reporting," Rev. 1
CNG-HU-3.01, "Safety Conscious Work Environment," Rev. 0
CNG-MN-4.01-1002, "Constellation Nuclear Generation Fleet Administrative Procedure, Work Order Screening and Prioritization," Rev. 0
CNG-OP-1.01-1001, "Operational Decision Making," Rev. 0

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CNG-OP-1.01-1006, "Post Trip Reviews," Rev. 0
CNG-PR-1.01-1011, "Constellation Nuclear Generation Fleet Administrative Procedure, Control of Station Specific Procedure Change Process," Rev. 1
EN-1-102, "10 CFR 50.59/10 CFR 72.48 Reviews," Rev. 11
ER-1-103, "Maintenance Rule Program Implementation," Rev. 2
NO-1-111, "Post-Trip Review," Rev. 7
NO-1-116, "Operational Decision Making," 6/27/06
NS-1-101, "Employee Concerns Program," Rev. 4
OAP 04-01, "Operations Administration Policy, Managing Operator Impacts," Rev. 0
OI-22H, "Switchgear Ventilation and Air Conditioning," Rev. 21
QL-2-100, "Calvert Cliffs Nuclear Plant Administrative Procedure, Corrective Action Program," Rev. 21
STP-O-5A-1, "Unit 1 Auxiliary Feedwater System Quarterly Surveillance Test," Rev. 20
STP-O-5A-2, "Unit 2 Auxiliary Feedwater System Quarterly Surveillance Test," Rev. 19
Unit 2 OI-29, "Saltwater System Operating Instruction," Rev. 53

System Health Reports

System Health Reports Units 1 and 2 Saltwater Cooling, 2nd Quarter 2007
System Health Report Unit 1 System 064A "Reactor Coolant System" 2nd Quarter 2007
System Health Report Unit 1 System 064B "Reactor Coolant Pumps" 2nd Quarter 2007
System Health Report Unit 2 System 064A "Reactor Coolant System" 2nd Quarter 2007
System Health Report Unit 2 System 064B "Reactor Coolant Pumps" 2nd Quarter 2007
System Health Report Unit 1 System 081 "Refueling Equipment" 2nd Quarter 2007
System Health Report Unit 2 System 081 "Refueling Equipment" 2nd Quarter 2007
System Health Reports, Units 1 and 2, System 032, Auxiliary Building Ventilation
System Health Reports, Units 1 and 2, System 005, Electrical 480V Transformers, and Buses

Miscellaneous

Calvert Quick Clips, dated 5/17/07
Nuclear Plant Operations Section Standing Order 07-02
Nuclear Plant Operations Section Standing Order 07-03
Calvert Cliffs Nuclear Power Plant Licensing Memorandum, Final Reportability Review of IRE-021-913, dated September 11, 2007
Saltwater Cooling System Maintenance Rule Scoping Document
Corrective Action Program Performance Indicators for July 2007
Clearance No. 1200500616
Maintenance Rule Scoping Document System 064A, "Reactor Coolant System," Rev. 27
Maintenance Rule Scoping Document System 064B, "Reactor Coolant Pumps," Rev. 27
Maintenance Rule Scoping Document, "Auxiliary Building and Radwaste H&V," Rev. 25
A(1) Evaluation, Corrective Action, and Goal Setting Plan System 064B-04-01, "Reactor Coolant Pumps," dated 2/24/04
A(1) Evaluation, Corrective Action, and Goal Setting Plan System 064B-06-01 "Reactor Coolant Pumps," dated 8/15/06
A(1) Evaluation, Corrective Action, and Goal Setting Plan # 064A-07-01, Rev 0, dated 6/15/07

Engineering Services KPI Report for July 2007
 Flowserve Products Tech Note, Tech Service Bulletin 0203-80-027, "Reactor Coolant and
 Reactor Recirculation Pump Heat Exchanger Leakage"
 Troubleshooting Control Form #2200603793 2RV200 Acoustic Monitor, dated 11/19/06
 E-90-037, "Electrical Heat Load in Switchgear Rooms," Rev. 4
 ES199602324-001, "Installation of New Switchgear HVAC Units"
 ES199601050-000, Evaluate SWGR Emergency Fans, Rev. 1
 ES200500510, "Installation of New Separate, and Independent Fusing for the Main Control
 Power Transformer"
 VTM-054020-1, "Trane Condensers, Coils, and Components"
 SP-0878, "Switchgear Room A/C Condenser, Compressor, and Evaporative Coil"
 SD-032, "Auxiliary Building Ventilation," Rev. 4
 RPA 2007-1012, "Request to add Section 6.9 to OI-22 for Abnormal Compressor Operation"
 CCNPP Temperature Logs for SWGR Rooms

LIST OF ACRONYMS

| | |
|-------|--|
| ACE | Apparent Cause Evaluation |
| ADAMS | Agency Wide Document and Management System |
| AFW | Auxiliary Feedwater |
| CAP | Corrective Action Program |
| CARB | Corrective Action Review Board |
| CCA | Common Cause Analysis |
| CCW | Component Cooling Water |
| CCNPP | Calvert Cliffs Nuclear Power Plant |
| CFR | Code of Federal Regulations |
| CR | Condition Report |
| ECP | Employee Concerns Program |
| ER | Engineering Request |
| HVAC | Heating Ventilation and Air Conditioning |
| IRE | Issue Report (Electronic) |
| LER | Licensee Event Report |
| LOCA | Loss of Coolant Accident |
| MO | Maintenance Order |
| MRC | Management Review Committee |
| MRFF | Maintenance Rule Functional Failure |
| NCV | Non-Cited Violation |
| NRC | Nuclear Regulatory Commission |
| OA | Other Activities |
| OE | Operating Experience |
| PARS | Publicly Available Records |
| PI&R | Problem Identification and Resolution |
| PORV | Power Operated Relief Valve |
| PSSV | Primary System Safety Valve |
| Q&PA | Quality and Performance Assessment |
| RCA | Root Cause Analysis |
| RCP | Reactor Coolant Pump |
| RCS | Reactor Coolant System |

| | |
|------|--|
| RECO | Reasonable Expectation for Continued Operability |
| ROP | Reactor Oversight Program |
| SCWE | Safety-Conscious Work Environment |
| SDP | Significance Determination Process |
| SRW | Service Water |
| SSC | Structure, System, and Component |
| SWGR | Switchgear |
| TS | Technical Specifications |