June 18, 2001

Mr. Charles H. Cruse
Vice President
Constellation Nuclear
Calvert Cliffs Nuclear Power Plant, Inc.
1650 Calvert Cliffs Parkway
Lusby, MD 20657-4702

SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT - NRC INSPECTION REPORT 05000317/2001-004, 05000318/2001-004

Dear Mr. Cruse:

On May 12, 2001, the 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 June 6, 2001, with Mr. Katz 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.

No findings of significance were identified.

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Sincerely,

/RA/

Michele G. Evans, Chief
Projects Branch 1
Division of Reactor Projects

Docket Nos. 05000317
05000318
License Nos. DPR-53
DPR-69

Enclosure: Inspection Report 05000317/2001-004 and 05000318/2001-004

Attachment 1 - Supplemental Information

cc w/encl:
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R. McLean, Administrator, Nuclear Evaluations
J. Walter, Engineering Division, Public Service Commission of Maryland
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REGION I

Docket Nos:	05000317, 05000318
License Nos.:	DPR-53, DPR-69
Report No:	05000317/2001-004, 05000318/2001-004
Licensee:	Calvert Cliffs Nuclear Power Plant, Inc.
Facility:	Calvert Cliffs Nuclear Power Plant, Units 1 and 2
Location:	1650 Calvert Cliffs Parkway Lusby, MD 20657-4702
Dates:	April 1, 2001 - May 12, 2001
Inspectors:	David Beaulieu, Senior Resident Inspector Fred Bower, Resident Inspector Paul Frechette, Physical Security Inspector
Approved by:	Michele G. Evans, Chief, Projects Branch 1 Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000317/2001-004, 05000318/2001-004, on 04/01/01 - 05/12/01, Calvert Cliffs Nuclear Plant, Inc.; Calvert Cliffs Nuclear Power Plant, Units 1 & 2. Resident Inspector Report.

The inspection was conducted by resident inspectors and a regional physical security specialist. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609 “Significance Determination Process” (SDP). Findings for which the SDP does not apply are indicated by “no color” or by the severity level of the applicable violation.

A. Inspector Identified Findings

No findings of significance were identified.

Report Details

Unit 1 operated at or near 100 percent power for the entire inspection period and Unit 2 was shutdown for a refueling outage for the entire inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems and Barrier Integrity

1R04 Equipment Alignment

.1 Partial Walkdown

a. Inspection Scope

The inspectors conducted an equipment alignment partial walkdown to evaluate the operability of a selected redundant train or backup system, while the affected train or system was inoperable or out of service. The walkdown included a review of system operating instructions to determine correct system lineup and verification of critical components to identify any discrepancies which could affect operability of the redundant train or backup system. The inspectors performed a partial system walkdown on the following system:

- Using procedure OI-32A-1, "Auxiliary Feedwater System," the redundant trains of the Unit 1auxiliary feedwater (AFW) system were inspected on May 4, 2001, while the No. 11 AFW pump was out of service to address a high turbine outboard bearing temperature.

b. Findings

No findings of significance were identified.

1R05 Fire Protection - Fire Area Tours

a. Inspection Scope

The inspectors conducted tours of areas important to reactor safety to evaluate conditions related to: (1) licensee control of transient combustibles and ignition sources; (2) the material condition, operational status, and operational lineup of fire protection systems, equipment and features; and (3) the fire barriers used to prevent fire damage or fire propagation. The inspectors used administrative procedure SA-1-100, Fire Prevention, during the conduct of this inspection.

The areas inspected included:

- Unit 1 AFW Pump Room
- Unit 2 AFW Pump Room
- Unit 2 Component Cooling Water Room

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation

a. Inspection Scope

The inspectors reviewed performance-based problems involving selected in-scope structures, systems, or components (SSCs) to assess the effectiveness of the maintenance program. Reviews focused on: (1) proper maintenance rule scoping, in accordance with 10 CFR 50.65; (2) characterization of failed SSCs; (3) safety significance classifications; (4) 10 CFR 50.65 (a)(1) and (a)(2) classifications; and (5) the appropriateness of performance criteria for SSCs classified as (a)(2), and goals and corrective actions for SSCs classified as (a)(1). The inspectors reviewed the most recent system health reports and system functional failures of the last two years. The following SSCs were reviewed:

- 480 Volt Distribution (System 005). The inspector verified that the licensee appropriately classified this system as (a)(1) primarily due to problems with Westinghouse air magnetic-type circuit breakers which have failed due to human performance, procedure deficiency, preventive maintenance, and aging issues. The inspectors evaluated the acceptability of the licensee's corrective action plan, as documented in Issue Report (IR) No. IR3-024-961.

