

November 9, 2006

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 05000317/2006004 AND 05000318/2006004

Dear Mr. Spina:

On September 30, 2006, the US Nuclear Regulatory Commission (NRC) completed an inspection at your Calvert Cliffs Nuclear Power Plant Units 1 and 2. The enclosed inspection report documents the inspection results, which were discussed on September 29, 2006, with you and other members of your staff.

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

This report documents two NRC-identified findings of very low safety significance (Green) that were determined to involve violations of NRC requirements. However, because of the very low safety significance and because these issues were 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

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enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

**/RA/**

Arthur L. Burritt, Acting Chief  
Projects Branch 1  
Division of Reactor Projects

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

Enclosure: Inspection Report 05000317/2006004 and 05000318/2006004  
w/Attachment: Supplemental Information

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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. 05000317/2006004 and 05000318/2006004

Licensee: Constellation Generation Group, LLC

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

Location: Lusby, MD

Dates: July 1, 2006 through September 30, 2006

Inspectors: John Giessner, Acting Senior Resident Inspector  
Marlone Davis, Resident Inspector  
Todd Jackson, Health Physicist  
Randolph Ragland, Health Physicist  
C.J. Fong, Reactor Inspector

Approved by: Arthur L. Burritt, Acting Chief  
Projects Branch 1  
Division of Reactor Projects

## SUMMARY OF FINDINGS

IR 05000317/2006-004, 05000318/2006-004; 07/01/06 - 09/30/06; Calvert Cliffs Nuclear Power Plant, Units 1 and 2; Operability Evaluations; Problem Identification and Resolution.

The report covered a three-month period of inspection by resident inspectors and announced inspections performed by reactor and health physicist inspectors. Two Green findings both of which were non-cited violations (NCVs) were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). 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: Mitigating Systems**

Green. The inspectors identified a non-cited violation (NCV) for the Service Water (SRW) and Auxiliary Feedwater (AFW) systems being inoperable without completing the actions required by Technical Specifications. Constellation did not declare AFW and SRW trains inoperable when water tight doors providing a High Energy Line Break (HELB) barrier were opened for maintenance or testing. Station personnel wrote condition report (CR) IRE-016-870 to address the control of these HELB barriers and have provided guidance to declare the trains inoperable if the water tight doors are open.

This finding is more than minor because it had a credible impact on the objective for the mitigating system cornerstone and the attribute of component availability during design basis events, specifically HELBs. The SDP phase 1 review determined a phase 2 evaluation was required since both SRW and AFW subsystems could have been impacted with the HELB barrier removed. The phase 2 evaluation yielded a very low safety significance (Green), because of the low exposure time when the watertight doors were open. A contributing cause of the finding is related to the cross-cutting aspect in the area of problem identification and resolution (PI&R) because Constellation did not implement and institutionalize operating experience (OE) related to control of the HELB barriers through changes to station processes or procedures. (Section 1R15)

Green. The inspectors identified a NCV of TS 5.4.1.a because Constellation did not initiate a condition report (CR) to document the adverse performance of the service water (SRW) heat exchanger salt water (SW) strainers during high debris loading as required in the Service Water Heat Exchanger Alarm Manual. Constellation also did not assess the operability of the strainers as required by the Corrective Action Program. Station personnel initiated CR IRE-017-018 to address the issue and assess operability of the strainers.

The finding was more than minor since it had a credible impact on the objective for the mitigating system cornerstone and the attribute of component reliability during design basis events where the SRW system was required. This finding was determined to be a finding of very low safety significance (green) because only one subsystem of the SRW system was inoperable at any time, and the subsystem inoperability time was less than the maximum allowed by TS. A contributing cause of this finding was related to the cross-cutting aspect of PI&R because Constellation did not implement the corrective action program with a low threshold for identifying the problems with the SRW heat exchanger SW strainers. (Section 4OA2)

B. Licensee-Identified Violations

None.

## REPORT DETAILS

### Summary of Plant Status

Unit 1 began the inspection period at 100 percent power. On July 7, 2006 during an influx of aquatic life (jellyfish) at the plant intake structure, operators rapidly reduced Unit 1 power to around 35 percent power to facilitate removal of two circulating water pumps. Power was restored to 100 percent on the same day. On August 26, operators reduced power to approximately 85 percent power for planned waterbox cleaning and main turbine valve testing. Power was restored to 100 percent the next day.

Unit 2 began the inspection period at 100 percent reactor power. On September 1, 2006, operators reduced power to approximately 78 percent due to storm related debris at the intake from tropical storm Ernesto. Power was restored to 100 percent the same day. On September 9, 2006 operators reduced power to approximately 85 percent power for planned waterbox cleaning and main turbine valve testing. Power was restored to 100 percent the next day.

### 1. REACTOR SAFETY

#### **Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity**

1R01 Adverse Weather Protection (71111.01 - 3 samples)

.1 Adverse Weather Seasonal Preparations - Hot Weather

a. Inspection Scope

The inspectors reviewed the adverse weather preparations and mitigating strategies for hot weather operations. This review included an assessment of Operations Administrative Policy 94-5, "Guidelines for Nuclear Plant Operations Support For Electric System Operation and Planning Department Transmission System Operations." The inspectors assessed the effectiveness of Constellation preparations for hot weather and stressed grid conditions. Risk-significant systems affected by hot weather and a heavily loaded grid were selected for review. The review included the service water, saltwater, and selected auxiliary building ventilation systems. The inspectors performed a partial walkdown of ultimate heat sink components and safety related ventilation systems. The inspectors conducted interviews with control room operators and system engineers to ensure protective measures applicable to these risk-significant systems were available. This inspection satisfied two inspection samples for review of risk-significant systems. Documents reviewed for each section of this report are listed in the Attachment.

b. Findings

No findings of significance were identified.

Enclosure



.2 Adverse Weather Conditions - Tropical Storm

a. Inspection Scope

On September 1, 2006, Calvert Cliffs entered Emergency Response Plan Implementation Procedure (ERPIP) 3.0, "Immediate Actions," for severe weather conditions due to high winds and heavy rains from tropical storm Ernesto. The inspectors reviewed the adverse weather preparations and mitigating strategies for severe weather events. This review included an assessment of Emergency Response Plan Implementation Procedure (ERPIP) 3.0, "Immediate Actions," Attachment 20, "Severe Weather," Emergency Planning (EP) 1-108, "Severe Weather Preparation," Attachment 3, "Severe Weather Preparation Checklist Operations," and Operations Administrative Policy (OAP) 00-01, "Severe Weather Operations." The inspectors conducted discussions with control room operators to verify severe weather mitigating strategies and measures were appropriate for the event. This inspection satisfied one inspection sample for the onset of adverse weather.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

.1 Partial Walkdown (71111.04Q - 4 samples)

a. Inspection Scope

The inspectors performed a partial walkdown of the following four systems to verify the operability of redundant or diverse trains and components when safety equipment was inoperable. The inspectors attempted to identify any discrepancies that could impact the function of the system, and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, walked down system components, and verified that selected breakers, valves, and support equipment were in the correct position to support system operation. The inspectors also verified that Constellation had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program.

