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CALVERT CLIFFS NUCLEAR POWER PLANT

December 2, 2011

U.S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 and 2; Docket Nos. 50-317 and 50-318;
License Nos. DPR 53 and DPR 69
Licensee Event Report 2011-002, Revision 00
Technical Specification 3.0.3 Entry for Inoperable 125 VDC Channels

The attached report is being sent to you as required by 10 CFR 50.73. Should you have questions regarding this report, please contact Mr. Douglas E. Lauver at (410) 495-5219.

Very truly yours,

Christopher R. Costanzo
Plant General Manager

CRC/KLG/bjd

Attachment: As stated

cc: D. V. Pickett, NRC
W. M. Dean, NRC

Resident Inspector, NRC
S. Gray, DNR

JE22
NRC

LICENSEE EVENT REPORT (LER)

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

Estimated burden per response to comply with this mandatory collection request: 80 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 Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resource@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.

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|---|--------------------------------------|---------------------------|
| 1. FACILITY NAME Calvert Cliffs Nuclear Power Plant, Unit 1 | 2. DOCKET NUMBER 05000 317 | 3. PAGE 1 OF 06 |
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4. TITLE
Technical Specification 3.0.3 Entry for Inoperable 125 VDC Channels

| 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 |
| 10 | 03 | 2011 | 2011 | - 002 - | 00 | 12 | 02 | 2011 | CCNPP, Unit 2 | 05000 318 |
| | | | | | | | | | FACILITY NAME | DOCKET NUMBER |
| | | | | | | | | | | 05000 |

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| 9. OPERATING MODE 1 | 11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check all that apply) | | | | | | | | | |
| 10. POWER LEVEL 100 | <input type="checkbox"/> 20.2201(b) | <input type="checkbox"/> 20.2203(a)(3)(i) | <input type="checkbox"/> 50.73(a)(2)(i)(C) | <input type="checkbox"/> 50.73(a)(2)(vii) | | | | | | |
| | <input type="checkbox"/> 20.2201(d) | <input type="checkbox"/> 20.2203(a)(3)(ii) | <input type="checkbox"/> 50.73(a)(2)(ii)(A) | <input type="checkbox"/> 50.73(a)(2)(viii)(A) | | | | | | |
| | <input type="checkbox"/> 20.2203(a)(1) | <input type="checkbox"/> 20.2203(a)(4) | <input type="checkbox"/> 50.73(a)(2)(ii)(B) | <input type="checkbox"/> 50.73(a)(2)(viii)(B) | | | | | | |
| | <input type="checkbox"/> 20.2203(a)(2)(i) | <input type="checkbox"/> 50.36(c)(1)(i)(A) | <input type="checkbox"/> 50.73(a)(2)(iii) | <input type="checkbox"/> 50.73(a)(2)(ix)(A) | | | | | | |
| | <input type="checkbox"/> 20.2203(a)(2)(ii) | <input type="checkbox"/> 50.36(c)(1)(ii)(A) | <input type="checkbox"/> 50.73(a)(2)(iv)(A) | <input type="checkbox"/> 50.73(a)(2)(x) | | | | | | |
| | <input type="checkbox"/> 20.2203(a)(2)(iii) | <input type="checkbox"/> 50.36(c)(2) | <input type="checkbox"/> 50.73(a)(2)(v)(A) | <input type="checkbox"/> 73.71(a)(4) | | | | | | |
| | <input type="checkbox"/> 20.2203(a)(2)(iv) | <input type="checkbox"/> 50.46(a)(3)(ii) | <input type="checkbox"/> 50.73(a)(2)(v)(B) | <input type="checkbox"/> 73.71(a)(5) | | | | | | |
| <input type="checkbox"/> 20.2203(a)(2)(v) | <input type="checkbox"/> 50.73(a)(2)(i)(A) | <input type="checkbox"/> 50.73(a)(2)(v)(C) | <input type="checkbox"/> OTHER | | | | | | | |
| <input type="checkbox"/> 20.2203(a)(2)(vi) | <input checked="" type="checkbox"/> 50.73(a)(2)(i)(B) | <input type="checkbox"/> 50.73(a)(2)(v)(D) | Specify in Abstract below or in NRC Form 366A | | | | | | | |

