Calvert Cliffs Nuclear Power Plant
Constellation Generation Group, LLC

1650 Calvert Cliffs Parkway
Lusby, Maryland 20657

Constellation Energy Group

November 29, 2004

U.S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit No. 1; Docket No. 50-317; License No. DPR 53
Licensee Event Report 2004-002
Vital Bus Inoperable Due to Scaffold Installation

The attached report is being sent to you as required under 10 CFR 50.73 guidelines. Should you have questions regarding this report, we will be pleased to discuss them with you.

Very truly yours,

Dave A. Holm
Plant General Manager

DAH/JTJ/bjd

Attachment: As stated

cc: J. Petro, Esquire
J. E. Silberg, Esquire
R. V. Guzman, NRC
S. J. Collins, NRC
Resident Inspector, NRC
R. I. McLean, DNR

IE22

NRC FORM 366 (6-2004) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 06/30/2007

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Calvert Cliffs Nuclear Power Plant	05000 317	1 OF 005

4. TITLE
Vital Bus Inoperable Due to Scaffold Installation

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
										05000
01	22	2004	2004	- 002 -	00	11	29	2004	FACILITY NAME	DOCKET NUMBER 05000

9. OPERATING MODE
1

10. POWER LEVEL
100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☐ 50.73(a)(2)(i)(A)
- ☒ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☐ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☐ 50.73(a)(2)(iv)(A)
- ☐ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☐ 50.73(a)(2)(v)(C)
- ☐ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER

Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
Jon T. Johnson, Engineering Analyst	410-495-2597

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On January 14, 2004, with Unit 1 operating at 100 percent power, contrary to Calvert Cliffs Nuclear Power Plant administrative procedure for scaffold control, an unbraced scaffold was installed within 12 inches of safety-related equipment (14A 480V AC load center). The scaffold was not sufficiently braced to preclude impact with the 14A 480V AC load center cooling fins during a Safe Shutdown Earthquake. The scaffold's close proximity to 14A 480V AC load center went undetected for nine days thus causing the load center to be inoperable while the scaffold was in place. This nine day duration exceeded the Limiting Condition for Operation required Completion Time of two hours for Technical Specification 3.8.9.B, "One or more AC vital subsystem(s) inoperable." The initial assessment (March 16, 2004), concluded the event did not meet reporting criteria. On September 28, 2004, the reportability determination was reviewed and determined that the event was reportable. The root cause of this event is attributed to human error. Subsequent corrective actions included immediate communication of the event with scaffold building teams involved.

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
CALVERT CLIFFS, UNIT 1	05000 317	2004	- 002 -	00	02 OF 005

17. NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)*

I. DESCRIPTION OF EVENT

On January 14, 2004, with Unit 1 operating at 100 percent power, an unbraced scaffold was installed within 12 inches of safety-related (SR) equipment which affected Unit 1 (14A 480V AC load center), contrary to Calvert Cliffs Nuclear Power Plant administrative procedure for scaffold control. The scaffolding was erected to support replacement of Unit 1 Reactor Vessel Level Monitoring System, subcooled margin monitor, and post-accident monitoring recorders. There were no structures, systems, or components inoperable at the start of the event or that contributed to the event.

The incorrect scaffold installation was identified on January 22, 2004 during a plant walkdown, and Issue Report IR4-007-099 was generated to evaluate the condition. The scaffold platform located in the Unit 1, 45', Switchgear Room was not sufficiently braced to preclude impact with the 14A 480V AC load center cooling fins during a Safe Shutdown Earthquake (SSE). The scaffolding was removed on January 22, 2004. The scaffold's close proximity to 14A 480V AC load center went undetected for nine days, which caused the 14A 480V AC load center to be considered inoperable while the scaffold was in place. This nine day duration exceeded the Limiting Condition for Operation (LCO) required Completion Time of two hours for Technical Specification 3.8.9.B, "One or more AC vital subsystem(s) inoperable."

The initial assessment performed under IR4-007-099, completed on March 16, 2004, concluded the event did not meet 10 CFR 50.73(a)(2)(v) reporting criteria. On September 28, 2004, the reportability determination for the event identified by IR4-007-099 was questioned. Further review determined that the event was reportable under 10 CFR 50.73(a)(2)(i)(B), "Any operation or condition which was prohibited by the plant's Technical Specifications." A subsequent issue report (IRE-000-370) was initiated to document failure to report.

II. CAUSE OF EVENT

The root cause of the incorrect scaffolding installation (IR4-007-099) was the result of human error. The scaffold building team failed to comply with the procedural guidance defined in the site's administrative procedure for scaffold control.

Calvert Cliffs' scaffold procedure provides direction for instances where scaffolding must be erected within 12 inches of SR equipment, piping, tubing, or electrical cabinets. The scaffold procedure defines the necessary methods for bracing the scaffolding to prevent displacement or sliding during a seismic event. Further, examples of acceptable bracing, such as a clamped outrigger or guy wires, at the floor level and the top level, are included. The scaffold procedure allows for securing the scaffold feet as a substitute for bracing at the floor level.

The scaffold building team was experienced in building scaffolds and the team had previously erected scaffolds in the same location. Because of previously successful scaffold installation in this area, the team became over confident during this scaffold installation. The scaffold building team failed to recognize the consequences of an insufficiently braced scaffold.

Human error was also noted in the lack of supervisory oversight at the job site during the installation of the scaffolding in close proximity to 14A 480V AC load center.