- Unit 1 Emergency core cooling system (ECCS) during dewatering of the 22 ECCS pump room cooler
- Unit 2 ECCS with 22 HPSI pump and 2MOV654 being out of service
- Unit 1 Component cooling (CC) water system after cleaning of the 11 CC heat exchanger
- 2A Emergency diesel generator (EDG) during maintenance on the 2B EDG

b. Findings

No findings of significance were identified.

.2 Complete Walkdown (71111.04S -1 sample)

a. Inspection Scope

The inspectors performed a complete system walkdown of the accessible portions of the service water system. The inspectors determined the correct system lineup using OI-15, Attachment 1, "Service Water Valve Alignment (Unit 1 Valves)," as well as appropriate piping and instrument drawings. The inspectors reviewed the open maintenance work requests on the system for any deficiencies that could affect the ability of the system to perform its function. Inspectors also reviewed the unresolved design issues such as temporary modifications, operator workarounds, and items tracked by plant engineering to assess their collective impact on system operation. In addition, the inspectors reviewed the condition report database to verify that equipment alignment problems were being identified and appropriately resolved.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05Q - 6 samples)

a. Inspection Scope

The inspectors conducted a tour of the six 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.

- Unit 1 Service water pump room (Room 226)
- Unit 2 Service water pump room (Room 205)
- Unit 1 Auxiliary feedwater pump room (Room 603)
- Unit 2 Component cooling water pump room (Room 201)
- Unit 1 Emergency core cooling system pump room (Room 118)
- 2B Emergency diesel generator room (Room 416)

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06 - 1 external flooding sample)a. Inspection Scope

The inspectors reviewed flood protection measures associated with external flood events. These events were described in the Updated Final Safety Analysis (UFSAR) and the Individual Plant Examination of External Events (IPEEE). The inspectors walked down risk significant areas at the site which included the intake structure and outside areas near plant structures. The inspectors evaluated the integrity of watertight doors, floor drains, and penetrations for these selected areas. The inspectors also walked down external drains identified by the IPEEE to verify their ability to mitigate the effects of external flood events.

b. Findings

No findings of significance were identified.

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

The inspectors observed the 12 A and 12B service water heat exchanger thermal performance tests. The inspectors reviewed the performance data and evaluated the test acceptance criteria from this completed test to ensure that design basis requirements were satisfied. The inspectors also evaluated existing heat transfer capabilities based on completed flow verification test results to ensure that specific safety functions could be performed in accordance with design specifications. The inspectors also reviewed Calvert Cliffs' periodic maintenance methods to verify that they conformed to the guidelines delineated in EPRI Report NP-7552, "Heat Exchanger Performance Monitoring Guidelines."

b. Findings

No findings of significance were identified.

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

On September 6, 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 turbine malfunction requiring operators to perform a manual reactor trip. Following the trip, equipment failures occurred resulting in a loss of all vital 4Kv buses. The inspectors focused on high-risk operator actions performed during implementation of the abnormal and emergency operating procedures, emergency plan implementation, and classification of the event. The inspectors evaluated the clarity and formality of communications, the

implementation 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 supervisor. The inspectors also reviewed simulator fidelity to evaluate the degree of similarity to the actual control room, especially regarding recent control board modifications.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

Quarterly Review (71111.12Q - 2 samples)

a. Inspection Scope

The inspectors reviewed the two 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 2 Wide range nuclear instrumentation power supplies
- Unit 2 21A reactor coolant pump seal flange leakage

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 - 6 samples)

a. Inspection Scope

The inspectors reviewed the following six 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.

- High grid stress during an electric system operator declaration for maximum emergency generation
- Unit 2 auxiliary feedwater testing
- 1A emergency diesel generator planned maintenance activities
- Unit 1 11 & 14 4kV busses transferred to and from their alternate power source to support maintenance on 11 4kV bus normal feeder breaker
- Unit 2 high pressure safety injection and low pressure safety injection check valve closure test
- 11 and 23 battery chargers planned maintenance activities

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15 - 5 samples)

a. Inspection Scope

For the five 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 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 sampling of condition reports to verify that Constellation identified and corrected any deficiencies associated with operability evaluations.

- Unit 1 core exit thermocouple reading lower than hot leg temperatures
- Unit 2 scaffolding in safety related switchgear room
- Unit 2 shutdown cooling heat exchanger inlet throttle valve for component cooling due to difficult valve operation
- Unit 1 auxiliary feedwater pump room water tight door open during test
- 1A emergency diesel generator room fan performance with switches installed improperly

b. Findings

Safety Related Watertight Doors

Introduction. The inspectors identified a Green NCV of Technical Specifications (TS) for the service water (SRW) and auxiliary feedwater (AFW) systems being inoperable for longer than the allowed time without completion of the actions required by TS, including placing the plant in hot shutdown. Constellation did not declare the associated AFW and SRW trains inoperable when the watertight doors that provide a high energy line break barrier were opened for maintenance or testing.

Description. On August 30, 2006, during the testing of Unit 1 #12 Turbine-Driven Auxiliary Feedwater (TDAFW) pump, in accordance with STP-O-5A-1, the inspectors noted that the procedure directed operators to open a set of watertight doors for the room that houses the #11 and # 12 TDAFW pumps. These doors are opened to the non-safety related turbine building and are different from the watertight door used for normal ingress and egress. The watertight doors that the procedure requires to be open are maintenance doors, which are larger and do not automatically close and latch. Station personnel opens these watertight doors to allow for quick egress during testing, and stations a fire watch while the doors are open.

The inspectors discussed the operability of the TDAFW pumps with Operations personnel, since it would be unlikely that the doors could be closed fast enough to mitigate a high energy line break event and prevent a harsh environment in the TDAFW room. This reasoning was consistent with NRC Information Notice (IN) 2000-20, "Potential Loss of Redundant Safety Related Equipment Because of A Lack of High Energy Line Barriers" and Regulatory Issue Summary (RIS) 2001-009, "Control of Hazard Barriers." The inspectors determined that since a HELB was considered a credible design basis accident, and the TDAFW pump had a specified safety function for that accident, then in accordance with the definition of operability in TS section 1.1, both pumps were inoperable. Constellation subsequently determined that both TDAFW pumps were inoperable during this test. The Technical Specification Action Statement (TSAS) 3.7.3c requires, in part, that the remaining operable pump be aligned for automatic initiation and the verification of the other unit's motor-driven AFW (MDAFW) pump as well as the AFW cross-tie valve to the opposite unit is operable in one hour. Station personnel performed the required actions when they determined the TDAFW pumps were inoperable. Constellation initiated a CR to evaluate their control of HELB barriers including an extent of condition evaluation.

As part of the extent of condition evaluation for the last three years, Constellation discovered that the TDAFW pump room doors for both units had been opened periodically for testing and maintenance activities without declaring the associated pumps inoperable. In addition, the Service Water (SRW) rooms for each unit, which contain the three SRW pumps, Salt Water/Service Water heat exchanger components, and the 13 or 23 AFW pump, had watertight doors which had been opened periodically without declaring the associated pumps inoperable. Having all three SRW pumps inoperable on both trains of the service water system would have required entry into shutdown TS 3.0.3.