- Containment Spray System (System 061). The inspector verified the licensee appropriately classified the system as (a)(1) due to repeat functional failures of the containment isolation check valves during local leak rate testing. The inspector verified acceptability of the licensee's corrective action plan which involved replacing the valves with axially opening, spring loaded check valves.

The inspectors also reviewed the following Calvert Cliffs Nuclear Power Plant documentation:

- Station Procedure MN-1-112, Managing System Performance
- Maintenance Rule Scoping Document, Revision 17
- Maintenance Rule System Level Indicator Summary, 4th Quarter 2000
- Maintenance Rule Indicator Report - (a)(1) SSCs, March 2001
- Applicable Plant Engineering System Report Cards

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

For the selected maintenance orders (MO) listed below, the inspectors verified: (1) risk assessments were performed in accordance with Calvert Cliffs procedure NO-1-117, "Integrated Risk Management;" (2) risk of scheduled work was managed through the use of compensatory actions; and (3) applicable contingency plans were properly identified in the integrated work schedule.

- MO1200102119 1A diesel generator radiator fan relay replacement
- MO2200101209 2A diesel generator parallel reset relay
- MO2200101036 Auxiliary feedwater Unit1/Unit 2 cross-tie valve 2CV4550 was only available for local operation due to Unit 2 outage related work

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed selected operability evaluations affecting risk significant mitigating systems to assess: (1) technical adequacy of the evaluations; (2) whether continued system operability was warranted; (3) whether other existing degraded conditions were appropriately addressed with respect to their collective impact on continued safe plant operation; and, (4) where compensatory measures were involved, whether the measures were in place, would work as intended, and were appropriately controlled. The following operability determinations were reviewed:

- 2001-003 Unit 1 Calibrated Instrument Transmitters in Containment
- 2001-004 1A Emergency Diesel Generator Radiator Fan Breakers
- 2001-008 Unit 2 Reactor Vessel and Internals
- 2001-011 Unit 1 Reactor Vessel and Internals

Region-based engineering specialist inspectors supported the resident inspectors' review of Operability Determination No. 2001-008.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications

a. Inspection Scope

The inspector reviewed Engineering Service Package No. 200100381 that addressed that the Unit 2 reactor vessel thimble support plate was found to be approximately one inch higher than expected, as measured from the top of the upper guide structure. The inspector verified that the design bases, licensing bases, and performance capability had not been degraded by the modification.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed post-maintenance test procedures and associated testing activities for selected risk significant mitigating systems to assess whether: (1) the effect of testing on the plant had been adequately addressed by control room and engineering personnel; (2) testing was adequate for the maintenance performed; (3) acceptance criteria were clear and adequately demonstrated operational readiness, consistent with design and licensing basis documents; (4) test instrumentation had current calibrations, range, and accuracy for the application; (5) tests were performed, as written, with applicable prerequisites satisfied; and (6) that equipment was returned to the status required to perform its safety function. The following maintenance order (MO) activities were reviewed:

- MO1200102119 1A Emergency Diesel Generator (EDG) Radiator Fan Relay Replacement
- MO2200101209 2A EDG Parallel Reset Relay
- MO2199904474 Service Water Valve 2-CV-1600

The review of completed test records included the following surveillance and engineering test procedures:

- STP O-8A-1 Test of 1A EDG and 11 4KV Bus Loss of Coolant Incident (LOCI) Sequencer
- ETP 00-018 2A EDG Speed Control and Performance Test
- ETP 00-019 2A EDG Transient Response Test
- STP O-66E-2 Service Water Turbine Building Header Isolation Valve Operability Test (Modes 5-6)

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities

a. Inspection Scope

During the Unit 2 refueling outage, the inspectors reviewed the shuffling of fuel during refueling activities. The inspectors observed and monitored the control of fuel movements performed by licensed operators in the main control room. Nuclear Fuel Management personnel provided engineering support for these activities. The inspectors verified that fuel movement sheets, computer tracking and mimic boards of the spent fuel pool and core were used to control proper fuel movements and final placement. The inspectors observed selected portions of fuel movement in the spent fuel pool area and remotely observed selected fuel movements in the core via video camera.

