January 16, 2004

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

SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT - NRC INTEGRATED INSPECTION REPORT 05000317/2003006 AND 05000318/2003006

Dear Mr. Vanderheydan:

On December 31, 2003, the US Nuclear Regulatory Commission (NRC) completed an inspection at your Calvert Cliffs Nuclear Power Plant Units 1 & 2. The enclosed report documents the inspection findings which were discussed on January 7, 2004, with you and other members of your staff.

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

This report documents one NRC-identified finding of very low safety significance (Green) which was determined to involve a violation of NRC requirements. However, because of the very low safety significance and because the issue was entered into your corrective action program, the NRC is treating the finding as a non-cited violation (NCV) consistent with Section VI.A of the NRC Enforcement Policy. Additionally, a licensee-identified violation, which was determined to be of very low safety significance is listed in this report. 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 U.S. Nuclear Regulatory Commission, ATTN. Document Control Desk, Washington, D.C. 20555-0001, with copies to the Regional Administrator, Region 1; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the Calvert Cliffs Facility.

Since the terrorist attacks on September 11, 2001, the NRC has issued five Orders and several threat advisories to licensees of commercial power reactors to strengthen licensee capabilities, improve security force readiness, and enhance controls over access authorization. In addition to applicable baseline inspections, the NRC issued Temporary Instruction 2515/148, "Inspection of Nuclear Reactor Safeguards Interim Compensatory Measures," and its subsequent revision, to audit and inspect licensee implementation of the interim compensatory measures required by the order. Phase 1 of TI 2515/148 was completed at all commercial power nuclear power plants during calendar year 2002, and the remaining inspection activities for Calvert Cliffs were completed in July 2003. The NRC will continue to monitor overall safeguards and security controls at Calvert Cliffs.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and 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 the NRC's document system (ADAMS). ADAMS is accessible from the NRC Web Site at http://www.nrc.gov/reading-rm.html (the Public Electronic Reading Room).

Sincerely,

/RA/

James Trapp, Chief
Projects Branch 1
Division of Reactor Projects

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

Enclosure: Inspection Report 05000317/2003006 and 05000318/2003006
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.: 05000317/2003006 and 05000318/2003006

Licensee: Calvert Cliffs Nuclear Power Plant, Inc. (CCNPPI)

Facility: Calvert Cliffs Nuclear Power Plant

Location: 1650 Calvert Cliffs Parkway
Lusby, MD 20657-4702

Dates: September 28, 2003 - December 31, 2003

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Projects Branch 1
Division of Reactor Projects

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SUMMARY OF FINDINGS

IR 05000317/2003006, 05000318/2003006; 9/28/2003-12/31/2003; Calvert Cliffs Nuclear Plant, Units 1 and 2; operability evaluations.

The report covered a three month period of inspection by resident inspectors and announced regional inspections including: two emergency preparedness inspectors, two health physicists, an operations engineer, reactor inspectors, and a project engineer. The inspection identified one Green finding, which was determined to be a non-cited violation. 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 of 10 CFR 50, Appendix B, Criterion XVI, Corrective Actions, which requires that measures shall be established to assure that conditions adverse to quality are promptly identified and corrected. Specifically, the licensee failed to promptly correct a condition adverse to quality associated with suction stabilizer failures, which if left uncorrected could have resulted in the failure of a charging pump. These failures occurred on the Unit 1, 13 charging pump in October, 2002, and on the Unit 2, 23 charging pump in September, 2002. The associated repairs were not timely and did not occur until October, 2003, and December 2003, respectively.

  This finding is greater than minor because it affects the Reactor Safety, Mitigating Systems attribute of equipment performance, and the availability, reliability, and capability objective of the mitigating systems cornerstone because if left uncorrected, this condition could have led to the failure of a charging pump. The issue was of very low safety significance because the finding was not a design or qualification deficiency, the finding did not represent an actual loss of safety function, and the finding did not screen as potentially risk significant due to a seismic, fire flooding, or severe weather initiating event. Additionally, the failure of a charging pump did not occur while its suction stabilizer was in a failed condition. The inspectors identified that a contributing cause of this finding was related to the cross-cutting area of Problem Identification and Resolution. (Section 1R15)

B. Licensee-Identified Violations

One violation of very low safety significance, which was identified by the licensee, has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. This violation is listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1 operated at or near 100 percent reactor power for the entire inspection period except for a brief period on October 31, when reactor power was reduced to approximately 84 percent to support main turbine control valve testing, and on November 21, when reactor power was reduced to 30 percent to support the isolation and repair of secondary system piping associated with the No. 12 moisture separator reheater.

Unit 2 operated at or near 100 percent reactor power for the entire inspection period except for a brief period on December 12, when reactor power was reduced to 84 percent to support main turbine valve testing.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

a. Inspection Scope

The inspectors assessed the effectiveness of the licensee's cold weather protection program to ensure that the 1B and 2A emergency diesel generators and the Unit 1 and Unit 2 safety injection and containment spray systems would remain functional and available for plant shutdown during cold weather conditions as required by Technical Specifications (TS). In addition to reviewing the licensee's program-related documents and procedures pertaining to these risk-significant systems, walkdowns were conducted to evaluate the material condition and operation of the freeze protection equipment (e.g., heat tracing, area space heaters, etc.) associated with the above systems/components. The licensee's ability to identify and resolve deficiencies was also assessed by determining if cold weather-related problems identified during the inspection, as well as those identified at other times by the licensee, were appropriately entered into their corrective action program and addressed for resolution. Documents reviewed during the course of this inspection are listed in the Attachment at the end of this report. This inspection activity represents one sample.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04Q)

1. Partial System Walkdown

a. Inspection Scope

The inspectors verified that select equipment trains of safety-related and risk significant systems were properly aligned. The inspectors reviewed plant documents to determine the correct system and power alignments, and the required positions of critical valves

and breakers. The inspectors verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or potentially impact the availability of associated mitigating systems. The applicable documents for this inspection are located in the Attachment. This inspection activity represents three samples. The inspectors performed the following three partial system walkdowns:

- Unit 1 12 Salt Water Cooling subsystem during a scheduled outage for salt water header maintenance
- Unit 2 Chemical and Volume Control System during repair 2HVCVC-218 Body to Bonnet Leak.
- Unit 1 Low Pressure Safety Injection (LPSI) System

This inspection activity represents three samples.

b. Findings

No findings of significance were identified.

2. Complete System Walkdown (Semi-Annual)

a. Inspection Scope (71111.04S)

The inspectors performed system walkdowns to verify that the system was aligned correctly to support the availability of safety functions, and to assure that the licensee had identified equipment discrepancies that could potentially impair the functional capability of the system. The walkdown was conducted to identify any discrepancies between the existing equipment lineup and the required lineup. Inspection attributes included verifying that major system components were correctly labeled, lubricated, cooled, and ventilated; hangers and supports were correctly installed and functional; essential support systems were operational; and ancillary equipment and debris did not interfere with system performance. Maintenance order work requests on the system for deficiencies that could affect the ability of the system to perform its function were reviewed.

During October 6-10, 2003, the inspectors performed a complete system alignment verification of the Unit 2 auxiliary feedwater (AFW) system to ensure proper equipment alignment was maintained, and to identify any discrepancies that could impact the function of the AFW system or potentially increase plant risk. The applicable documents for this inspection are located in the Attachment. This inspection activity represents one sample.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

Fire Area Walkdowns (71111.05Q)

a. Inspection Scope

The inspectors walked down accessible portions of the plant to assess the licensee's control of transient combustible material and ignition sources, fire detection and suppression capabilities, fire barriers, and any related compensatory measures. The inspectors assessed the material condition of fire protection suppression and detection equipment to determine whether any conditions or deficiencies existed which could impair the operability of that equipment. The inspectors reviewed administrative procedure SA-1-100, Fire Prevention, during the conduct of this inspection. This inspection activity represents three samples. The inspectors toured the following three areas important to reactor safety:

- Unit 1 Boric Acid Storage Tank Room
- 1A Emergency Diesel Generator Room
- Unit 1 Intake Structure Area

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07B)

a. Inspection Scope

From January 22-25, 2002, the inspector reviewed the licensee's programs and processes for assuring that safety-related heat exchangers were operationally maintained and capable of performing their design function. The results of this inspection were unintentionally omitted from the inspection report issued at that time and are therefore included in this report. As part of the inspection, the inspector selected the following heat exchangers for review:

- Saltwater Heat Exchanger (System 012) for both Units.
- Service Water Heat Exchanger (System 011) for both Units.
- Component Cooling Water Heat Exchanger (System 015) for both Units.
- Systems 011, and 012 Emergency Core Cooling System (ECCS) Pump Room Air Coolers for Unit 1 & 2.