Analysis. Failure to declare the SRW and AFW pumps or safety-related train inoperable when its HELB barrier (watertight door) was opened for other than normal ingress and egress was a performance deficiency. The inspectors considered the deficiency was more than minor since it had a credible impact on the objective for the mitigating system cornerstone and the attribute of component availability during design basis events, specifically HELBs. The SDP phase 1 review determined a phase 2 evaluation was required since both SRW subsystems could have been inoperable with the HELB barrier removed. For the AFW system, two cases existed where the opposite unit's AFW system was impacted due to open watertight doors.

The phase 2 evaluation used an unavailability of both TDAFW pumps in the conservative 3-30 day range. Constellation's data shows calculated unavailability times in the last year for unit 1 and 2 of 85 hours and 64 hours, respectively. Inspectors determined that these times were reasonable. To account for possible cases where the opposite unit's MDAFW may not have been available and some cases where the logs were not complete, the inspectors conservatively assumed only one train of AFW remained. SRW pump or component unavailability was 13 hours for Unit 1 and three hours for Unit 2. The inspectors used the initiating event of Main Steam Line Break Outside Containment (Table 3.10) of the Risk Informed Inspection Notebook, revision 2, for Calvert Cliffs. The phase 2 worksheet resulted in a very low safety significance (green) for both units because of the low exposure time when the watertight doors were open. Constellation performed their own detailed risk assessment using their risk model and determined the highest Incremental Core Damage Probability was green.

The inspectors identified that a contributing cause of this finding was related to the cross-cutting aspect in the area of PI&R because Constellation did not implement and institutionalize OE related to the control of HELB barriers, from a 2004 site self-assessment, RIS 2001-009 and IN 2000-20, through changes to station processes or procedures.

Enforcement. With the watertight doors open in the respective rooms, AFW, SRW, and SW subsystems would be inoperable. TS 3.7.3c, "Auxiliary Feedwater System," requires, in part, action to verify the other unit's motor-driven AFW pump is operable within one hour. In addition, the SRW and SW TS require both trains operable in modes 1-4. There is no TS action for both subsystems being inoperable, therefore, TS 3.0.3 is applicable and requires action to be in mode 3 within seven hours.

Contrary to the above, on several occasions on both units, most recently August 30, 2006, Constellation did not verify the other unit's AFW pump operable in one hour from the inoperability of the TDAFW pumps. Additionally, contrary to the requirements for SRW and SW operability, on December 9, 2004, Unit 1 SRW pump room doors were open for more than nine hours, exceeding TS 3.0.3 requirement to be in mode 3 within seven hours. This violation is documented in Constellation's corrective action program as IRE-016-870 and is being treated as a non-cited violation consistent with Section VI.A.1 of the NRC Enforcement Policy: **NCV 05000317 and 318/2006004-01, Failure to Comply With TS for SRW and AFW With Watertight Doors Open.**

#### 1A EDG Room Fan Performance

The inspectors identified that the 1A Emergency Diesel Generator (EDG) room ventilation fan temperature switches were installed with the shipping protectors over the sensing element. On September 24, 2006, while observing a 1A EDG surveillance test, the inspectors noted the temperature in the room slowly rising while the EDG was being loaded. The system design is such that at approximately 85F°, the second ventilation fan starts and around 95F°, the third ventilation fan starts. The inspectors observed the local temperature over 95F° (with a maximum peak of 97F°) with only one fan running.

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The inspectors discussed the observation with the Constellation staff, and they subsequently determined the fan temperature switches were installed with the shipping protectors over the sensing element which created a delay in activation of the temperature switch. Station personnel initiated a condition report IRE-017-390 and removed the shipping protectors to restore the EDG to the intended design configuration. This item is unresolved pending an investigation and operability assessment by the station personnel. **Unresolved Item (URI 05000317/2006004-03, 1A EDG Ventilation Fan Performance**

1R19 Post-Maintenance Testing (71111.19 - 5 samples)

a. Inspection Scope

The inspectors reviewed the five 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).

- 22 shutdown cooling heat exchanger component cooling water solenoid valve (2SV3830) replacement
- High pressure safety injection (HPSI) main header isolation motor operated valve (2MOV-654) maintenance
- 22 ECCS pump room cooler
- U-4000-12 transformer out of service (supply to 4kv safety bus)
- Fire system containment isolation motor operated valve (2MOV-620), circuit breaker inspection

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22 - 5 samples)

a. Inspection Scope

The inspectors observed and/or reviewed the five surveillance tests listed below, associated with selected risk-significant SSCs, to verify TS compliance and that Constellation properly specified test acceptance criteria. The inspectors also verified that station personnel established proper test conditions as specified in the procedures, no equipment preconditioning activities occurred, and that acceptance criteria had been satisfied.



- Unit 1 reactor coolant system leakage surveillance (STP O-27-1)
- 11 auxiliary feedwater pump inservice surveillance test (STP O-5A-1)
- Unit 2 reactor coolant system leakage surveillance (STP O-27-2)
- Unit 1 remote shutdown and post accident monitoring instrumentation channel check (STP O-63-1)
- Unit 2 high pressure safety injection and low pressure safety injection check valve closure test (STP O-65-2)

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23 - 1 samples)

a. Inspection Scope

The inspectors reviewed one temporary modification to verify that safety systems did not depart from the design basis and system success criteria. The inspectors reviewed the associated 10 CFR 50.59 screening against the system design bases documentation, including the UFSAR. 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 the licensee controlled the modification in accordance with the requirements of procedure MD-1-100, "Temporary Alterations."

- Disabling an alarm relay in the 0C diesel generator battery monitor alarm circuit

b. Findings

No findings of significance were identified.

**Cornerstone: Emergency Preparedness (EP)**

1EP6 Drill Evaluation (71114.06 - 1 sample)

a. Inspection Scope

The inspectors observed a site emergency response drill training exercise conducted on July 26, 2006, to assess licensed operators' and site Emergency Director performance in the area of emergency preparedness. This training exercise focused on equipment failures and operator challenges that would typically exist during a significant event which resulted in protective action recommendations (PARs) to state and local officials. The inspectors also observed and evaluated the required procedural transitions and associated event classifications.

b. Findings

No findings of significance were identified.

## 2. Radiation Safety

### Cornerstone: Occupational Radiation Safety (OS)

#### 2OS1 Access Control to Radiologically Significant Areas (71121.01)

##### a. Inspection Scope (7 Samples)

The inspectors reviewed radiological work activities and practices and procedural implementation during observations and tours of the facilities and inspected licensee Performance Indicators (PIs) relative to the Occupational Exposure Cornerstone. The licensee had one PI in this cornerstone for the period from October 2005 - September 15, 2006 (NRC Inspection Report Nos. 5000317/2006002 and 5000318/2006002)

The inspectors reviewed corrective action reports related to access controls. This review included any high radiation area radiological incidents, identified by the licensee, in high radiation areas  $<1\text{R/hr}$  that have occurred since the last inspection in this area. Additionally, the inspector reviewed any pertinent problem identification and resolution issues identified in this area, and assessed the licensee's self-assessment activities.