The inspectors reviewed the licensee's control of decay heat removal while shutdown cooling pumps were removed from operation to permit maintenance on valves located in the common shutdown cooling suction line, as permitted by Technical Specification 3.9.4. Alternate decay heat removal was provided by the spent fuel pool cooling system. Due to the complexity, integrated plant effects, and infrequent performance, this evolution was controlled in accordance with administrative procedure NO-1-102, "Conduct of Infrequent Tests or Evolutions (ITOE)." The inspectors observed the brief conducted by the ITOE Activity Manager as required by NO-1-102. The inspectors reviewed Contingency Planning Worksheet 01-12, "Shutdown Cooling Unavailable," Design Calculation No. CA03959, "Spent Fuel Pool Coolers Heat Removal Capacity," and the procedure change 50.59 evaluation screen for procedure OI-24B, Revision 3, "Spent Fuel Pool Cooling Pump and Cooler Operation on Refueling Pool."

Lastly, the inspectors observed portions of the plant start-up and heat-up activities per procedure OP-01-2, "Plant Startup from Cold Shutdown," and verified on a sampling basis that technical specifications, license conditions, and administrative procedures were met prior to mode changes.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors witnessed performance of surveillance test procedures and reviewed test data of selected risk-significant systems, structures, and components (SSCs) to assess whether the SSCs satisfied Technical Specifications, Updated Final Safety Analysis Report, Technical Requirements Manual, and licensee procedure requirements. The inspectors assessed whether the testing appropriately demonstrated that the SSCs were operationally ready and capable of performing their intended safety functions. The following tests were witnessed:

- STP O-08A-1 Test of 1A DG and 11 4KV Bus LOCI Sequencer
- STP O-099-1 Wide Range Noble Gas Monitor Test
- STP O-090-1 125 VDC Breaker Lineup Verification

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed risk significant temporary modifications to assess: (1) the adequacy of the 10 CFR 50.59 evaluation; (2) that the installations were consistent with the modification documentation; (3) that drawings and procedures were updated as applicable; and, (4) the adequacy of the post installation testing. The following temporary alterations were inspected:

- Temporary Alteration No. 1-01-0022, Change setpoint of pressure instrument alarm 1-PIA-329, from 300 psig to 1500 psig due to check valve leakage in the loop that connects to the No. 11B safety injection tank.

- Temporary Alteration No. 1-01-0018, Changing resistors and capacitors in 125 VDC annunciator alarm cards to prevent spurious control room alarms.

b. Findings

No findings of significance were identified.

3. SAFEGUARDS

Physical Protection (PP)

3PP1 Access Authorization

a. Inspection Scope

The following activities were conducted to determine the effectiveness of the licensee's behavior observation portion of the personnel screening and fitness-for-duty programs as measured against the requirements of 10CFR26.22 and the licensee's Fitness-for-Duty Program documents.

Five supervisors representing the Radiation Safety, System Engineering, Operations, Maintenance, and Integrated Scheduling Departments were interviewed, on April 4, 2001, regarding their understanding of behavior observation responsibilities and the ability to recognize aberrant behavior traits. Two (2) Access Authorization/ Fitness-for-Duty self-assessments, an audit, and event reports and loggable events for the four previous quarters were reviewed, during April 2-5, 2001. On April 4, 2001, five (5) individuals who perform escort duties were interviewed to establish their knowledge level of those duties. Behavior observation training procedures and records were reviewed on April 3, 2001.

b. Findings

No findings of significance were identified.

3PP2 Access Control

a. Inspection Scope

The following activities were conducted during the period April 2-5, 2001 to verify that the licensee has effective site access controls, and equipment in place designed to detect and prevent the introduction of contraband (i.e., firearms, explosives, incendiary devices) into the protected area as measured against 10CFR73.55(d) and the Physical Security Plan and implementing procedures.

Site access control activities were observed, including personnel and package processing through the search equipment during peak ingress periods on April 2, 3, and 4, 2001, and vehicle searches, on April 5, 2001. On April 2, 2001, testing of all access control equipment, including metal detectors, explosive material detectors, and X-ray examination equipment, was observed. On April 3, 2001, a quarterly probability of detection test on the hand geometry unit was observed. The Access Control event log, an audit, and three (3) maintenance work requests were also reviewed.