12. LICENSEE CONTACT FOR THIS LER

| | |
|---|--|
| FACILITY NAME K. L. Greene, Principal Engineer | TELEPHONE NUMBER (Include Area Code) 410-495-4385 |
|---|--|

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 |
|----------|-----------|------------|---------------|--------------------|-------|--------|-----------|---------------|--------------------|
| E | EK | BYC | P319 | Y | | | | | |

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|--|-------------------------------------|-------|-----|------|
| 14. SUPPLEMENTAL REPORT EXPECTED <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO | 15. EXPECTED SUBMISSION DATE | MONTH | DAY | YEAR |
| | | | | |

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

At 1035 on October 3, 2011, Operators entered Limiting Condition for Operation (LCO) 3.0.3 for Calvert Cliffs Units 1 and 2. The LCO 3.0.3 entry was due to an emergent failure of 1A Diesel Generator (DG) Battery Charger which caused 1A DG to be inoperable concurrent with planned maintenance on No. 21 Saltwater Subsystem which caused 2A DG to be inoperable. The concurrent inoperability of both A Train DGs caused the A Train 125 VDC channels for each Unit to be declared inoperable and required entry into LCO 3.0.3 on both Units. At 1605 on October 3, 2011, 1A DG battery charger was returned to service and the 1A DG and all supported A Train components became operable. Limiting Condition for Operation 3.0.3 was exited for both Units at 1605.

The apparent cause of the battery charger failure was age related degradation of its circuit board due to exceeding its expected service life. The affected circuit boards were replaced. Corrective actions include updating the preventive maintenance task to replace the battery charger circuit boards on a set periodicity.

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I. DESCRIPTION OF EVENT:

A. PRE-EVENT PLANT CONDITIONS:

Unit 1 and Unit 2 were operating at full power on October 3, 2011. On Unit 2, 2A Diesel Generator (DG) was declared inoperable at 0001 on October 3, 2011 due to planned maintenance being performed on No. 21 Saltwater Subsystem (its cooling water source).

B. EVENT:

At 1035 on October 3, 2011, the 1A DG's dedicated battery charger (No. 16 Battery Charger) failed while technicians were conducting routine preventive maintenance on the battery charger. While technicians were performing voltage adjustments, in accordance with the maintenance procedure, the battery charger output voltage went to zero.

The failure of the No. 16 Battery Charger resulted in 1A DG being declared inoperable because the battery charger directly supports the operability of the 1A DG. Therefore, both Unit's A Train DGs (1A and 2A DG) were inoperable at the same time causing the A train station battery chargers (two per Unit) for both Units to be declared inoperable. A battery charger is considered operable as long as it is receiving power from its normal offsite power source and it can be connected to a DG within two hours following an event.

If the A Train battery chargers are inoperable, the 125 VDC channels associated with the inoperable battery chargers are also inoperable. An operable 125 VDC channel consists of an operable 125 VDC battery, the associated battery charger and all the associated control equipment, and cabling. There are four 125 VDC channels for each Unit (two A Train channels and two B Train channels). The Technical Specifications contain actions to be performed if one 125 VDC channel is inoperable. Both A Train 125 VDC channels on each Unit were inoperable. Since there is no specific Technical Specification Required Action for two inoperable 125 VDC channels, Limiting Condition for Operation (LCO) 3.0.3 was entered for both Units.

Following entry into LCO 3.0.3, when the 125 VDC channels were not able to be restored to operable status within one hour, Calvert Cliffs Operators began preparations for and commenced shutdown of both Units to comply with the LCO 3.0.3 Required Action to place the Units in Mode 3 within seven hours.

At 1605 on October 3, 2011, the No. 16 Battery Charger was returned to service following repairs. This action restored the 1A DG to an operable status. Restoration of the 1A DG restored the A Train battery chargers and the A Train 125 VDC channels for both Units to an operable status. Both Units exited LCO 3.0.3 at this time.