The inspectors reviewed licensee documentation packages relative to possible PI events occurring since the last inspection to determine if any events involved dose rates  $>25\text{ R/hr}$  at 30 centimeters or  $>500\text{ R/hr}$  at 1 meter, what barriers failed or remained available to prevent personnel access. The inspectors reviewed unintended exposures  $>100\text{ mrem}$  Total Effective Dose Equivalent (TEDE) (or  $>5\text{ rem}$  Skin Dose Equivalent (SDE) or  $>1.5\text{ rem}$  Lens Dose Equivalent (LDE)), to determine if there were any overexposures or substantial potential for overexposure. There were no licensee events which occurred between October 2005 - September 15, 2006 which met any of the above criteria.

The inspectors conducted radiation worker performance observations during dry storage cask movement and lid welding activities to determine if radiation workers were aware of significant radiological conditions in the work place, the required RWP controls, and to assess the level of radiological hazards present.

The inspectors reviewed radiological problem reports relative to radiation worker errors since the last inspection to examine the licensee's cause assessments, including the determination of any observable pattern traceable to a similar cause; and, the effectiveness of the licensee's efforts to resolve the reported problems. The inspectors discussed corrective actions with the Radiation Protection Manager (RPM). The inspectors verified the adequacy of postings and verified the integrity of Locked High Radiation Areas, and Very High Radiation Areas (if reasonably accessible).

The inspectors conducted radiation protection technician observations during dry storage cask movement and lid welding activities to determine if job coverage technicians were aware of significant radiological conditions in the work place, the required RWP controls; and to assess their appreciation of the radiological hazards. The inspectors reviewed any radiological problem reports associated with radiation protection technician performance errors.

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls (71121.02)

a. Inspection Scope (3 Samples)

The inspectors reviewed the integration of ALARA requirements in work procedures and RWP documents.

The inspectors evaluated the radiation protection group generated shielding requests with respect to dose rate reduction problem definition and assigning value (dose savings or dollars). In addition, the inspectors evaluated engineering shielding responses for follow through.

The inspector determined if there have been any declared pregnant workers during the current assessment period, and reviewed the exposure results and monitoring controls employed by the licensee with respect to requirements of 10 CFR 20.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation (71121.03)

a. Inspection Scope (1 Sample)

The inspectors verified the calibration expiration and source response check currency on radiation detection instruments staged for use. The inspector interviewed radiation protection technicians and observed technicians select and self verify instrument operability prior to use.

b. Findings

No findings of significance were identified.

**Cornerstone: Public Radiation Safety (PS)**2PS3 Radiological Environmental Monitoring Program (REMP)a. Inspection Scope (10 Samples)

The inspector reviewed the current Annual Radiological Environmental Monitoring Report and recent licensee assessment results to verify that the REMP was implemented as required by technical specifications (TS) and the offsite dose calculation manual (ODCM). The review included changes to the ODCM and environmental monitoring program commitments concerning sampling locations, monitoring and measurement frequencies, land use census, inter-laboratory comparison program, and data analysis. In addition, the inspector reviewed station self-assessments and audits, licensee event reports, inter-laboratory comparison program results, the UFSAR for information regarding the environmental monitoring program and meteorological monitoring instrumentation, and the scope of the audit program to verify that it met the requirements of 10 CFR 20.1101(c).

The inspector walked down four (of five) air particulate and iodine sampling stations; one (of 3) vegetation sampling locations; one (of one) shoreline sediment location; two (of two) bay water composite sampling locations; and eight (of 23) thermoluminescent dosimeter (TLD) monitoring locations, and determined that these were located as described in the ODCM and determined the equipment material condition to be acceptable.

The inspector observed the collection and preparation of a variety of environmental samples (listed above) and verified that environmental sampling was representative of the release pathways as specified in the ODCM and that sampling techniques were in accordance with procedures.

Based on direct observation and review of records, the inspector verified that the meteorological instruments were operable, calibrated, and maintained in accordance with guidance contained in the UFSAR, NRC Safety Guide 23, and station procedures. The inspector verified that the meteorological data readout and recording instruments in the control room and at the tower were operable.

The inspector reviewed each event documented in the Annual Environmental Monitoring Report which involved a missed sample, inoperable sampler, lost TLD, or anomalous measurement for the cause and corrective actions. The inspector conducted a review of Constellation's assessment of any positive sample results.

The inspector reviewed any significant changes made by the licensee to the ODCM as the result of changes to the land census or sampler station modifications since the last inspection. The inspector also reviewed technical justifications for any changed sampling locations and verified that the licensee performed the reviews required to ensure that the changes did not affect its ability to monitor the impacts of radioactive effluent releases on the environment.

The inspector reviewed the calibration and maintenance records for air samplers, as

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well as technical descriptions of new air sampling equipment purchased and being introduced into the field by Constellation. The inspector reviewed: the results of Calvert Cliffs' interlaboratory comparison program to verify the adequacy of environmental sample analyses performed by the station; the station's quality control evaluation of the interlaboratory comparison program and the corrective actions for any deficiencies; Calvert Cliffs' determination of any bias to the data and the overall effect on the REMP; and quality assurance audit results of the program to determine whether the licensee met the TS/ODCM requirements. The inspector verified that the appropriate detection sensitivities with respect to TS/ODCM are utilized for counting samples and reviewed the results of the quality control program including the interlaboratory comparison program to verify the adequacy of the program.

The inspector observed several locations where the station monitors potentially contaminated material leaving the radiologically controlled area, and inspected the methods used for control, survey, and release from these areas, including observing the performance of personnel surveying and releasing material for unrestricted use verifying that the work is performed in accordance with plant procedures.

The inspector verified that the radiation monitoring instrumentation was appropriate for the radiation types present and was calibrated with appropriate radiation sources. The inspector reviewed Constellation's criteria for the survey and release of potentially contaminated material; verified that there was guidance on how to respond to an alarm which indicates the presence of licensed radioactive material; and reviewed the licensee's equipment to ensure the radiation detection sensitivities were consistent with the NRC guidance contained in IE Circular 81-07 and IE Information Notice 85-92 for surface contamination and HPPOS-221 for volumetrically contaminated material.

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES (OA)**

4OA1 Performance Indicator (PI) Verification (71151 - 2 Samples)

a. Inspection Scope

Cornerstone: Occupational Radiation Safety

- Occupational Exposure Control Effectiveness (OECE)(02.01)

The inspectors interviewed cognizant personnel and selectively examined records used by the licensee to identify occurrences involving high radiation areas, very high radiation areas, and unplanned personnel exposures for the time period from October 2005 to September 15, 2006. The reviewed records included selected corrective action program records and the periodic PI data records for this PI. This review was conducted against the applicable criteria specified in Nuclear Energy Institute's (NEI) Regulatory Assessment Performance Indicator Guideline No. 99-02 (Revision 3), with an effective date of April 1, 2005.