A review was conducted of two Issue Reports (IRs) generated and entered into the licensee's corrective action program, to address concerns identified during the inspection. The IRs reviewed are identified in the list of documents contained in this report.

b. Findings

No findings of significance were identified.

4 OTHER ACTIVITIES

40A1 Performance Indicator Verification

a. Inspection Scope

The inspectors reviewed performance indicator (PI) data for the below listed cornerstones to verify individual PI accuracy and completeness. The review included the licensee's tracking and trending reports, personnel interviews, and security event reports for the Performance Indicator data collected from the 1st quarter of 2000 through the 1st quarter of 2001.

- Fitness-for-Duty Program
- Personnel Screening Program
- Protected Area Security Equipment

b. Findings

No findings of significance were identified.

4OA3 Event Follow-up

.1 (Closed) Licensee Event Report 50-317 & 50-318/1999-005: Corrosion Behavior and Onset of Oxide Spalling of High Duty Fuel

Licensee Event Report (LER) 50-317 & 50-318/1999-005-00 described that the Unit 2 fuel assemblies discharged at the end of Cycle 12 had an oxide layer that was thicker than predicted and instances of oxide spallation occurred where none were anticipated. The LER stated that this phenomenon had the potential to affect performance of the cladding during certain accident conditions, but further analysis was necessary to determine whether fuel design limits would be exceeded. The licensee entered the concern into their corrective action system as Issue Report No. IR3-020-203.

As corrective actions, the licensee: (1) evaluated the extent of the spalling and its effect on cladding integrity during normal and post-accident conditions and determined that the fuel would not have exceeded any design limit; (2) developed a model to predict the degree of oxidation/spalling that will occur over the cycle to ensure the fuel remains within design limits; (3) inspected each subsequent offload of spent fuel to verify the degree of oxidation, and; (4) plans to switch to a different cladding material that is less prone to oxidation beginning with Unit 1 Cycle 16.

Because the oxidation and spalling of the fuel did not result in the fuel exceeding any design limits, the issue was considered minor. The issue did not involve a violation of regulatory requirements. LER 50-317 & 50-318/1999-005-00 is **closed**.

4OA6 Management Meetings

.1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on June 6, 2001. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT 1

PARTIAL LIST OF PERSONS CONTACTED

J. Alvey, General Supervisor, Security Operations
M. Burrell, Supervisor, Access/Training/Support
C. Cruse, Vice President
D. Dean, Security Program Specialist
G. Gwiazdowski, Director, Nuclear Security
D. Holm, Superintendent, Nuclear Operations
P. Katz, Plant General Manager
B. Martenis, Fitness for Duty Program Manager
B. Montgomery, General Supervisor, Plant Engineering
M. Navin, Superintendent, Technical Support
K. Nietmann, Manager, Nuclear Performance Assessment Department
T. Pritchett, Manager, Nuclear Engineering Department
J. Spina, Superintendent, Nuclear Maintenance
L. Weckbaugh, Manager, Nuclear Support Services

ITEMS OPENED AND CLOSED

Closed

05000317&318/1999-005-00	LER	Corrosion Behavior and Onset of Oxide Spalling of High Duty Fuel (Section 4OA3)

LIST OF ACRONYMS USED

AFW	Auxiliary Feedwater
CCNPPI	Calvert Cliffs Nuclear Power Plant, Inc.
EDG	Emergency Diesel Generator
IR	Issue Report
ITOE	Infrequent Test or Evolution
LER	Licensee Event Report
LOCI	Loss of Coolant Incident
MO	Maintenance Order
NRC	Nuclear Regulatory Commission
PI	Performance Indicator
SDP	Significance Determination Process
SSC	Structure, System and Component
VDC	Voltage Direct Current

PARTIAL LIST OF DOCUMENTS REVIEWED

Plant Access Training - Fitness for duty
Security/Fitness for Duty Semi-Annual Report, August 4, 2000
Security/Fitness for Duty Semi-Annual Report, February 13, 2001

Nuclear Performance Assessment Department, Audit Report 2000-99, March 5, 2001
Security Loggable Event Report, 03/00-03/01
IR3-056-192, Evaluation of Hand Geometry Unit Threshold Values
IR3-051-031, Semi-annual Fitness for Duty Data Reporting Process Review