The inspector reviewed the licensee's methods for inspection and cleaning of the heat exchangers, the flow balance testing of the saltwater (SW) system conducted every refueling cycle, and the water chemistry controls to assure the heat removal capabilities of the selected components. The current performance characteristics and test results were compared to the design requirements and the licensee's response to Generic Letter 89-13, "Service Water System Problems Affecting Safety-Related Equipment." The heat exchanger inspection, cleaning, and maintenance methods and frequencies were reviewed with the system engineers to determine if they were consistent with

expected degradation trends and with industry practice. The heat exchanger design calculations and performance evaluations were reviewed with the system engineers and the system manager to verify if they were consistent with the required heat exchanger design capabilities. The licensee's chemical treatment program was reviewed and discussed with the licensee to verify that potential bio-fouling mechanisms had been identified, the treatments were conducted as scheduled, and the results were monitored for effectiveness.

The inspector reviewed heat exchanger inspection and cleaning records to verify that the results were properly evaluated to ensure adequate heat transfer capabilities. The inspector reviewed heat exchanger design basis values and assumptions, plugging limit calculations, and vendor information, to verify that they were incorporated into the heat exchanger inspection and maintenance procedures. The inspector reviewed the results of the 1999 Emergency Core Cooling System (ECCS) Pump Room Air Cooler Periodic Performance Test (Air flow) to determine if the testing was consistent with industry standards, if test instrument accuracies were properly considered, if the test acceptance criteria was consistent with design basis values and if the test conditions properly reflected the differences between testing and design conditions.

In addition, the inspector reviewed system health reports of the selected systems to verify that problems potentially affecting heat exchanger performance were being identified and appropriately resolved. Finally, the inspector conducted a walk-down of the intake structure, and the saltwater and service water systems, including the selected heat exchangers, to assess their material condition. Documents applicable to this inspection are listed in the Attachment. This inspection activity represents one sample.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program

1. Licensed Operator Requalification Program Training Activity (71111.11Q)

a. Inspection Scope

The inspectors observed a licensed operator simulator training scenario conducted on November 17, 2003, in order to assess operator performance. The scenario involved failures of the Linear Range Nuclear Instrumentation (LRNI) Channel D power summer and the 11 Steam Generator Main Feed Valve controller, as well as a failure of the main turbine to trip. The inspection focused on high-risk operator actions performed during implementation of the emergency operating procedures, emergency plan implementation and classification, and the incorporation of lessons learned from previous plant events. The inspectors also evaluated the clarity and formality of communications, the implementation of appropriate actions in response to alarms, the performance of timely control board operation and manipulation, 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. This inspection activity represents one sample.

b. Findings

No findings of significance were identified.

2. Licensed Operator Requalification Program Biennial review (71111.11B)

a. Inspection Scope

The following inspection activities were performed using NUREG-1021, Rev. 8, "Operator Licensing Examination Standards for Power Reactors," Inspection Procedure Attachment 71111.11, "Licensed Operator Requalification Program," and NRC Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process (SDP)," as acceptance criteria, 10 CFR 55.46 Simulator Rule (sampling basis). These inspection activities were performed for both units.

The inspectors reviewed documentation of operating history since the last requalification program inspection. The inspectors also discussed facility operating events with the NRC resident staff. Documents reviewed included NRC inspection reports and licensee Condition Reports that involved human performance and Technical Specification compliance issues. Specifically, the inspectors reviewed the following plant incident reports (IRs):

– IR4-024-056 Inappropriate return-to-service of Unit 2 equipment
– IR4-016-286 Ineffective corrective action for operator EAL classification
– IR3-061-932 Inadvertent auto-start of 1B emergency diesel generator

The Inspectors reviewed five RO and two SRO comprehensive biennial written exams administered in 2003. The inspectors reviewed six sets of simulator scenarios and 10 JPMs also administered during this current exam cycle to ensure the quality of these exams met or exceeded the criteria established in the Examination Standards and 10 CFR 55.59.

The inspectors observed the administration of operating examinations to two crews (i.e., Operating Crew #5 and Staff Crew #1). The inspectors observed five simulator scenarios for the operating crew and one for the staff crew, and one set of ten (four in-plant and six control room) job performance measures administered to each individual. As part of the examination observation, the inspectors assessed the adequacy of licensee examination security measures.

The inspectors interviewed four evaluators, two training supervisors, three ROs, and five SROs for feedback regarding the implementation of the licensed operator requalification program. The inspectors also reviewed Operations Training Action Item Detail Reports, QA audits, Operations Training self-assessments, and recent plant and industry events

to ensure that the training staff modified the program, when appropriate, to recommended changes.

Remedial training was assessed through the review of evaluation records for the past two years, to ensure remediation plans were unique to the individual failures, timely, and effective.

Conformance with operator license conditions was verified by reviewing the following records:

- Attendance records for the last two year training cycle,
- 11 medical records to confirm all records were complete, that restrictions noted by the doctor were reflected on the individuals' license and that the exams were given within 24 months,
- Proficiency watch-standing and reactivation records. A sample of all six licensed operator watch-standing crews' documentation was reviewed for the current and prior quarter to verify currency and conformance with the requirements of 10 CFR 55.

The inspectors observed simulator performance during the conduct of the examinations, and reviewed simulator performance tests and discrepancy reports to verify compliance with the requirements of 10 CFR 55.46. Calvert Cliffs is committed to the ANSI 3.5-1985 standard. The inspectors reviewed simulator configuration control and performance testing through interviews and the review of: facility simulator procedures; open and closed simulator issue reports and maintenance orders; and the review of test results. Specifically, the following tests were reviewed:

Malfunction tests:
- MS015 Atmospheric Dump Valve Controller Fails
- CCW002 Component Cooling Water Pump Failure
– CVCS006 Loss of Normal Letdown
– CEDS015 Reactor Trip
– CEDS007 Uncoupled Control Element Assembly

Transient tests:
- ANS 2I Main Steam Break in Containment
– ANS 2D Simultaneous Trip of All Reactor Coolant Pumps

Core Performance test:
- BOC, MOC, and EOC Cycle 15 Core Reactivity Tests

Normal Plant Evolution test:
– Steady State 100% Heat/Mass Balance

On December 30, 2003, the inspectors conducted an in-office review of licensee requalification exam results. These results included the annual operating test only (i.e., the comprehensive written exam was administered last year). The inspection assessed

whether pass rates were consistent with the guidance of NRC Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process (SDP)." The inspectors verified that:

- Crew failure rate on the dynamic simulator was less than 20%. (Failure rate was 10%)
- Individual failure rate on the dynamic simulator test was less than or equal to 20%. (Failure rate was 1.2%)
- Individual failure rate on the walk-through test (JPMs) was less than or equal to 20%. (Failure rate was 2.4%)
- Individual failure rate on the comprehensive biennial written exam was less than or equal to 20%. (Failure rate was 3.6%)
- More than 75% of the individuals passed all portions of the exam (88% of the individuals passed all portions of the exam).

This inspection activity represents one sample.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12Q)

a. Inspection Scope

The inspectors reviewed the licensee's effectiveness in performing routine maintenance activities. This review included an assessment of the licensee's practices pertaining to the identification, scoping, and handling of degraded equipment conditions, as well as common cause failure evaluations and the resolution of historical equipment problems. For those systems, structures, and components scoped in the maintenance rule per 10 CFR 50.65, the inspectors verified that reliability and unavailability were properly monitored and that 10 CFR 50.65 (a)(1) and (a)(2) classifications were justified in light of the reviewed degraded equipment condition. Documents applicable to this inspection are listed in the Attachment. This inspection activity represents two samples. The inspectors conducted this inspection for the following two equipment issues:

- Unit 2 Control Element Drive Mechanism (CEDM) Increased Vibrations on the 21 Motor Generator Set
- Unit 1 and Unit 2 Charging Pump Suction Stabilizer Failures

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation (71111.13)

a. Inspection Scope

The inspectors reviewed the licensee's assessments concerning the risk impact of removing from service those components associated with the work items listed below. This review primarily focused on activities determined to be risk significant within the maintenance rule. 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," Section 11, "Evaluation of Systems to Be Removed From Service," and approved station procedures. The inspectors compared the assessed risk configuration to actual plant conditions to evaluate whether the assessment was accurate and comprehensive. In addition, the inspectors assessed the adequacy of the licensee's identification and resolution of problems associated with maintenance risk assessments and emergent work activities. This inspection activity represents four samples. The inspectors reviewed the following four selected work activities:

- Unit 1, 12 Salt Water Header cleaning evolution
- Unit 1, 13 Service Water Pump maintenance evolution
- Unit 2, 21 Plant Air Compressor maintenance evolution
- Unit 2, 21 Salt Water Pump handswitch replacement

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-Routine Plant Evolutions and Events (71111.14)

1. Unit 1 No. 12 Moisture Separator Reheater Repair

a. Inspection Scope

The inspectors assessed operator performance during a reduction in reactor power, conducted in accordance with OP-03-1, "Normal Power Operation," in response to the identification of secondary piping wall thinning associated with the No. 12 moisture separator reheater. While performing pre-outage ultrasonic (UT) inspections of piping associated with the reheat system on November 21, the licensee identified an area of piping which was below the minimum acceptable wall thickness specification. Unit 1 reactor power was reduced to approximately 30 percent on November 21 to protect plant personnel during the isolation of the affected line. After the affected line was isolated, reactor power was returned to 97 percent on November 21. Repairs were performed and reactor power was subsequently returned to 100 percent on November 25. For this assessment, the inspectors observed control room activities and procedures, and reviewed operator logs to determine if operators performed the appropriate actions in accordance with their training and established station procedures. This inspection activity represents one sample.

b. Findings

No findings of significance were identified.