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The inspectors determined that the licensee had one occurrence during the period specified which met the applicable criteria and this event was properly reported as a PI. This event is documented in NRC Inspection Report Nos. 5000317/2006002; 5000318/2006002. This review and examination did not identify any problems with the PI accuracy or completeness and thus, verified this performance indicator. This inspection activity represents the completion of 1 sample relative to this inspection area (i.e., inspection procedure section 02.01) for one performance indicator (i.e., OECE).

- Radiological Effluent Technical Specification/Offsite Dose Calculation Manual Radiological Effluent Occurrences (RETS/ODCM REOs)(02.01)

The inspector interviewed cognizant personnel and selectively examined records use by the licensee to identify any occurrences involving gaseous or liquid effluent releases for the time period from October 2005 - September 15, 2006. The reviewed records included selected corrective action program records and the periodic PI data records for this PI. This review was conducted against the applicable criteria specified in Nuclear Energy Institute's (NEI) Regulatory Assessment Performance Indicator Guideline No. 99-02 (Revision 3), with an effective date of April 1, 2005.

This review and examination did not identify any problems with the PI accuracy or completeness and, thus, verified this performance indicator. This inspection activity represents the completion of 1 sample relative to this inspection area (i.e., inspection procedure section 02.01) for one performance indicator (i.e., RETS/ODCM REOs).

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Review of Items Entered Into the Corrective Action Program

The inspectors performed a daily screening of items entered into Constellation's corrective action program 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. Inspectors reviewed each issue report, attended screening meetings, and accessed Constellation's computerized database.

.2 Annual Sample: Review of Operator Workarounds

a. Inspection Scope

The inspectors performed an in-depth review of workarounds in accordance with IP 71152. This included an evaluation of the cumulative effects of documented workarounds, field walkdown to determine potential undocumented workarounds, review of Condition Reports (CRs) and Control Room walkdowns. The evaluation followed the guidelines in 71152 paragraph 03.02 b and assessed potential workarounds not evaluated by station personnel, workarounds that have been formalized as long-term

corrective actions, and workarounds that increase the potential for human performance errors.

b. Findings

No findings of significance were identified.

.3 Annual Sample: Review of Safety Related Salt Water System Performance During Debris Intrusion

a. Inspection Scope

The inspectors conducted a review of Constellation's safety related salt water (SW) system, which takes a suction on the Chesapeake Bay and acts as an ultimate heat sink. Inspectors selected this sample since there were several events which challenged the system. Specifically, in July and August 2006 there was an unusually high number of jellyfish at the traveling screens which remove debris from the suction of the circulating and salt water systems. The jellyfish clogged the traveling screens to the point where circulating water pumps had to be removed from service. In September 2006, there was an excessive amount of debris in the bay caused by high winds. The inspection involved a system evaluation by reviewing logs, procedures, design basis documents, performance monitoring, interviewing site personnel, and walkdowns of plant equipment. The inspection focused on possible common mode failure conditions and susceptible equipment, as well as equipment and personnel performance during this time.

b. Findings

Introduction. The inspectors identified a Green NCV of TS 5.4.1.a, "Administrative Controls - Procedures," for failure to follow the Alarm Manual for the service water (SRW) system. Specifically, the operators did not initiate CRs to address SRW heat exchanger salt water (SW) strainer trouble alarms. Constellation also did not assess system operability as required by the Corrective Action Program.

Description. During a jellyfish intrusion on July 19, 2006, the inspectors walked down the traveling water screens and noted some carryover of debris from the front side of the screen to the backside of the screen. A review of control room logs for that day identified several SW strainer trouble alarms. Further investigation showed that the 22A SW strainer valve was not in its correct position. The alarm response procedure directs the operator to attempt to reset the circuitry, determine which valve failed, and if the flushing valve is fully or partially open, consider placing the control system to "Off" for that strainer to allow the other strainer on the same train to function in automatic. Finally, the alarm response procedure directs initiation of a condition report for equipment deficiencies. Operators performed a manual flush of the strainer and the alarm cleared. The manual flush is not described in this alarm response procedure, no CR was written, and station personnel did not assess system operability. On July 21, 2006, following a discussion with the inspector, Operations personnel initiated CR IRE-016-074. Constellation categorized this CR as a level 4 and closed the CR to trend, with no actions taken. The operability explanation noted that "the alarm was apparently caused by influx of jellyfish and was promptly resolved per the Alarm Manual." The

inspectors also discussed with engineers that if manual action was required during debris intrusions, then SW strainer operability could be challenged. Constellation created an Incident Response Team (IRT) and performed an apparent cause evaluation for the jellyfish intrusion but did not perform an evaluation on the potential impact to safety-related systems.

On September 1, 2006, following high winds from tropical storm Ernesto inspectors reviewed the control room logs and found several cases where condition reports were not written for SW strainer trouble alarms. The alarms came in and cleared with no action taken on a number of occasions. The system is design for the strainer to autoflush before an alarm is received. In one case, a 12B SW strainer valve was not in its correct position and the control room logs indicate the actions taken for the alarm were unsuccessful. On other occasions operators were dispatched to observed the SW strainer going into an autoflush or to manually flush the strainer following an alarm.

In response to the inspectors observations and discussions regarding strainer performance, the Constellation staff initiated IRE-017-018 to address why no CRs were initiated for these issues. The inspectors concluded that with the SW strainer valve in the wrong position, the automatic backwash feature of the associated subsystem strainer would not function, and therefore the SW strainer was inoperable. The inspectors also concluded that there was an adverse impact to the SW strainers from debris intrusion and that Constellation, by not documenting the adverse conditions in their corrective action process as required by their procedure, missed an opportunity to assess the impact on system operability as well as determine the corrective actions needed to address the issue. The inspectors determined that on July 19, 2006 a SW strainer was inoperable for one subsystem on Unit 2 for less than one hour. On September 1, both subsystems were inoperable, but not at the same time and for less than one hour.

Analysis. The failure to follow the Alarm Response Manual for the salt water system is the performance deficiency in that the Constellation staff did not initiate CRs to address salt water strainer trouble alarms or assess system operability as required by the procedure. The performance deficiency more than minor since it had a credible impact on the objective for the mitigating system cornerstone and the attribute of component reliability during design basis events where the SW system was required. The finding was determined to be of very low safety significance, Green, using phase 1 of the SDP since the TS allowed outage time for one subsystem inoperable was not exceeded. The inspectors identified that a contributing cause of this finding was related to the cross-cutting aspect of PI&R because Constellation did not implement the corrective action program with a low threshold for identifying the problems with the SW strainers.

Enforcement. TS 5.4.1a, "Administrative Controls - Procedures," requires, in part, that written procedures be established and implemented for activities recommended in Regulatory Guide 1.33, revision 2, Appendix A of February 1978. Paragraph 6 of Appendix A requires procedures for safety-related alarm conditions. The SW strainers are safety-related and have alarm response procedures associated with each of its service water heat exchangers. Contrary to the above, on July 19 and September 1, 2006, Constellation failed to adequately implement the alarm response procedures because no condition report was written. This violation is documented in Constellation's corrective action program as IRE-017-018 and is being treated as a

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non-cited violation consistent with Section VI.A.1 of the NRC Enforcement Policy: **NCV 05000317 and 318/2006004-02, Failure to comply with TS 5.4.1 for Salt Water Strainers.**

.4 Radiological Environmental Monitoring Program

a. Inspection Scope

The inspector reviewed the Constellation's Licensee Event Reports, Special Reports, and audits related to the radiological environmental monitoring program performed since the last inspection. The inspector determined that identified problems were entered into the corrective action program for resolution. The inspector also reviewed corrective actions affecting environmental sampling, sample analysis, or meteorological monitoring instrumentation.

b. Findings and Observations

No findings of significance were identified.