III. ANALYSIS OF EVENT

The 480V AC system is designed to function reliably and supply power during normal operation and under design basis events (i.e., when subjected to SSE accelerations). The 480V AC system engineered safety features (ESF) electrical system meets the single-failure criteria as defined in Institute of Electrical and Electronics Engineers Standard 279, Section 4.2 and is designed as a Class 1E system. Four of the eight 480V AC load centers for each unit supply power to ESF. Busses 11A/B and 14A/B feed ESF loads redundant. The redundant busses are supplied from separate emergency diesel generators through the 4.16KV/480V unit service transformers.

Following identification of the event, an evaluation concluded that the scaffolding would contact at least one cooling fin of the 14A 480V AC load center during an SSE. The cooling fin would ultimately develop a leak at the point-of-contact resulting in overheating and subsequent failure of the 14A 480V AC load center.

In accordance with 10 CFR Part 100, Appendix A, (III)(c) an SSE is that earthquake which is based upon an evaluation of the maximum earthquake potential considering the regional and local geology and seismology and specific characteristics of local subsurface material. It is that earthquake which produces the maximum vibratory ground motion for which certain structures, systems, and components are designed to remain functional. These structures, systems, and components are those necessary to assure; (1) the integrity of the reactor coolant pressure boundary, (2) the capability to shutdown the reactor and maintain it in a safe shutdown condition, or (3) the capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to the guideline exposures. As defined above, item (2) applies to this event.

A probabilistic risk assessment of this issue was performed, assuming 14A 480V AC load center failed during an SSE. Based on the nine day duration (January 14 to 22, 2004), the Unit 1 delta core damage frequency increase for this issue was determined to be 7.4E-8. The change in large early release frequency was insignificant, as was the impact on Unit 2.

Additional review determined that a loss of 14A 480V AC load center would not prevent safe shutdown of Unit 1, assuming redundancy was maintained by the unaffected train (11B 480V AC load center). According to the Calvert Cliff's Control Room log, the 11B 480V AC load center was maintained operable during the January 14 – 22, 2004 event.

However, this event is considered reportable in accordance with 10 CFR 50.73(a)(2)(i)(B); "Any operation or condition which was prohibited by the plant's Technical Specifications." Unit 1 entered a condition prohibited by Technical Specifications on January 14, 2004 by remaining in Mode 1 throughout the event.

With a Unit in Mode 1, 2, 3, or 4, and one or more AC vital busses inoperable, Calvert Cliffs' Technical Specification 3.8.9, Required Action B.1 requires restoring the AC vital bus subsystems to operable status within 2 hours AND within 16 hours from discovery of failure to meet the LCO. Further, if Required Action B.1 is not met, then Calvert Cliff's Technical Specification 3.8.9, Required Actions D.1 and D.2 require the affected unit to be in Mode 3 (hot standby) within the next 6 hours and in Mode 5 (cold shutdown) within the following 30 hours.

The 14A 480V AC load center was determined to be inoperable from January 14 – 22, 2004. This nine day duration exceeded the LCO Required Completion Time of two hours for Technical Specification 3.8.9.B, "One or more AC vital subsystem(s) inoperable." Technical Specification Bases 3.8.9-1, Table B, Note 1, states that "Each bus of the AC and DC Electrical Power Distribution System is a subsystem."

The scaffold adjacent to 14A 480V AC load center rendered a Technical Specification required AC Electrical Power Distribution Subsystem inoperable on January 14, 2004. The condition to enter Technical Specification 3.8.9.D occurred two hours later, which required Unit 1 entry into Mode 3 within six hours. Unit 1 entry into Mode 5 was then required within the next 30 hours.

Unit 1 continued to operate in Mode 1 until January 22, 2004, when the scaffold was removed and the 14A 480V AC load center was restored to operable status.

The failure to correctly install scaffolding near the 14A 480V AC load center did not directly impact the plant financially or in terms of radiological exposure.

IV. CORRECTIVE ACTIONS

After the January 2004 event, a meeting was conducted between CCNPP line supervision, the craft superintendent, and scaffold teams to emphasize the importance of procedural compliance. Further, the meeting reiterated the requirements for the installation of scaffolds within 12 inches of SR equipment. Calvert Cliffs Nuclear Power Plant's administrative procedure for scaffold control allows the scaffolding crew to use normal methods in order to meet the seismic requirements for proper bracing. Where normal bracing methods can not be achieved, the scaffold crews must contact CCNPP design engineering for resolution.

The above actions were further re-enforced by the Manager-Nuclear Maintenance, to line supervision associated with building scaffolding, design engineering, and craft personnel. The Manager-Nuclear Maintenance reiterated if personnel are not confident with the scaffolding configuration, they shall contact design engineering to ensure the proposed scaffolding meets all applicable seismic design criteria.

Another event related to improperly erected scaffolding occurred on September 14, 2004. This later event is not reportable under 10 CFR 50.73. However, the second event demonstrated that additional actions to prevent recurrence were required. A prompt investigation and an apparent

cause analysis performed for the September 14 event identified the following corrective actions that will apply to any scaffold built in safety-related areas.

1. A CCNPP Supervisor will attend the pre-job brief to ensure the brief covers the manner in which scaffold is seismically secured.

2. Prior to the newly erected scaffold being left unattended, the scaffold will be independently verified to be seismically braced by CCNPP supervision or design engineering.

3. The CCNPP scaffold procedure is being changed to provide scaffold crews clearer guidance on bracing, distance to safety-related equipment, and thermal growth effects.

V. ADDITIONAL INFORMATION

A. Component Failures

Component	IEEE 803 EIIS Function	IEEE 805 System ID
14A 480V AC Load Center	BU	ED

B. Previous Occurrences

No other events of this type have occurred at Calvert Cliffs Nuclear Power Plant.