2. Unit 2 Main Turbine Control Valve Testing

a. Inspection Scope

The inspectors assessed operator performance during a reduction in reactor power in accordance with OP-03-1, Normal Power Operation, associated with Unit 2 main turbine valve testing which was conducted on December 12, 2003. Reactor power was reduced to approximately 84 percent to support the test. For this assessment, the inspectors observed control room activities and procedures, and reviewed operator logs to determine if operators performed the appropriate actions in accordance with their training and established station procedures. This activity represents one sample.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed operability determinations to verify that the operability of systems important to safety was properly established, that the affected components or systems remained capable of performing their intended safety function, and that no unrecognized increase in plant or public risk occurred. In addition, the inspectors reviewed the selected operability determinations to verify they were performed in accordance with NO-1-106, "Functional Evaluation - Operability Determination," and QL-2-100, "Issue Reporting and Assessment." This inspection activity represents three samples. The operability evaluations were reviewed for the issues listed below:

- ABB Breaker Model 7, failure to open during testing at Westinghouse/ABB
- Operability of the 12, 21, & 22 Switchgear HVAC units with an identified degraded bearing on the 11 Switchgear HVAC unit due to inadequate greasing
- Operability of the 13 and 23 Charging Pumps with failed suction stabilizers

b. Findings

Introduction: A Green non-cited violation was identified for the licensee's failure to comply with 10 CFR 50, Appendix B, Criterion XVI, Corrective Actions, specifically related to the licensee's failure to adequately evaluate the extent of condition and subsequent impact on charging pump operability associated with failed suction stabilizers, most importantly on the Unit 1, 13 charging pump, and on the Unit 2, 23 charging pump. If uncorrected, these failures could have resulted in the failure of a charging pump. Repair activities to correct these degraded conditions were not completed in a timely manner.

Description:

On September 3, 2003, while reviewing a deficiency list contained in an operation's shift turnover document, the inspectors noted that the Unit 1, 13 charging pump suction stabilizer was indicated as being operable with a failed bladder. The inspectors also noted that the 13 charging pump was in an operable status in light of this failure. Discussions conducted by the inspectors with operations and engineering personnel revealed that suction stabilizer failures were not uncommon, and that the licensee considered these failures not to render the associated charging pump inoperable. In subsequent discussions, the inspectors learned that in addition to the Unit 1, 13 charging pump, the Unit 2, 21, 22, and 23 charging pump's suction stabilizers were also in a failed condition. These failures were identified by the licensee during the monthly performance of 1-41-4-0-M, "Operations Performance Evaluation Requirements," which verifies each charging pump suction stabilizer and discharge desurger as-found pressure is within recommended limits. The suction stabilizer failure and repair dates are as follows:

Pump	Failure	Repair

13	10/12/02	10/13/03
21	8/23/03	10/2/03
22	8/23/03	12/23/03
23	9/21/02	12/20/03

Maintaining these pressures within an acceptable band reduces the fluid acceleration losses internal to the pump thereby minimizing potential pump cavitation, as well as cyclical stress corrosion cracking of the pump blocks. Upon reviewing Facility Change Request 79-1004, the inspectors noted that suction stabilizers were installed around 1980 to eliminate recurring charging pump suction and discharge line vibration-induced failures. Based on this, the inspectors questioned the licensee's determination which concluded all affected charging pumps were operable, and requested a copy of the engineering evaluation which supported this conclusion. The inspectors learned that a formal operability evaluation in accordance with licensee procedure NO-1-106, Functional Evaluation/Operability Determination, had not been performed nor had an engineering evaluation been performed within the licensee's corrective action program to address this common degraded condition. The inspectors also learned that these repairs had not been completed in a timely manner due to the inconsistent generation of Issue Reports, part unavailability issues, and inappropriately assigned priorities for open maintenance orders.

On October 8, the licensee issued a Reasonable Expectation of Continued Operability (RECO) to address this issue. It stated that all charging pumps still affected were currently operable, and emphasized that suction stabilizers were considered critical for long term equipment reliability, not operability. The inspectors reviewed the RECO, and conducted discussions with NRC regional, headquarters, and technical training center personnel specializing in historical failure mechanisms specific to charging pumps. Based on this, the inspectors concluded that the RECO did not provide an adequate technical basis for justifying continued operability and presented this concern to the licensee. The RECO was re-issued on December 18, after the licensee completed visual inspections on suction and discharge piping, welds and supports in the charging pump rooms, as well as penetrant testing on suction piping welds that were susceptible to cracking. After reviewing these completed measures and the information provided in the previously issued RECO, the inspectors concluded that the licensee's determination that the affected charging pumps were operable was reasonable.

Analysis:

The performance deficiencies associated with this finding were that an adequate evaluation of the extent of condition, specific to charging pump operability, was not performed at the time the suction stabilizer failures were identified, and the associated repairs were not completed in a timely manner. The main factors that contributed to these deficiencies was a cultural understanding that suction stabilizer failures had no impact on charging pump operability even though they were installed in 1980, in part, to aid in preventing charging pump failures. Absent the performance of a sound, technical evaluation by the licensee at the time of these failures, the inspectors concluded that the impact on charging pump operability had not been adequately evaluated by the

licensee. This finding is greater than minor because it affects the reactor safety, mitigating systems attribute of equipment performance, and the availability, reliability, and capability objective of the mitigating systems cornerstone because if left uncorrected, this condition could have led to the failure of a charging pump.

This finding was assessed in accordance with NRC Manual Chapter 0609, Appendix A, Attachment 1, "Significance Determination Process for Reactor Inspection Findings for At-Power Situations, using a Phase 1 screening, and was determined to be of very low safety significance (Green). The issue was of very low safety significance because the finding was not a design or qualification deficiency, the finding did not represent an actual loss of safety function, and the finding did not screen as potentially risk significant due to a seismic, fire flooding, or severe weather initiating event. Additionally, the failure of a charging pump did not occur while its suction stabilizer was in a failed condition. The inspectors identified that a contributing cause of this finding was related to the cross-cutting area of Problems Identification and Resolution.

Enforcement:

10 CFR 50, Appendix B, Criterion XVI, Corrective Actions, states, in part, that measures shall be established to assure that conditions adverse to quality are promptly identified and corrected. Contrary to the above, a condition adverse to quality involving multiple suction stabilizer failures, most importantly those associated with the Unit 1, 13 charging pump, and the Unit 2, 23 charging pump, occurred and the licensee failed to promptly correct the condition, in that subsequent repairs were not completed in a timely manner. If left uncorrected, this degraded condition could have resulted in the failure of a charging pump. Because this finding is of very low safety significance and has been entered in the licensee's corrective action program as IR4-027-075, this violation is being treated as an NCV, consistent with the Section VI.A.1 of the NRC enforcement Policy. NCV 050000317,318/2003-06-01, Failure to Adequately Evaluate Suction Stabilizer Failures and Perform Repairs In a Timely Manner.

1R16 Operator Workarounds (71111.16)

a. Inspection Scope

The inspectors reviewed a specific operator workaround and also performed a cumulative review of operator workarounds previously identified by the licensee for potential affects on the functionality of mitigating systems. The workarounds were reviewed to determine: (1) if the functional capability of the system or human reliability in responding to an initiating event was affected; (2) the affect on the operator's ability to implement abnormal or emergency procedures, and (3) if operator workaround problems were captured in the licensee's corrective action program. This inspection activity represents two samples. The inspection reviewed the following operator workarounds:

- Routine monitoring of the EDG Air Receivers while the 2A Emergency Diesel Generator Air Receiver was out of service

- Cumulative Operator Workaround Review

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17A)

a. Inspection Scope

The inspectors reviewed a permanent plant modification associated with the plant intake structure fire protection system. This inspection was performed to verify the adequacy of the modification package, and to verify that design and licensing bases requirements of the system were not degraded during associated work activities. The inspectors also verified that post-modification testing was completed in accordance with established station procedures which adequately demonstrated continued reliability and satisfactory performance of the plant intake structure fire detection system. This inspection represents one sample. Documents reviewed during the course of this inspection are listed in the Attachment at the end of this report.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors observed and/or reviewed post-maintenance tests associated with the following work activities to verify that equipment was properly returned to service and that proper testing was specified and conducted to ensure that the equipment could perform its intended safety function following maintenance. This inspection activity represents 11 samples. Post-maintenance testing associated with the following maintenance activities was reviewed:

- Channel “A” Control Room Post Accident Monitoring Instrument Replacement
- 1CC-3828-CV Unit 1 11 Shutdown Cooling Heat Exchanger Supply Valve, following a stroke time in the alert range
- 1SW-5151A- CV Unit 1 Service Water Heat Exchanger Salt Water Strainer Flushing Control Valve following an adjustment of the baseline stroke time
- 1DW-5460 -CV Unit 1 Demineralized Water Containment Isolation Valve, following replacement of the air regulator
- 1A EDG, following the repair of a lube oil fitting
- Unit 1 11 HPSI pump, following replacement of the suction and discharge flange gaskets
- 2A Diesel generator scavenging air cover plate gasket replacement
- 2B Diesel generator scavenging air cover plate gasket replacement

- Unit 2 21 ECCS pump room air cooler following cleaning and inspection activities
- 23 Component Cooling Water Pump Handswitch Replacement
- 2A Emergency Diesel Generator following replacement of the #10 upper main bearing

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed and/or reviewed the five surveillance tests listed below associated with selected risk-significant systems, structures, and components (SSCs) to verify that technical specifications were properly complied with, and that test acceptance criteria were properly specified. The inspectors also verified that proper test conditions were established as specified in the procedures, that no equipment preconditioning activities occurred, and that acceptance criteria had been met. This inspection activity represents five samples.