4OA3 Event Followup

Reduction of Power Generation due to Jellyfish Intrusion

The inspectors assessed operator performance associated with a Unit 1 event that involved a rapid reduction of power. On July 7, 2006, at approximately 4:30 p.m., a large number of jellyfish entered the intake basin of the plant. The jellyfish challenged the circulating water and screen wash systems. Unit 1 control room operator (CRO) received high differential pressure (D/P) alarms on several traveling screens in the control room. The CRO immediately dispatched outside operators to investigate the cause and subsequently gave directions to clear the traveling screens. The outside operators used fire hoses to deflect the jellyfish away from the intake. At approximately 4:59 p.m., The Unit 1 CROs implemented Abnormal Operating Procedure (AOP) - 7L, "Circulating Water / Intake Malfunction," due to continuous high D/P alarms on the traveling screens and securing two circulating water pumps. Unit 1 required a rapid reduction of power in accordance with AOP-7L. The inspectors observed plant operation, procedure adherence and system performance during this time. The inspectors assessed the plant response and conditions specific to the event, and evaluated the performance of licensed operators. The inspectors reviewed control room procedures and operator logs to determine if operators performed the appropriate actions in accordance with their training and established station procedures.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On September 29, 2006, the resident inspectors presented the inspection results to Mr Spina and other members of his staff who acknowledged the findings. The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT: SUPPLEMENTAL INFORMATION

**SUPPLEMENTAL INFORMATION****KEY POINTS OF CONTACT**Constellation Personnel

J. Spina, Vice President  
 J. Pollock, Plant General Manager  
 D. Bauder, Operations Manager  
 A. Barnett, REMP Laboratory, Ft. Smallwood  
 L. Barta, Laboratory Supervisor, Ft. Smallwood  
 J. Branyan, Functional Surveillance Test Coordinator  
 R. Conatser, Senior Chemist, REMP Program Manager  
 S. Dean, General Supervisor Operations  
 J. Detechemundy, Health Physics Technician  
 B. Erdman, Radiological Engineering Supervisor  
 S. Etnoyer, Plant Health Physicist  
 H. Evans, Health Physics Leader  
 M. Flaherty, Engineering Services Manager  
 P. Furio, Supervisor Licensing  
 J. Gaines, Director Calvert Cliffs Licensing  
 D. Geneva, General Supervisor, Chemistry  
 T. Hickey, Welder  
 J. Johnson, Licensing  
 P. Jones, Senior Plant Health Physicist  
 R. Kellner, Senior Plant Health Physicist  
 T. Kirkham, Principle Plant Health Physicist  
 L. Larragoite, Constellation Licensing Director  
 R. Marshall, Health Physics Technician  
 K. Mills, System Engineering General Supervisor  
 D. Murphy, Supervisor NSSS Systems  
 S. Marie Reichard, Engineering Analyst  
 C. Neyman, Engineering Analyst  
 E. Roach, General Supervisor of Health Physics  
 D. Scroggy, Health Physics Technician  
 A. Simpson, Sr. Licensing Engineer  
 B. Snuse, Licensing  
 M. Stanley, Operations, Fire Brigade  
 L. Williams, System Manager  
 M. Yox, Engineering Analyst

**LIST OF ITEMS OPENED, CLOSED AND DISCUSSED**Opened

05000317/2006004-03	URI	1A EDG Ventilation Fan Performance
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Opened and Closed

05000317-318/2006004-01	NCV	Failure to Comply With TS for SRW and AFW With Watertight Doors Open
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Attachment

05000317-318/2006004-02

NCV

Failure to comply with TS 5.4.1 for Salt Water Strainers

### LIST OF DOCUMENTS REVIEWED

#### **Section 1R01: Adverse Weather**

Calvert Cliffs Integrated Schedule WW 0629, dated July 17, 2006  
 Unit 1 and 2 QSS Week 0629 - Risk Evaluation Rev. 3, July 14, 2006  
 Abnormal Operating Procedure, AOP-7M, Major Grid Disturbances, revision 1  
 Operations Administrative Policy 94-5, Guidelines for Nuclear Plant Operations Support For Electric System Operation and Planning Department Transmission System Operations Unit, revision 10  
 IRE-016-300, Original calculation did not consider CW001 temperature indication uncertainty, August 2, 2006  
 Rep task ID 20421009, Cross Calibration of Circulating Water temperature detectors, August 1, 2006  
 Drawing Bechtel 63-077-B, Block Diagram RTD recorder 2TR17, revision 4  
 Emergency Response Plan Implementation Procedure (ERPIP) 3.0, "Immediate Actions," Attachment 20, "Severe Weather," revision 39.  
 Emergency Planning (EP) 1-108, "Severe Weather Preparation," Attachment 3, "Severe Weather Preparation Checklist Operations," revision 0  
 Operations Administrative Policy (OAP) 00-01, "Severe Weather Operations," revision 0.

#### **Section 1R04: Equipment Alignment**

Clearance Order 2200600309, Tagout 22 ECCS Pump Air Cooler, September 12, 2006  
 Simplified Drawing 84304, Circulating and Salt Water Cooling System, revision 6  
 UFSAR Table 9-17A, Single Failure Analysis, revision 34  
 Simplified Drawing 64311, Safety Injection and Containment Spray, revision 9  
 Operating Instruction (OI) OI-3A Unit 2, Safety Injection and Containment Spray, revision 22  
 Drawing 62731 Sheet 1, Safety Injection and Containment Spray, revision 72  
 OI 29 Unit 1 and 2, Salt Water System, revision 52  
 OI-15, Service Water System, revision 43,  
 CA03387, Unit 1 Service Water Flow Analysis, revision 1.  
 Maintenance Order (MO) 2200601499  
 Clearance ID# 2200600153

#### **Section 1R05: Fire Protection**

Combustion Loading Analysis Report, Calculation CA02243, revision 1  
 IRE-016-887, Combustible Load calculation underestimates quantity of Armaflex Insulation, August 31, 2006  
 Updated Final Safety Analysis Report, Section 9.9, CCNPP Fire Protection Program, revision 35  
 SA-1, Fire Protection Program, revision 6.  
 FP-2, Fire Hazards Analysis Summary Document, revision 0.