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C. INOPERABLE STRUCTURES, STRUCTURES, COMPONENTS, OR SYSTEMS THAT CONTRIBUTED TO THE EVENT:

The failure of the No. 16 Battery Charger resulted in the 1A DG being declared inoperable. This failure, when combined with the 2A DG already being inoperable due to planned maintenance, resulted in both A Train DGs being inoperable simultaneously. This resulted in both A Train 125 VDC channels on each Unit being declared inoperable, which required both Units to enter LCO 3.0.3.

D. DATES AND APPROXIMATE TIMES OF MAJOR OCCURRENCES:

On October 3, 2011 at 0001, 2A DG was declared inoperable due to the performance of planned maintenance on the No. 21 Saltwater Subsystem (its cooling water source).

At 1035, 1A DG was declared inoperable when its dedicated battery charger failed while technicians were performing preventive maintenance on the battery charger. With both A Train DGs declared inoperable, the A Train station battery chargers and both A Train 125 VDC channels on each Unit were also declared inoperable, which resulted in entry into LCO 3.0.3 on both Units.

At 1350, Operators began reducing power on Unit 1 in accordance with Operating Procedure-3, Normal Power Operation, to comply with LCO 3.0.3.

At 1352, Operators began reducing power on Unit 2 in accordance with Operating Procedure-3, to comply with LCO 3.0.3.

At 1445, Operators made an immediate notification (4-hour event report, Event Report 47316) to the Nuclear Regulatory Commission in accordance with 10 CFR 50.72(b)(2)(i).

At 1605, the No. 16 Battery Charger was returned to service following repairs. This action restored the 1A DG to an operable status. Restoration of the 1A DG restored the A Train battery chargers and the A Train 125 VDC channels for both Units to an operable status. As a result, Calvert Cliffs exited LCO 3.0.3 at 1605. Unit 1 and Unit 2 were at approximately 35 percent power and 42 percent power, respectively, when the units exited LCO 3.0.3.

On October 4, 2011 at 0415, Unit 2 was returned to full power.

On October 4, 2011 at 1203, Unit 1 was returned to full power.

E. OTHER SYSTEMS OR SECONDARY FUNCTIONS AFFECTED:

The failure of the No. 16 Battery Charger made the 1A DG inoperable. With both A Train DGs inoperable, the associated A Train battery chargers and 125 VDC channels were also inoperable. Throughout the entire event, electrical power to the A Train battery chargers and

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their associated 125 VDC channels was provided by the normal offsite power source. All B Train battery chargers and their associated 125 VDC channels were operable.

F. METHOD OF DISCOVERY:

The failure of the No. 16 Battery Charger was self-revealing. Operators then determined the impact of this failure on the operability of associated components and determined that entry into LCO 3.0.3 for both Units was required.

G. MAJOR OPERATOR ACTION:

Following entry into LCO 3.0.3, Operators began preparations to shutdown both Units since one of the A Train 125 VDC channels was not restored to an operable status within one hour. When the 125 VDC channels were restored to an operable status and the plant exited LCO 3.0.3, Operators had reduced the power level of Unit 1 and Unit 2 to approximately 35 and 42 percent, respectively.

H. SAFETY SYSTEM RESPONSES:

There were no demands for safety system actuations during this event. There were no safety system failures during this event, as the associated B Train components remained operable.

II. CAUSE OF EVENT:

The cause of this event was a hardware failure of the No.16 Battery charger.

The failure of the No.16 Battery Charger is documented in CR-2011-010294. Subsequent investigation determined the No. 16 Battery Charger's sensing and current limit circuit board had an overheated capacitor and resistors, and was providing no voltage output. The cause of the failure appears to be age related degradation of the electrolytic capacitor. The failed circuit board was in service greater than 16 years. The industry recommendation is to replace electrolytic capacitors in this type of circuit board every ten years. While the site had initiated a change request to modify the governing preventive maintenance procedure to replace this electrolytic capacitor every ten years, the change was not incorporated. However, this change was previously made to the preventive maintenance procedure of the site's station blackout diesel (0C DG) which is a similar diesel generator model as 1A DG.