- STP M -663-1, Containment Tendon Surveillance
- STP 0-65Q-1, Safety Injection System Valve Quarterly Operability Test
- STP 0-8B-1, Test of 1B DG and 14 4KV Bus LOCI Sequencer
- STP M-200-1, Reactor Trip Circuit Breaker Functional Test
- STP O-65T-1, ECCS Valves Powered From MCC-114R Quarterly Operability Test

b. Findings

No findings of significance were identified

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed three temporary modifications. These reviews were performed to determine whether system operability and availability were affected during and after the completion of the modifications. The inspectors verified that proper configuration control was maintained, appropriate operator briefings were planned, design modification packages were technically adequate, and post-installation testing was performed satisfactorily. This inspection activity represents three samples.

- Unit 2 22 Main steam isolation valve hydraulic fluid level modification to clear hanging alarm
- Disabling control room annunciation associated with 12B Reactor Coolant Pump bleed off temperature

- Open Containment Actuation Signal annunciation slide links

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness (EP)

1EP1 Exercise Evaluation

The licensee was to conduct a full-participation exercise in 2003 to meet the biennial exercise requirement. However, the offsite agencies requested a postponement of the exercise because of the impact of Hurricane Isabelle. The licensee therefore has requested a scheduler exemption from the NRC to postpone the exercise until sometime in 2004. The Office of Nuclear Reactor Regulation approved the schedule exemption request on December 22, 2003. In accordance with the licensee's request and NRC approval, the exercise conducted in 2004 will meet the biennial exercise requirement for the Revised Oversight Process (ROP) cycles 3 and 4. The licensee will then conduct an exercise in 2005 to meet the biennial exercise requirement for ROP cycles 5 and 6.

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

a. Inspection Scope

A regional in-office review was conducted of licensee submitted revisions to the emergency plan, implementing procedures and Emergency Action Level (EAL) changes which were received by the NRC during the period of June 2003 through December 2003. A thorough review was conducted of aspects of the plan related to the risk significant planning standards (RSPS), such as classifications, notifications and protection action recommendations. A cursory review was conducted for non-RSPS portions. These changes were reviewed against 10 CFR 50.47(b) and the requirements of Appendix E. These changes are subject to future inspections to ensure that the impact of the changes continues to meet NRC regulations. The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 04, and the applicable requirements in 10 CFR 50.54(q) were used as reference criteria. This inspection activity represents one sample.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors observed a control room simulator training exercise conducted on November 17, 2003, to assess licensed operators' performance in the area of

emergency preparedness. Inspection attributes included verification that the operators made the correct drill event declaration and that associated followup actions were performed in accordance with regulatory requirements and the licensee's procedures. The observed scenario was performed in conjunction with the licensed operator requalification program. This inspection activity represents one sample. (See Section 1R11 for details)

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

The inspector conducted the following activities and reviewed the following documents to determine the effectiveness of radiological controls, including access controls to radiologically significant areas.

Plant Walk Downs and RWP Reviews

The inspector toured portions of the Unit 1 and 2 Auxiliary Buildings and reviewed access controls to locked High Radiation Areas. Selected locked High Radiation Area access points were physically inspected to determine if access points were secure, as appropriate. The inspector reviewed High Radiation Area key control and reviewed the administrative controls for access areas to locked High Radiation Areas. The inspector also toured the steam generator storage area and the low level waste storage area. The inspector made radiation measurements to identify anomalous conditions.

The inspector reviewed and discussed occupational radiation protection performance for calendar year 2003. In particular, the inspector reviewed and discussed maximum occupational worker doses including deep and shallow doses and doses attributable to intakes of airborne radioactive materials. Intakes were reviewed to identify committed effective dose equivalents (CEDE) in excess of 50 millirem. The reviews included causes and corrective actions, as appropriate. The inspector reviewed the results relative to occupational exposure performance indicators.

The reviews in this area were against criteria contained in 10 CFR 20 and applicable radiation protection procedures.

Problem Identification and Resolution

The inspector selectively reviewed corrective action issue reports to determine if identified access control problems were entered into the corrective action program for resolution. The inspector evaluated the corrective action database to identify repetitive deficiencies or significant individual deficiencies. The review also included evaluation of data to determine if any problems involved undetected PI events. (See Section 4OA2.)

This inspection activity represents three samples.

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls (71121.02)

a. Inspection Scope

The inspector selectively reviewed the adequacy and effectiveness of the program to reduce occupational radiation exposure to as low as is reasonably achievable (ALARA).

Inspection Planning

The inspector reviewed pertinent information regarding plant collective exposure history, current exposure trends, and ongoing or planned activities in order to assess current performance and exposure challenges. The inspector determined the stations' three year rolling average collective exposure and trends in collective historical exposure data.

The inspector reviewed Unit 2 outage previous work activity history data and determined site specific trends in collective exposures using plant historical data. Six tasks Special Work Permit (SWP) 03-2010, 03-2319, 03-2016, 03-2702, 03-2703, 03-2010) were selected which exhibited higher collective personnel exposures. The tasks were reviewed for exposure reduction efforts and success. The review included a review of site specific procedures including a review of the processes used to estimate and track work activity specific exposures.

Radiological Work Planning

The inspector obtained a list of work activities ranked by actual/estimated exposure that were completed during the last outage and selected 6 work activities with the highest exposure significance (SWP 03-2010, 03-2319, 03-2016, 03-2702, 03-2703, 03-2010). The inspector reviewed the ALARA work activity evaluations, exposure estimates, and exposure mitigation requirements and success. The inspector reviewed the grouping of radiological work into work activities.

For the previously completed tasks, the inspector compared the results achieved (dose rate reductions, person-rem used) with the intended dose established in the ALARA plans. The inspector selectively reviewed and evaluated inconsistencies between intended and actual work activity doses.

Verification of Dose Estimates and Exposure Tracking Systems

The inspector reviewed the assumptions and basis for the current annual collective exposure estimate. The inspector discussed procedures to determine the methodology for estimating work activity specific exposures and the intended dose outcome, including person-hour estimates.

The inspector reviewed methods used to readjust exposure estimates, or re-planning work, when unexpected changes in radiation conditions, scope or emergent work were encountered.

Declared Pregnant Workers

The inspector reviewed the exposure control documentation for declared pregnant workers, as available, for the current assessment period. The review included a review of the exposure results and monitoring controls employed with respect to the requirements of 10 CFR 20.

Problem Identification and Resolution

The inspector reviewed issue reports, self-assessments, audits, and reports related to the ALARA program since the last inspection to determine if ALARA issues were being included in the corrective action program. (See Section 4OA2.) .

The inspector reviewed dose significant post-job (work activity) reviews and post-outage ALARA reports to determine if follow-up activities were being conducted in an effective and timely manner.

These inspection activities represent six samples.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation (71121.03)

a. Inspection Scope

The inspector reviewed the most recent calibration and testing of the whole body external contamination monitors at the radiological control area egress (Nos. 249, 250, 421, 834). The inspector also selectively reviewed calibration and testing of similar monitors at the protected area egress. The inspector also reviewed the most recent calibration and testing data for the whole body counting system (system 96-8206) used for quantifying intakes of radionuclides. In addition, the inspector reviewed the most recent calibration and testing data for the Unit 1 and Unit 2 containment high range monitors.

The review was against criteria contained in applicable licensee procedures, industry standards and Technical Specifications, as applicable.

This inspection represents two samples.

b. Findings

No findings of significance were identified.

Cornerstone: Public Radiation Safety

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems (71122.01)

a. Inspection Scope

The inspector reviewed the following documents to evaluate the effectiveness of the licensee's radioactive gaseous and liquid effluent control programs. The requirements of the radioactive effluent controls are specified in the Improved Technical Specifications and the Offsite Dose Calculation Manual (ITS/ODCM). This inspection activity represents the completion of nine samples relative to this inspection area (i.e., inspection procedure sections 02.01a, b, c, d and 02.02a, b, d, e, f, g, h, i, j, k).