**Section 1R06: Flood Protection Measures**

RAN 97-031, Individual Plant Examination of External Events Summary Report,  
MN-1-319, Structure and System Walkdowns, rev. 7  
BG&E 62308, Area & Equipment Drains Containment and Auxiliary Building Unit 2 Plan at  
Elevation.45'-0", revision 14

**Section 1R07: Heat Sink Performance**

CA04879, rev. 0, (93-074 Rev. 3), Salt Water NPSH and Pressure Evaluation  
SRWHX-4, rev.9, Service Water Heat Exchanger Cleaning and Inspection  
CA03387, rev. 1, Unit 1 Service Water Flow Analysis  
ES200400743, Plate Heat Exchanger Thermal Performance Trending Evaluation, revision 0  
EPRI NP-7552, Heat Exchanger Performance Monitoring Guidelines, dated December 1991

**Section 1R11: Licensed Operator Requalification Program**

Drill Simulator Guide EPOP-9, Turbine Failure and loss of 4KV Bus, revision 1

**Section 1R12: Maintenance Effectiveness**

MN-1-101, Control of Maintenance Activities, revision 31  
Maintenance Order (MO) 2200504499  
Maintenance Order (MO) 2200500523  
Maintenance Order (MO) 2200602453  
Maintenance Order (MO) 2200600776  
Maintenance Order (MO) 2200602796  
Maintenance Order (MO) 2200602679  
SP-0556, Reactor Coolant Pump - Seal Area, Attachment 1, revision 2.  
IRE-015-378  
IRE-008-929  
IRE-014-698  
IRE-009-026

**Section 1R13: Maintenance Risk Assessments and Emergent Work Control**

Integrated Work Schedule 0631, August 1, 2006  
Integrated Work Schedule 0635, August 29, 2006  
Integrated Work Week 0636, September 3 - September 10 2006.  
Integrated Work Schedule 0638, September 20, 2006  
Maintenance Order (MO) 2200600937  
Maintenance Order (MO) 1200600619

**Section 1R15: Operability Evaluations**

IRE-014-572, RV Head Replacement Project Changed Design of the ICI Thimble in the Area of  
the CET, May 11, 2006  
Engineering Services package (ESP) ES199600729-000, revision 0  
CET printout August 3, 2006  
Drawing 12021A-0037, ICI Thimble Assembly, revision 0B  
Maintenance Order (MO) 2200602722, Scaffold and Insulation Support for SWGR HVAC Duct,  
Attachment

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Calvert Cliffs Nuclear Power Plant Administrative Procedures MN-1-203, Scaffold Control, revision 15

IRE-017-054, SRW Door and TDAFW Pump Doors opened and not risked assessed, September 11, 2006

IRE-017-110, #22 ECCS Pump room Air Cooler Maintenance PRA did not assess water tight doors open on opposite Unit1, September 13, 2006

IRE-016-911, Engineering Review identified vulnerabilities in barrier control, August 31, 2006

IRE-016-870, AFW Steam Train Operability with AFW Pump Room Double Watertight Door Open, August 30, 2006

Reasonable Expectation of Continued Operability (RECO) IRE-016-008, 2-CC-266 22 SDC HX throttle valve, unable to fully shut, August 29, 2006

IRE-016-843, Cell 20 battery 20 has a crack in jar cell top, August 29, 2006

IRE-017-387, 1A EDG room fan switches have shipping protectors installed over the sensing element, September 27, 2006

Unit 1 and 2 AOP-9A, Control Room Evacuation and Safe Shutdown Due to Severe Control Room Fire, revision 12

NO-1-106, Functional Evaluation/Operability Determination, revision 10

QL-2-100, Corrective Action Program, revision 20

### **Section 1R19: Post-Maintenance Testing**

DWG 62710SH002, Calvert Cliffs Unit 2 Component Cooling System, revision 24

Maintenance Order (MO) 2200600164, EQ Replacement on #22 Shutdown Cooling HX Outlet 2SV3830

Unit 2 Emergency Operating Procedure (EOP) -5, Loss of Coolant Accident, revision 21

Surveillance Test Procedure (STP) O-65G-2, Component Cooling Valve Quarterly Operability Test, performed August 29, 2006

Purchase Order (PO) 41590, Solenoid 3 way valve ASCO Model NPEFL8300382ERF, August 11, 2005

MO 220050296, 2MOV654OP, 2 SI HPSI Header Isolation Inspection, September 12, 2006

MO 2200600538, Inspect Replace Anodes #22 ECCS Pump Room Cooler, September 12, 2006

MO 1200504571, 11 4kv Bus Normal feeder, September 19, 2006

### **Section 1R22: Surveillance Testing**

STP O-27-1/2, Reactor Coolant System Leakage Evaluation (Unit 1 and 2), revision 19, change 5

Information Technology System Type Screening Form ITSF-2000-0051, Operations Calculations, July 20, 2000

Nuclear Engineering Unit Memo DMLS # DE05497, RCS Volume Change with Replacement Steam Generator, January 21, 2002

U1 and U2 RCS Leakage Calculations from STP O-27-1/2, August 25, 2006

STP O-5A-1, Auxiliary Feedwater System Quarterly Surveillance Test completed for 11 AFW, August 30, 2006

IRE-017-007, STP O-27 not revised for NRC IN 94-46, September 9, 2006

IRE-016-789, STP O-027 1&2 software does not meet standards to ensure full compliance with TS, August 25, 2006

Administrative procedure EN-4-107, ASME Inservice testing of Pumps, revision 1

Calvert Cliffs IST Program Plan, revision 2

**Section EP6: Emergency Response Drill**

Calvert Cliffs Emergency Response Drill Scenario, State Participation -1, dated August 1, 2005  
Calvert Cliffs Emergency Response Plan Implementation Procedures (ERPIP) 3.0, Immediate Actions, revision 39  
Emergency Action Level (EAL) Technical Basis Document, revision 10  
IRE-016-353, Emergency Director training using judgment, August 3, 2006  
Emergency Preparedness Unit File 9.5 - Drill/Exercise Reports for July 25, 2006 Emergency Response Plan Implementation procedure Drill, July 27, 2006

**Section 2OS1: Access Control to Radiologically Significant Areas; Section 2OS2: ALARA Planning and Controls; and Section 2OS3: Radiation Monitoring Instrumentation and Protective Equipment**

Procedures and Documents

CCNPP Administrative Procedure, RP-1-101, ALARA, Rev. 4  
CCNPP Technical Procedure, RSP 1-200, ALARA Planning and SWP Preparation, Rev. 22  
CCNPP Technical Procedure, RSP 1-106, Special Work Permit Administration, Rev. 10  
CCNPP Administrative Procedure, NO-1-117, Integrated Risk Management, Rev. 17  
CCNPP Administrative Procedure, RP-1-100, Radiation Protection  
CCNPP Technical Procedure, RSP 1-203, Temporary Shielding, Rev. 13  
CCNPP, ALARA Plan 2006 - 2010  
CCNPP Monthly Dose Report for August 2006  
CCNPP Plant Status/Integrated Work Schedule, September 13, 2006  
CCNPP 2006 RFO Source Term Management High Impact Team Charter

Condition Reports (CR):

IRE-014-370; IRE-014-035; IRE-014-920; IRE-011-739; IRE-016-686; IRE-015-339;  
IRE-014-021; IRE-014-057; IRE-015-174; IRE-011-421; IRE-014-516; IRE-011-735;  
IRE-016-769; IRE-011-740; IRE-010-870; IRE-013-639; IRE-011-278; IRE-015-716;  
IRE-013-800; IRE-016-589; IRE-012-220; IRE-015-268; IRE-016-759; IRE-011-203;  
IRE-014-475; IRE-014-858; IRE-013-087; IRE-011-718; IRE-016-507; IRE-013-203;  
IRE-011-297; IRE-016-043

Special Work Permits and ALARA Reviews

SWP 2006-0128 and ALARA Review Checklist  
SWP 2006-0156 and ALARA Review Checklist  
SWP 2006-0126  
Temporary Shielding Request Nos. 1-06-001; 1-06-002; 1-06-003; 1-06-004; 1-06-006;  
1-06-008; 1-06-610; 1-06-011; 1-06-017; 1-06-018; 1-06-023; 1-06-025; 1-06-027;  
2-05-024; 2-03-056; 0-05-030;

Maintenance Work Order Nos.