III. ANALYSIS OF EVENT:

Immediate notification of this event (Event 47316) was made on October 3, 2011 at 1445 in accordance with 10 CFR 50.72(b)(2)(i) (4-hour Emergency Notification System report) due to the initiation of a plant shutdown required by the plant's Technical Specifications.

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NUREG-1022, Revision 2, Event Reporting Guidelines 10 CFR 50.72 and 50.73, in section 3.2.2 states:

“Entry into STS 3.0.3 (ISTS LCO 3.0.3) or its equivalent is not necessarily reportable under this criterion. However it should be considered reportable under this criterion if the condition is not corrected within an hour, such that it is necessary to initiate actions to shutdown, cool down, etc.”

Following the failure of the No. 16 Battery Charger and subsequent entry into LCO 3.0.3 for both Units, the site was unable to restore a 125 VDC channel to an operable status within one hour. Actions were initiated to shutdown the Units. As a result, this event is reportable under 10 CFR 50.73(a)(2)(i)(B).

The Nuclear Regulatory Commission Performance Indicator for Unplanned Power Changes per 7,000 Critical Hours changes as a result of this event. Unit 1 changes from 0.0 to 0.806 and Unit 2 changes from 0.867 to 1.734. Both Units remain in the green band for this indicator. No other Nuclear Regulatory Commission Performance Indicators were impacted by this event.

Prior to the event, the daily calculated probabilistic risk factor values for Core Damage Frequency (CDF) and Large Early Release Frequency (LERF) were Green (< 2x normal) for Unit 1 and Yellow (2 to 10 times normal) for Unit 2 (due to the No. 21 Saltwater Subsystem maintenance work). When the 1A DG was declared inoperable, the CDF and LERF risk levels changed to Orange (between 10 and 20 times normal) for both Units. These risk levels existed for a period of 5.5 hours and resulted in an Incremental Conditional Core Damage Probability (ICCDP) and Incremental Conditional Large Early Release Probability (ICLERP) of 1.2 E-07 and 1.6E-08 for Unit 1, and 5.0E-8 and 3.0E-9 for Unit 2. Although the risk levels during the period were elevated, the short duration resulted in a relatively small increase in incremental CDF and LERF risk. The increases in these risk levels remained below the Regulatory Guide 1.177, An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications, threshold of what is considered a small risk (threshold of 1E-06 for ICCDP and 1E-07 for ICLERP).

IV. CORRECTIVE ACTIONS:

A. ACTION TO RETURN AFFECTED SYSTEMS TO PRE-EVENT NORMAL STATUS:

1. Maintenance Technicians replaced both the sensing and current limit circuit board and the amplifier circuit board for 1A DG No. 16 Battery Charger. The new circuit boards were calibrated and post-maintenance testing was performed satisfactory. This action restored 1A DG and the associated A Train battery chargers and 125 VDC channels to an operable status.

B. ACTION TAKEN OR PLANNED TO PREVENT RECURRENCE:

1. The 1A DG preventive maintenance task on its associated battery charger was modified to have the circuit boards replaced at a ten-year interval.

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If information is subsequently developed, that would significantly affect the understanding of this event, a supplemental licensee event report will be submitted.

V. ADDITIONAL INFORMATION:

A. FAILED COMPONENTS:

1. The 1A DG No. 16 Battery Charger was manufactured by Power Conversion Products Inc.

B. PREVIOUS LERs ON SIMILAR EVENTS:

A review of Calvert Cliffs' events during the last four years was performed. No previous licensee event reports were identified that involved the same underlying concern or reason for this event.

C. THE ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIS) COMPONENT FUNCTION IDENTIFIER AND SYSTEM NAME OF EACH COMPONENT OR SYSTEM REFERRED TO IN THIS LER:

| COMPONENT | IEEE 803 EIIS FUNCTION | IEEE 805 SYSTEM ID |
|-----------------------|---------------------------|-----------------------|
| 1A Diesel Generator | DG | EK |
| 1A DG Battery Charger | BYC | EK |

D. SPECIAL COMMENTS:

None