- the 2002 Radiological Annual Effluent Release Reports including projected public dose assessments;
- the most recent ODCM (Revision 7, August 28, 2003) and technical justifications for ODCM changes;
- implementation of IE Bulleting 80-10, Contamination of Non-Radioactive System and Resulting Potential for Unmonitored, Uncontrolled Release of Radioactivity to environment;

- selected 2003 analytical results for radioactive liquid, charcoal cartridge, particulate filter, and noble gas samples;
- selected 2002-2003 radioactive gaseous and liquid release permits, including monthly projected public dose assessments;
- implementation of the compensatory sampling and analysis program when the effluent radiation monitoring system (RMS) is out of service;
- trending evaluations of the availability for effluent RMS;
- calibration records for chemistry laboratory measurements equipment (gamma and liquid scintillation counters);
- implementation of the measurement laboratory quality control program, including control charts;
- implementation of the interlaboratory comparisons by the licensee and the contractor laboratory;
- the 2002 QA Audit (Audit Number 2002-02), audit findings, and its corrective actions, if any;
- most recent Channel Calibration and Channel Functional Test results for the radioactive liquid and gaseous effluent RMS and its flow measurement devices listed in the Tables 4.3-11 and 4.3-12 of the ODCM for both units;

<u>RMS</u>

- Waste Gas Holdup Noble Gas Monitor;
- Plant Vent Noble Gas Monitors (Low and High Ranges);
- Liquid Radwaste Effluent Line Monitor; and
- Steam Generator Blowdown Effluent Line Monitor.

<u>Flow Rate Measurement Devices:</u>

- Waste Gas Holdup System, Effluent System Flow Rate Measuring Device;
- Liquid Radwaste Effluent Line Flow Rate Monitor; and
- Steam Generator Blowdown Effluent Line.

The inspectors reviewed the most recent surveillance testing results (visual inspection, delta P, in-place testings for HEPA and charcoal filters, air capacity test, and laboratory test for iodine collection efficiency) for the following air treatment systems listed in the Section 5.1.11 of the ITS for both units:

- containment iodine removal systems;
- penetration room exhaust air filtration systems;
- control room emergency ventilation system (common);
- ECCS pump room exhaust air filtration systems; and
- spent fuel pool ventilation system (common).

The inspector also toured and observed the following activities to evaluate the effectiveness of the licensee's radioactive gaseous and liquid effluent control programs.

- Walkdown for determining the availability of radioactive liquid/gaseous effluent RMS and for determining the equipment material condition;

- Walkdown for determining operability of air cleaning systems and for determining the equipment material condition;
- Walkdown for determining the gland steam exhaust condenser air flow pathway and offgas sampling material condition; and
- Observed the licensee's radioactive effluent sampling techniques and preparing the measurement at the laboratory.

b. Findings

No findings of significance were identified.

PS2 Radioactive Material Processing and Transportation (71122.02)

Shipment Records and Documentation

a. Inspection Scope

The inspector selectively reviewed records associated with the shipment of a Type B package of radioactive material (Shipment 03 -132PM, shipped August 28, 2003). The inspector evaluated the training of radioactive materials shipping, handling, and loading personnel involved in the shipment.

The review was against criteria contained in 10 CFR 20; 10 CFR 71; applicable Department of Transportation requirements, as contained in 49 CFR 170 -189, and applicable station procedures. This represents one sample.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

40A1 Performance Indicator Verification (71151)

1. Mitigating Systems Cornerstone

a. Inspection Scope

For the period from October 2002 through September 2003, the inspectors examined the licensee's performance indicator data and plant records associated with the PI listed below, including licensee event reports, selected operator narrative logs, maintenance rule records, and associated issue reports. The review was against the applicable criteria specified in NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 2. This inspection activity represents six samples.

- Emergency AC Power System Unavailability
- Residual Heat Removal Unavailability

- Heat Removal System Unavailability

b. Findings

No findings of significance were identified.

2. Barrier Integrity Cornerstone

a. Inspection Scope

For the period from October 2002 through September 2003, the inspectors examined the licensee's performance indicator data and plant records associated with the PI listed below, including licensee event reports, selected operator narrative logs, maintenance rule records and associated issue reports. The review was against the applicable criteria specified in NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 2. This inspection activity represents two samples.

- Reactor Coolant System Leakage

b. Findings

No findings of significance were identified.

3. Public Radiation Cornerstone

a. Inspection Scope

The inspector reviewed the following documents to ensure the licensee met all requirements of the RETS/ODCM Radiological Effluent Occurrences performance indicator from the third quarter 2002 to the third quarter 2003:

- Monthly projected dose assessment results due to radioactive liquid and gaseous effluent releases;
- Quarterly projected dose assessment results due to radioactive liquid and gaseous effluent releases
- Associated procedures.

The review was against the applicable criteria specified in NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 2. This inspection activity represents one sample.

b. Findings

No findings of significance were identified.

4. Occupational Exposure Control Effectiveness

a. Inspection Scope

The implementation of the Occupational Exposure Control Effectiveness Performance Indicator (PI) Program was reviewed. Specifically, the inspector reviewed corrective action program records for occurrences involving High Radiation Areas, Very High Radiation Areas, and unplanned personnel radiation exposures since the last inspection in this area. The review was against the applicable criteria specified in NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 2. The purpose of this review was to verify that occurrences that met NEI criteria were recognized and identified as Performance Indicators. This inspection activity represents one sample.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

1. Detailed Review of the Unit 1 and Unit 2 Containment Tendon Inspection

a. Inspection Scope

The inspectors reviewed the implementation of the containment tendon long-term corrective action plan for Unit 1 and Unit 2. This plan was implemented to ensure that the containments met their design basis since deficiencies identified during a 1997 tendon surveillance. On September 21, 2001, the NRC concluded that CCNPPI's containment long-term corrective action plan will reasonably ensure that both Unit 1 and Unit 2 containments meet their design requirements until the end-of-life if properly implemented.

The inspectors reviewed past tendon surveillance, technical specifications, the Updated Final Safety Analysis Report, condition reports, operating procedures, models, calculations, current licensing basis, and other relevant documents. Key personnel were interviewed. Additionally, the inspectors performed a walk down along the containment structure. This walk down included an inspection of the bottom vertical end caps below ground level. The inspectors compared the containment tendon long-term corrective action plan's accomplished and future goals to the current licensing basis.

b. Findings

No findings of significance were identified.

2. Public Radiation Safety

a. Inspection Scope

The inspector reviewed the following 2002-2003 Incident Reports (IRs) to evaluate the effectiveness of the licensee's problem identification and resolution processes in the areas of radioactive liquid and gaseous effluent control programs. This inspection activity represents the completion of one sample.

2002-2003 Incident Reports (IRs) and corrective actions for the following areas:

- Effluent RMS (IR4-004-108, IR4-014-377, IR4-016-594, IR4-004-103, IR4-019-901, IR4-026-229, IR4-018-576, IR4-015-406, IR4-004-844, IR4-004-667, IR4-001-205, IR3-061-876, IR3-007-892, IR3-040-903, and IR3-079-596)
- Air Cleaning Systems (IR3-007-899, IR4-017-527, IR4-003-560, IR4-000-779, IR4-016-651, and IR4-005-004)
- Routine Effluent Control Programs (IR3-007-899, IR3-071-587, IR3-070-834, IR3-070-835, IR3-007-896, IR3-050-819, IR4-022-823, IR4-003-587, IR4-022-837, IR4-000-107, IR4-003-599, IR4-003-593, IR4-011-504, and IR4-001-206).

b. Findings

No findings of significance were identified.

3. Annual Sample Review - Determining Releases Following Steam Generator Tube Rupture

a. Inspection Scope

The inspector reviewed CCNPP's actions to address NRC Unresolved Item (URI 50-317; 50-318/2002-06-01). This URI was opened pending further NRC review of CCNPP's evaluation and resolution of: (1) radioactive source terms (routine and following a steam generator tube rupture event); (2) radioactive material release rate to the environment, and (3) projected dose assessment to the public.

During this inspection, the inspector reviewed the following requirements and documents to evaluate CCNPP's effectiveness and soundness in the addressing NRC URI 50-317; 50-318/2002-06-01. The inspector also toured the Gland Steam Exhaust Condensers, release pathways, and condenser offgas sampling stations for both units.

- ITS Section 3.4.13 Reactor Coolant System (RCS) Operational Leakage
- ITS Section 3.4.14 RCS Leakage Detection Instrumentation
- ITS Section 3.4.16 RCS Specific Activity (Dose Equivalent I-131)
- ODCM B527 Release Pathways 13, Gland Steam Exhaust Condenser
- FSAR 14.15.3 Steam Generator Tube Rupture, Analysis of Effects and Consequences
- FSAR 14.24 Maximum Hypothetical Accident
- Procedure CP-224 Monitoring Radioactivity is Systems Normally Uncontaminated
- Procedure CP-236 Specification and Surveillance Primary-to-Secondary Leaks
- Procedure OI-13 Condenser Air Removal Leaks
- Pending Evaluation of Primary-to-Secondary Leak Rate using Condenser Offgas Monitors (1,2-RY-1752) and N-16 Monitors (1,2-RIC-5422A)
- Condenser Offgas Measurement Results (from 12-1-01 to 12-4-03)
- Projected Doses to the Public Resulting from the Maximum and Routine Release of Radioactive Materials from the Gland Steam Exhaust Condenser.