2200604664; 1200600392; 0200600987; 2200601047;  
0200600738; 1200403667;

**Section 2PS3: Radiological Environmental Monitoring Program (REMP)**

Annual Radiological Environmental Operating Report for the Calvert Cliffs Nuclear Power Plant Units 1 and 2 and the Independent Spent Fuel Storage Installation (January 1 - December 31, 2005)

Annual Radiological Environmental Operating Report for the Calvert Cliffs Nuclear Power Plant Units 1 and 2 and the Independent Spent Fuel Storage Installation (January 1 - December 31, 2004)

Offsite Dose Calculation Manual, Revision 8 (August 2004)

Land Use Census Around Calvert Cliffs Nuclear Power Plant (August 2005)

Chemistry Audit CHE-05-01-C, dated May 5, 2005

Focused Self-Assessment of H-3, and potential risks associated with the release of H-3 to the environment (Focused Self-Assessment Report FSA-2006-79, performed April 3-June 30, 2006. Tritium Groundwater Protection Action Plan, Rev. 0, July 25, 2006

CP-103, Rev 10, Chemistry Quality Assurance and Quality Control Program

CP-224, Rev 14, Monitoring Radioactivity in Systems Normally Uncontaminated

CP-234, Rev 4, Specification and Surveillance for the REMP

CP-235, Rev 4, Specification and Surveillance Unconditional Release

CP-301, Rev 2, Setup, Calibration, and Operational Checks of the Gamma Spectroscopy Counting System

CP-340, Rev 5, Verification of Lower Level of Detection

CP-438, Rev 7, Operation of the Environmental Trailers and Sampling of Intake and Outfall

CP-509, Rev 2, Land Use Census

CP-977, Rev 7, Operation of Gamma Spectroscopy Counting System

ITEEC-650, Rev 1, Calibration of Bicon/NE Technology Small Articles Monitor Model SAM-9 or SAM-11, including current calibration data sheets for SN 417 and SN 5236

RP-2-100, Rev. 10, Radioactive Materials Management

RP-2-301, Rev 1, 10 CFR 50.75(g) and 10 CFR 72.30(d) Documentation Requirements

RSP 1-113, Rev 9, Release of Items, Material and Vehicles from a Contaminated or Radiologically Controlled Area

STP—461-0, Rev 13, Meteorological Calibration, including calibration data sheets dated June 21, 2006

Lab Services Section, Procedure II-2, Rev 7, Gamma Counting Using a Ge(Li) or HPGe Detector and the GENIE PC Counting System

Lab Services Section, Protocol for Packing Solver Zeolite Cartridges

IRE-008-937, IRE-014-108, IRE-010-785, IRE-004-984, IRE-008-901, IRE-008-461, IRE-005-087, IRE-010-043, IRE-016-276, IRE-004-985, IRE-014-508, IRE-012-356, IRE-009-037, IRE-010-219, IRE-008-651, IRE-016-319, IRE-016-320

**Section 4OA2: Identification and Resolution of Problems**

IRE-016-978, 11A SRW Heat Exchanger Strainer Circuit, September 6, 2006

IRE-016-074, K-20 22A/B SRW HX trouble alarm, July 21, 2006

IRE-017-018, SW Strainer and manual flushes, September 7, 2006

Control Room Logs September 6-7 2006; July 6-7, 2006; September 1, 2006

IRE-015-773, Unplanned LCO TS 3.5.2A caused by jellyfish intrusion, July 7, 2006

Operational Decision-Making Checklist, Increased Jellyfish Concentration, July 7, 2006

IRE-016-781, Three occasions since June 2006, shift compliment was reduced below minimum staffing per AOP-9A, August 25, 2006

IRE-016-727, Broken Control room hand switches are not identified as priority 3 or Control room deficiencies, August 23, 2006



Control room Deficiency list, August 23, 2006

Operation Administrative Policy (OAP) 04-01, Managing Operator Impacts, February 26, 2004

### LIST OF ACRONYMS

ADAMS	Agency-wide Documents Access and Management System
AFW	Auxiliary Feedwater
ALARA	As Low As Reasonably Achievable
AOP	Abnormal Operating Procedure
CC	Component Cooling
CCNPP	Calvert Cliffs Nuclear Power Plant
CCW	Component Cooling Water
CET	Core Exit Thermocouple
CFR	Code of Federal Regulations
CR	Condition Report
CRO	Control Room Operator
D/P	Differential Pressure
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
EP	Emergency Preparedness
EP	Emergency Plan
ERPIP	Emergency Response Plan Implementation Procedure
EPRI	Electric Power Research Institution
HELB	High Energy Line Break
HPSI	High Pressure Safety Injection
ICCDP	Incremental Core Damage Probability
IMC	Inspection Manual Chapter
IN	Information Notice
IPEEE	Individual Plant Examination of External Events
IRT	Incident Response Team
Kv	Kilivolt
LDE	Lens Dose Equivalent
LPSI	Low Pressure Safety Injection
MDAFW	Motor Driven AFW
MOV	Motor-Operated Valve
MR	Maintenance Rule
mrem	Millirem
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
OAP	Operations Administrative Policy
ODCM	Offsite Dose Calculation Manual
OE	Operating Experience
OOS	Out of Service
PAM	Post-Accident Monitor
PAR	Protective Action Recommendation
PARS	Publicly Available Records
PI	Performance Indicators
QA	Quality Assurance

PI&R	Problem Identification & Resolution
R	Roentgen
RCA	Radiologically Controlled Area
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
REMP	Radiological Environmental Monitoring Program
RETS	Radiological Effluent Technical Specification
RIS	Regulatory Issue Summary
RPM	Radiation Protection Manager
RWP	Radiation Work Permit
SDE	Skin Dose Equivalent
SDHX	Shutdown Cooling Heat Exchanger
SDP	Significance Determination Process
SRW	Service Water
SRWHX	Service Water Heat Exchanger
SSC	Systems, Structures, and Components
STP	Surveillance Test Procedure
SW	Saltwater
TDAFW	Turbine Driven AFW
TEDE	Total Effective Dose Equivalent
TLD	Thermoluminescent Dosimeter
TS	Technical Specifications
TSAS	Technical Specification Action Statement
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
WRNI	Wide Range Nuclear Instrument