The fuel conditions are controlled by ITS Section 3.4.16 (I-131 Dose Equivalent) and the primary-to-secondary leakages are controlled by ITS Section 3.4.13 (100 gpd/generator) and by ITS Section 3.4.14 (containment sump level alarm, the containment atmosphere radioactivity monitor, condenser offgas monitor, and N-16 monitors). CCNPP routinely monitored radioactive materials releases through the gland steam exhaust condenser, performed projected dose calculations, and reported in the Annual Report, as required.

The inspector reviewed the implementation of the above ITS, ODCM, and procedures requirements, as well as projected doses to the public. CCNPP implemented these requirements effectively. Bases of the projected dose assessment to the public were acceptable. The event source terms used for projected dose calculation to the public were acceptable. There were no trending results of the primary-to-secondary leakage determined by radiation monitors and the offgas grab sample measurements (from December 1, 2001 to December 4, 2003). This Unresolved Item (URI 50-317; 50-318/2002-06-01) is closed.

b. Findings

No findings of significance were identified.

4. Problem Identification and Resolution Review

a. Inspection Scope

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a routine screening of items entered into the licensee's corrective action program. This review was accomplished by reviewing the descriptions of each issue report entered into the licensee's corrective action program.

b. Findings

No findings of significance were identified.

5. Cross-References to PI&R Findings Documented Elsewhere

Section 1R15 of this report describes a PI&R cross-cutting issue.

4OA3 Event Followup

1. Notice Of Enforcement Discretion (NOED) To Repair The 2A Emergency Diesel Generator

On October 10, 2003, the NRC granted a Unit 2 NOED related to enforcing compliance with the requirements of TS 3.8.1, AC Sources - Operating. The details of the repair activities and the request are documented in a Letter dated December 9, 2003, from the licensee to the NRC.

During a biennial inspection of the 2A EDG, aluminum particles were found in the suction strainer to the standby lube oil pump. Further inspection performed by the licensee identified that these particles were associated with a degraded No. 10 upper main bearing. The licensee's apparent root cause investigation determined that the No. 10 upper main bearing degradation was caused by an installation error when a distorted bearing cap was improperly reinstalled in 1995. The maintenance occurring in 1995 was to correct a similar degraded condition specific to the No. 10 upper main bearing.

The inspectors reviewed the applicable TS requirements, assessed the licensee's inspection efforts pertaining to potential common-mode failure mechanisms affecting the other EDGs, and monitored compliance for granting of the NOED. Based on the recurring degradation of the No. 10 upper main bearing which was caused by a performance deficiency, the inspectors have initiated a review of previous maintenance and vendor-related activities which occurred during 1994 and 1995 in order to appropriately assess this issue. This issue is considered an unresolved item pending further review and will be documented as URI-50-318/2003-06-02.

2. (Open/Closed) Licensee Event Report (LER) 50-318/2003-03-00, Reactor Trip Due to Main Turbine Governor Valves Closing

On May 28, 2003, a reactor trip occurred on Unit 2 during troubleshooting activities associated with the turbine generator governor valve control circuit. The licensee determined that the root cause of this event was due to a human performance deficiency associated with improper work practices and inadequate supervisory oversight. This event was previously assessed by the NRC and resulted in a Green, self-revealing finding. No violations of NRC requirements were identified. This event was captured in the licensee's corrective action program as IR200300217, and documented in NRC Inspection Report 05000317,318/2003003 as FIN 05000318/2003003-01. This LER represents one event followup sample and is closed.

4OA6 Meetings, including Exit

On January 7, 2004, the resident inspectors presented the inspection results to George Vanderheyden and other members of his staff. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

4OA7 Licensee-Identified Violations

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

- Technical Specification 5.4, Procedures, requires that written procedures shall be established, implemented, and maintained covering activities as recommended in Regulatory Guide 1.33, Revision 2, Appendix, February 1978. Contrary to this, the licensee failed to ensure that all bearings associated with the Unit 1, 11 Switchgear HVAC unit were properly greased and lubricated during installation activities when maintenance order number 1199901384 was performed in September, 2002. This was identified during troubleshooting activities in response to increased fan vibrations, during which the licensee identified that an internal bearing was dry, and exhibited signs of rust. This issue is documented in the licensee's corrective action program as IR4-000-171. This finding was of very low safety significance because an actual failure did not occur.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel
S. Brown, ALARA Work Leader
Bill Carey, Operator
Keith Crissman, Electrical Maintenance
Sonny Dean, Auxiliary Systems Manager
Paul Fatka, System Manager
Dave Frye, Shift Manager
P. Furio, Supervisor, Regulatory Matters
M. Geckle, Operations Manager
Chip Grooms, Shift Manager
Calvin Hancock, Health Physics Supervisor
D. Holm, Manager, Nuclear Maintenance
Mark Hunter, System Manager
Al Kelly, Senior Reactor Operator
Keith King, Senior Reactor Operator
T. Kirkham, Radiation Protection Supervisor
Joe Klecha, Operator
Ed Kreahling, System Manager
Hien Le, System Manager
Randy Lewis, Operator
Dave Lynch, Shift Manager
Dale McElheny, System Manager
Roger McPherson, Operator
Homero Montes De Oca, Electrical Maintenance Supervisor
K. Neitmann, Plant General Manager
Bob Pace, Shift Manager
Tom Pilkerton, Mechanical Maintenance Supervisor
Mike Polak, Secondary Systems Manager
S. Sanders, General Supervisor, Radiation Safety
Curtis Scayles, Mechanical Maintenance Supervisor
G. Vanderheyden, Vice President
Larry Van der Snick, Operator
Larry Williams, Systems Manager
M. Yox, Engineering Analyst

Licensee Personnel (Biennial Heat Sink Inspection Conducted January 22-25, 2002)

M. Geckle	Director- Nuclear Regulatory Matters (NRM)
J. Gines	System Manager Systems 010, 011, and 012
T. Grover	Engineering Analyst
W. Holston	General Supervisor Design Engineering
M. Junge	PE Auxiliary System
R. Lake	System Engineer Salt Water System
T. Pritchett	Manager Nuclear Engineering
Craig Sly	NRM

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

URI-50-318/2003-06-02	URI	Review of Previous Maintenance and Vendor-Related Activities Associated with the 2A EDG

Opened and Closed

50-318/2003-03-00	LER	Reactor Trip Due to Main Turbine Governor Valves Closing
50-317,318/2003-06-01	NCV	Failure to Adequately Evaluate Suction Stabilizer Failures And Perform Repairs In a Timely Manner

Closed

50-317,318/2002-06-01	URI	Resolution of projected doses from turbine gland seal exhauster due to steam generator leakage

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

ERPIP 3.0, Immediate Actions, Attachment 20, Severe Weather
OAP 00-01, Operations Administrative Policy, Severe Weather Operations
0-102-4-O-M, Freeze Protected Equipment
OI-21A, 2A Diesel Generator
OI-21B, 1B Diesel Generator
OI-3A, Safety Injection And Containment Spray
ESFAS 12 Alarm Manual - 11 RWT Level /Temperature
MO0200300213, Measure amps/ckts. of winter freeze protection heat trace
MO2200103080, 12 CST heat trace panel, clean/inspect panel & heat trace operation check
MO0200300538, Calibrate/check temperature switch for 12 CST heat tracing

Section 1R04: Equipment Alignment

Complete System Walkdown:

Unit 2 AFW System

OM-60-583-E, Rev 57: Unit 1 AFW
OM-62-585, Rev. 52: Unit 2 AFW
MO2200102368 Install forced oil on 21 AFW pump journal bearing
MO2200103181 Replace 23 AFW pump outboard thrust bearing housing
MO1200102925 Install forced oil lubrication system on 11 AFW pump journal bearing
MO1200102927 Install forced oil lubrication system on 12 AFW pump journal bearing
MO2200102590 AFW turbines install proximity probes vibration monitoring on unit 2 turbines
MO1200103146 AFW turbines install proximity probes vibration monitoring on unit 2 turbines
IR4-019-740 23 AFW pump outboard pump bearing sight glass has oil leak (very slow)
Auxiliary Feedwater System Description No. 36 A/B, Rev.1
System Health Report, AFW, System 036A, 2nd Quarter 2003
Safety Tagging Clearance Order:1200300678
Drawing: 60708SH0002

Partial System Walkdowns:

Unit 1 12 Salt Water Cooling subsystem

Drawing: OM-60-708-E
Safety Tagging Clearance ID 1200300678

Unit 2 Chemical And Volume Control System During Repack Of 2-CVC-218

Drawing: 62730SH0001, Chemical And Volume Control System
Clearance ID: 2200300927
MO2200302851, Repair 2HVCVC-218 Body To Bonnet Leak

Unit 1 Low Pressure Safety Injection (LPSI) system

Drawing: OM-60-731-E
OP-1, Plant Startup from Cold Shutdown, Rev. 47
NO-1-205, Locked Valves, Rev. 10
OI-3A Unit 1, Safety Injection and Containment Spray, Rev. 16
STP O-62-1, Monthly Valve Position Verification - Unit 1, Rev. 39
Safety Injection and Containment Spray Systems System Description No. 52/61, Rev. 2
System Health Report, Safety Injection and Containment Spray, System 52/61, 2nd Quarter 2003

Section 1R05: Fire Protection

Issue Reports:

IR4-020-185, Found Air Pressure out-of-spec for 1A Diesel Pre-Action System
IR4-020-194, IA DG Pre-Action System Short Cycling
IR3-083-231, Circulating Water Pump Excitation Failures

Manual:

Fire Fighting Strategies Manual

Section 1R07: Heat Sink Performance

Procedures

ETP-93-026R; 11 and 12 CC Hx Thermal Performance Test, Rev 2, Continuous Use
ETP-98-040R; 11A and 11B SRW Hx Thermal Performance Test, Rev 0
ETP-94-111R; 11 and 12 ECCS Pump Room Air Cooler Periodic Performance Evaluation, Rev. 2, Continuous Use
STP O-73A-1; Salt Water Pump and Check Valve Quarterly Evaluation Test, Rev 15

Inspection and Test Results including Engineering Calculation/Analysis

Thermal Performance Test Package for test performed on March 13, 2000, for 11 and 12 Component Cooling Heat Exchangers.
Thermal Performance Test Package for test performed on August 11, 1999, for 11A and 11B SRW Heat Exchangers.

Drawings

Baltimore Gas and Electric Company DWG. No. 15077-0002SH0013, Rev 1, SRW Plate Heat Exchanger, Unit 1.
Calvert Cliffs Nuclear Power Plant DWG. No. 60708SH0002, Rev 98, Circulating Salt Water Cooling System.

Heat Exchanger Data Sheets

Air Cooled Heat Exchanger Specification Sheets for ECCS Pump Rooms, M R M Corporation Massillon, Ohio.
Heat Exchanger Specification Sheets for Component Cooling Heat Exchangers, Rev 1, Struthers Wells

Health Reports

Service Water System (system 011), dated October 20, 2001
Salt Water System (system 012), dated October 22, 2001
Component Cooling Water System (system 015), dated October 5, 2001

Others

Generic Letter 89-13, Service Water System Problems Affecting Safety-Related Equipment
EPRI NP-7552, Heat Exchanger Performance Monitoring Guidelines
Baltimore Gas and Electric Company's Final Response to GL-89-13, dated June 30, 1994

Section 1R11: Licensing Operator Requalification Program

Procedures:

ERPIP 3.0, Immediate Actions

Other:

Simulator Operator Examination For The Licensed Operator Training Program At The Calvert Cliffs Nuclear Power Plant, approved on November 13, 2003.

Section 1R12: Maintenance Effectiveness

Unit 2 Control Element Drive Mechanism (CEDM) System

Maintenance Rule Scoping Document, Revision 21
MN-1-112, Revision 8, Managing System Performance
IR4-020-660, 21 CEDM motor generator set showing increased vibration
IR4-009-115, U-2 CEDM system has exceeded its MR system level performance criteria
System Health Report for CEDM

13 and 23 Charging Pumps Failed Suction Stabilizers

NO-1-106, Functional Evaluation/Operability Determination, Attachment 7, Basis For Reasonable Expectation Of continued Operability (RECO), dated December 18, 2003
IR4-016-893, Operability evaluation on 13 charging pump with failed suction stabilizer
IR4-022-382, Increased failure rate of the suction stabilizer and discharge desurgers
IR4-010-604, Failure of 13 charging pump suction stabilizer PE 1-41-4-0-M
IR4-010-426, Failure of 23 charging pump suction stabilizer PE 1-41-4-0-M
MO1200301828, Repair failed suction stabilizer on 13 charging pump
MO2200203590, Repair failed suction stabilizer on 23 charging pump

Section 1R13: Maintenance Risk Assessment/Emergent Work Evaluation

Unit 1 12 Salt Water Header (SW) System

Technical Specifications 3.7.7.A
QSS Week 0346 - Risk Evaluation Rev. 3
Unit 1 Reactor Operators Log for November 17, 2003

Unit 1 13 Service Water Pump System

Technical Specifications 3.7.6.B
QSS Week 0346 - Risk Evaluation Rev. 5
Unit 1 Reactor Operators Log for November 20, 2003

Unit 2 21 Plant Air Compressor

QSS Week 0348 - Risk Evaluation Rev. 1
Unit 2 Reactor Operators Log for December 1, 2003

Unit 2 21 Salt Water Pump handswitch replacement

MO2200302351, 2HS5199 has cracked lexan cam followers on contacts 1,2,3,5,6,7 & 8

Section 1R15: Operability Evaluations

ABB Breaker Model 7 Failure To Open During Testing At Westinghouse/ABB

STP O-90-1, AC Sources and On Site Power Distribution Systems 7 Day Operability Verification
STP O-90-2, AC Sources and On Site Power Distribution Systems 7 Day Operability Verification
IR4-016-834, This IR written to address operability concern with issue in IR4-024-528
IR4-024-528, The IR documents a surveillance report from Westinghouse which describes the failure of the type 7 ABB breaker to open during a 300 cycle test.
MO1200303462, Replace existing ABB breaker with a Magnablast breaker at 152-1115
MO1200303453, Replace existing ABB breaker with a Magnablast breaker at 152-1103
MO1200303455, Replace existing ABB breaker with a Magnablast breaker at 152-1113
MO2200303475, Replace existing ABB breaker with a Magnablast breaker at 152-2206
MO2200303476, Replace existing ABB breaker with a Magnablast breaker at 152-2306
MO2200303470, Replace existing ABB breaker with a Magnablast breaker at 152-2113

Operability Of 12, 21, & 22 Switchgear HVAC Units With Degraded Bearing On 11 Switchgear HVAC Unit

IR4-000-172, 11 switchgear HVAC unit has high vibrations indicating a degraded bearing
IR4-000-174, Review of operability of the 12, 21, & 22 HVAC units
MO1200303475, Investigate cause of increased vibration on 11 switchgear HVAC unit
MO0200301878, Inspect 12 Switchgear HVAC unit
MO0200301879, Inspect 21 Switchgear HVAC unit
MO0200301880, Inspect 22 Switchgear HVAC unit
Drawing 15832-0002SH0001, Fan Assembly Drawing For Switchgear Room HVAC Fans No. 11 & No. 21

Operability Of The 13 and 23 Charging Pumps With Failed Suction Stabilizers

NO-1-106, Functional Evaluation/Operability Determination, Attachment 7, Basis For Reasonable Expectation Of continued Operability (RECO), dated December 18, 2003
IR4-016-893, Operability evaluation on 13 charging pump with failed suction stabilizer
IR4-022-382, Increased failure rate of the suction stabilizer and discharge desurgers
IR4-010-604, Failure of 13 charging pump suction stabilizer PE 1-41-4-0-M
IR4-010-426, Failure of 23 charging pump suction stabilizer PE 1-41-4-0-M
MO1200301828, Repair failed suction stabilizer on 13 charging pump
MO2200203590, Repair failed suction stabilizer on 23 charging pump

Section 1R16: Operator Work Arounds

2A Emergency Diesel Generator Air Receiver Out of Service

MO 2200304000- 2A DG Air compressor after cooler leak
Shift Turnover Information Sheet for November 18, 2003

Cumulative Operator Workaround Review

Operations Administrative Policy 94-7, Reduction Program For Operator Workarounds
Calvert Cliffs, Operator Workarounds Performance Indicator, November 2003

Section 1R17: Permanent Plant Modifications

Plant Intake Structure Fire Detection System

MO 0200102212 Replace intake structure fire system
MO 0200300812 Support production with scaffolding the intake structure for replacement of the fire system
Drawing T-5068-V-03 sht. 1 Smoke detection piping layout Unit 1
Drawing T-5068-V-03 sht. 2 Smoke detection piping layout Unit 2
Drawing T-5068-V-03 sht. 3 Intake structure smoke detection panel layouts 1N5918 & 2N5618
STP FS - 490 - O - E, Fire Detection Instruments Functional Test
STP FS - 490 - O - F, Fire Detection Instruments Functional Test
VESDA Laser Scanner Product Manual
ESP: ES200100916 Request replacement smoke detection system
Letter from BFPE International Subj.: Air Sampling Smoke Detection Test System- Intake Structure

Section 1R19: Post Maintenance Testing

Unit 1A EDG Following Repairs To A Lube Oil Fitting

MN-3-120, Rev. 5, ASME Section XI Repair/Replacement
STP-O-8A-1, Rev 25, Testing of 1A DG and 11.4 KV Bus LOCI Sequencer
IR4-024-861, 1A EDG lube oil leak

Unit 1 11 HPSI Pump Following Replacement of the Suction and Discharge Flange Gaskets

IR3-040-642, 11 HPSI pump suction flange leakage
MO 1200003171, Replace suction flange and discharge flange gasket on 11 HPSI pump
MO 1200302208, Replace relay 1HS-301X in 1C08 11 HPSI Pump Handswitch
MO 1200302156, Inspect 152-1108 (11 HPSI PP) and controls per EPM04000

Channel “A” Control Room Post Accident Monitoring Instrument

IR4-025-216 U2 Node Box is not functioning
MO 1200303819 1-RIC-5421 Spikes High for no apparent reason
STP O- 63 -2 Remote Shutdown and Post Accident Monitoring Instrument Channel

1CC-3828-CV Unit 1 11 Shutdown Cooling Heat Exchanger Supply Valve

Memorandum Dated October 30, 2003 Subj.: Evaluation of the Alert Stroke Time for 1CV-3828
IR4-024-809, 1CC3828CV stroked in the alert range
STP O - 65G - 1 Component Cooling Valve Quarterly Operability Test

1SW-5151A- CV Unit 1 Service Water Heat Exchanger Salt Water Strainer Flushing Control Valve

IR4-024-810, 1SW5151A stroke time was not in the required band
STP O - 65N - 1 11 Saltwater Subsystem Valve Quarterly Operability Test

1DW-5460 -CV Unit 1 Demineralized Water Containment Isolation Valve

MO 1200302318 Replace 1PCV5460, Containment DI Water Isolation CV Regulator
STP O - 65D - 1 Miscellaneous Containment Isolation Valves Quarterly Test

2A Diesel Generator Scavenging Air Cover Plate Gasket Replacement

STP O - 8A - 2 Test of 2A DG and 4 KV Bus 21 LOCI Sequencer

2B Diesel Generator Scavenging Air Cover Plate Gasket Replacement

STP O - 8B - 2 Test of 2B DG and 4 KV Bus 24 LOCI Sequencer

21 ECCS Pump Room Air Cooler B

MO2200301886

23 CCW Pump Handswitch Replacement

MO2200302342, Replace 23 CC handswitch
IR4-013-800, 2HS 3817 has cracked lexan cam followers on contacts 1,2,6,7,8,11,12,13,14,15,16,17 & 18

2A Emergency Diesel Generator Following Replacement Of The #10 Upper Main Bearing

STP 0-8A-2, Test Of 2A DG And 4KV Bus 21 LOCI Sequencer
IR4-017-074, Operability evaluation of other EDGs with potential common-mode degradation
RECO, Common failure mode for the other diesel generators, dated October 9, 2003.

Section 1R23: Temporary Modifications

Unit 2 22 Main Steam Isolation Valve Hydraulic Fluid Level

MD-1-100, Temporary Alterations
IR4-018-575 22 MSIV 2C161 panel hydraulic level low alarm locked in
MO 22003002033 MSIV 22 Hydraulic tank level low alarm fix/replace level switch 2LS4048
10CFR50.59 Engineering Evaluation
ESP: T/A-2-03-0015 Temporary Alteration to remove hanging alarm for 22 MSIV hydraulic fluid level Low
Drawing 63101SH0161, MSIV Hydraulic Fluid System

Disabling Control Room Annunciation Associated With 12B RCP Bleed Off Temperature

MD-1-100, Temporary Alterations
ESP: 1-T/A 1-02-0065, Jumper Out 1TA184 On 1CO7B
IR4-004-6421, Temperature Element For 1TA184 Is Failing High
Drawing 60933SH0020C, Loop Diagram 12B Reactor Coolant Pump Controlled Bleed Off 1TE184
MO1200205073, Repair Temperature Element 1TA184

Section 4OA1: PI Verification

NEI 99-02, Revision 2, Nuclear Energy Institute, Regulatory Assessment Performance Indicator Guideline, Dated November 2001
CCNPP Availability Data
NRC Performance Indicators
Web Based reported PI data for Calvert Cliffs Unit(s) 1 and 2
System Health Reports

Section 4OA2: Identification and Resolution of Problems

ESP No : ES199800135
Letter from Ms. D. M. Skay to Mr. C. H. Cruse, dated September 21, 2001, Calvert Cliffs Nuclear Power, Unit Nos. 1 and 2 - Containment Tendon Long-Term Corrective Action Plan (Tac Nos. MA7782 and MA 7783). Accession Number : ML012530249
Letter from Mr. J. C. Poehler to Mr. L. D. Landry, dated August 18, 1999, Failure Modes of Unit 2 Broken Wires from 1999 Inspection
Letter from Mr. Ron Dufresne to Mr. A. W. Facemire, dated July 18, 2001, Tendon Summary - 2001

Letter from Mr. K. M. Hoffman to Mr. L. D. Landry, dated January 11, 1999, Severely Corroded Tendons
R-3648-00-01, Revision 1, Updated Model for Containment Structure Vertical Tendon Degradation for Calvert Cliffs 1 and 2.
Vertical Tendon Forces at End of 2002, Unit 1 and Unit 2, (Data Chart)
Vertical Tendon Forces at End of Plant Life, Unit 1 and Unit 2, Predicted Model
Summary of Historical Tendon Liftoff Forces (Initial, 20 Year)
Weibull Model Predicted Wire Breaks at Years 2002, 2005, 2007 (Unit-1, Unit-2)
Waybill Model Predicted Wire Breaks at Years 2012, 2017, 2022 (Unit-1, Unit-2)
Waybill Model Predicted Wire Breaks at Years 2027, 2032, 2034 (Unit-1, Unit-2
Letter from R. C. Cox to A. W.Facemire, dated December 18, 2002, Analysis of Tendon Buttonhead RT Results
NCR No: FN606-001, NCR No: FN606-003, NCR No: FN606-005, NCR No: FN606-007, NCR No: FN606-009, NCR No: FN606-011, NCR No: FN606-013, NCR No: FN606-015, NCR No: FN606-017, NCR No: FN606-019, NCR No: FN606-021, NCR No: FN606-023, NCR No: FN606-025, NCR No: FN606-027, NCR No: FN606-029, NCR No: FN606-031, NCR No: FN606-033, NCR No: FN606-035, NCR No: FN606-037, NCR No: FN606-039, NCR No: FN606-041, NCR No: FN606-043, NCR No: FN606-045, NCR No: FN606-047, NCR No: FN606-049, NCR No: FN606-051, NCR No: FN606-053, NCR No: FN606-055
Maintenance Orders 1200002734, 2200001674, Calvert Cliffs Unit 1 & 2 Tendon Non-Conformance Report (NCR) Future Actions
Document ID : ES199800135-002, ES199801711-000, ES200100029-000, ES200100122-000
Design Calculation : C-0013A, Prestressing Equipment Required for Tendon Surveillance
Design Calculation : C-0014 Prestressed Containment Structure Tendon Sheathing
Design Calculation : CA04002 Unit 1 Containment Structure - Vertical Tendon Operability Evaluation
Design Calculation : CA06062 Containment Tendon Force Versus Time Curves - Unit 1 & 2
Surveillance Test Procedure : M-663-1, 20th Year Surveillance Unit 1 Calvert Cliffs Nuclear Power Plant PSC Final Report
Surveillance Test Procedure : M-663-2, 20th Year Surveillance Unit Calvert Cliffs Nuclear Power Plant PSC Final Report
Surveillance Test Procedure : M-666-1, Containment Tendon Surveillance Visual Examination and Grease Testing

LIST OF ACRONYMS

AFW	Auxiliary Feedwater
ALARA	As Low As Is Reasonably Achievable
CCNPPI	Calvert Cliffs Nuclear Power Plant, Inc.
CEDE	Committed Effective Dose Equivalents
CEDM	Control Element Drive Mechanism System
CFR	Code of Federal Regulations
EAL	Emergency Action Level
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
EP	Emergency Preparedness
ERPIP	Emergency Response Plan Implementation Policy
IRs	Incident Reports
JPM	Job Performance Measures
LER	Licensee Event Report
LPSI	Low Pressure Safety Injection
LRNI	Linear Range Nuclear Instrumentation
NCV	Non-cited Violation
NOED	Notice of Enforcement Discretion
ODCM	Offsite Dose Calculation Manual
PI	Performance Indicator
QA	Quality Assurance
RCS	Reactor Coolant System
RECO	Reasonable Expectation of Continued Operability
RMS	Radiation Monitoring System
ROP	Reactor Oversight Process
RSPS	Risk Significant Planning Standards
RO	Reactor Operator
SDP	Significance Determination Process
SRO	Senior Reactor Operator
SW	Saltwater
SWP	Special Work Permit
TS	Technical Specifications
URI	Unresolved Item
UT	Ultrasonic