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January 21, 1992

ELV-03380  
1264

Docket No. 50-424

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D. C. 20555

Gentlemen:

VOGTLE ELECTRIC GENERATING PLANT  
LICENSEE EVENT REPORT  
FAILURE TO COMPLETE TECHNICAL SPECIFICATION REQUIRED  
ACTION FOR BATTERY CELL LOW VOLTAGE

In accordance with 10 CFR 50.73, Georgia Power Company hereby submits the enclosed report related to an event discovered on December 26, 1991.

Sincerely,

*CKM*  
C. K. McCoy

CKM/NJS/gmb

Enclosure: LER 50-424/1991-016

xc: Georgia Power Company  
Mr. W. B. Shipman  
Mr. M. Sheibani  
NORMS

U. S. Nuclear Regulatory Commission  
Mr. S. D. Ebnetter, Regional Administrator  
Mr. D. S. Hood, Licensing Project Manager, NRR  
Mr. B. R. Conser, Senior Resident Inspector, Vogtle

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## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) VOTILE ELECTRIC GENERATING PLANT - UNIT 1 DOCKET NUMBER (2) 05000424 PAGE (3) 1 OF 4

TITLE (4) FAILURE TO COMPLETE TECHNICAL SPECIFICATION REQUIRED ACTION FOR BATTERY CELL LOW VOLTAGE

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MONTH	DAY	YEAR	YEAR	SEQ NUM	RE	MONTH	DAY	YEAR	FACILITY NAMES		DOCKET NUMBER(S)
12	23	91	91	016	00	01	21	92			05000
05000											

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR (11)									
POWER LEVEL	100	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)						
		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)						
		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in						
		20.405(a)(1)(iii)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	Abstract below)						
		20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(vii)(B)							
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)							

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
MEHDI SHEIRANI, NUCLEAR SAFETY AND COMPLIANCE	AREA CODE 404 826-3209

COMPLETE ONE LINE FOR EACH FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORT TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORT TO NRC
X	EJ	BTRY	C173	Y					

SUPPLEMENTAL REPORT EXPECTED (14)

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

ABSTRACT (16)

On 12-26-91, a maintenance supervisor and plant engineering personnel were reviewing recorded data for a Class 1E battery cell which was being single-cell charged when it was noticed that the cell had displayed abnormal behavior. Per the recorded data, after the cell was placed on single-cell charge on 12-23-91, the cell float voltage had dropped below the Technical Specification (TS) allowable value for approximately 22 hours. Per TS requirements, if float voltage for a connected cell is found to be below the allowable value, then the battery must be declared inoperable. Subsequently, engineering review determined that a temporary internal short had probably existed in the cell and, consequently, an inoperable condition should have been considered to exist.

The root cause of the event was procedure inadequacy. The procedure, which provides instructions for single-cell charging, did not provide a precaution that TS requirements would apply for low cell voltage readings obtained while single-cell charging. In addition to revising the procedure, corrective action has been taken to jumper out the cell due to further unacceptable voltage readings. A new cell is expected to be installed by 2-15-92.

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VOGTLE ELECTRIC GENERATING PLANT - UNIT 1	05000424	91	016	00	2	OF	4

TEXT

## A. REQUIREMENT FOR REPORT

This report is required per 10 CFR 50.73 (a)(2)(i) since review of recorded data for a Class 1E battery cell indicated that a failure occurred to complete Technical Specification (TS) action requirements for an inoperable battery.

## B. UNIT STATUS AT TIME OF EVENT

At the time of discovery of this event, Unit 1 was in Mode 1 (Power Operation) at 100 percent of rated thermal power. Other than that described herein, there was no inoperable equipment which contributed to the occurrence of this event.

## C. DESCRIPTION OF EVENT

On 12-23-91, during performance of a weekly surveillance for Class 1E 125 V-dc battery banks, cell No. 24 of the A Train battery (1AD1B) failed to meet the TS required float voltage limit. The actual measured voltage was 2.105 V, which was below the TS Table 4.8-2 specified limit of greater than or equal to 2.13 V, but above the specified allowable value of greater than 2.10 V. Per TS requirements, the battery could be considered operable provided that, within 24 hours, certain parameters specified by TS Table 4.8-2 are measured for all connected cells and found to be within their allowable values and provided that any parameters not meeting their specified limits are restored to within acceptable limits within the next 6 days. Due to these requirements, further measurements for the A Train battery were completed on 12-23-91 and the parameters for all connected cells were found to be within their allowable values. Additionally, all parameters, other than float voltage for cell No. 24, were found to meet their specified limits.

To attempt to restore the float voltage for cell No. 24 to within acceptable limits, a maintenance work order was initiated to install a single-cell charger per instructions provided in Procedure 27915-C, General Battery Maintenance. As a contingency action, engineering reviews and approvals were initiated to allow the battery cell to be jumpered out should the single-cell charging prove to be ineffective. At approximately 1330 EST on 12-23-91, the single-cell charger was installed by maintenance electricians. The planned charge duration was 72 hours. After the charger was energized, cell voltage and current readings were taken periodically as required by Procedure 27915-C, and the charger output was adjusted when required to keep the voltage within the range specified by the procedure.

On 12-26-91, a maintenance supervisor initiated a review of the charging data recorded up to that point to determine if the charge should be terminated at the end of the planned 72-hour period. In reviewing these data with plant engineering, it was noticed that some of the voltage readings appeared abnormal. After an initial voltage reading of 2.12 V, the recorded data indicated that cell voltage had actually decreased to 1.99 V

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and had remained at that value for several hours before finally beginning to increase. Per the recorded data, the cell voltage had remained below the TS allowable value of greater than 2.10 V approximately 22 hours. Additionally, the desired voltage range of 2.39 to 2.41 V (i.e., the voltage specified by Procedure 27915-C to be maintained during the single-cell charge) was not reached until 0600 EST on 12-25-91.

Similar behavior for other battery cells placed on single-cell charge had never been seen. It was known that a true measurement of cell voltage could not be taken with a single-cell charger installed. It was also noted that the charging current had remained at or near the current limit of the charger (i.e., 30 A) for approximately the first 24 hours after the charger was energized. To what extent the high charging current influenced the voltage readings was uncertain. Due to these uncertainties, a decision was made on 12-26-91 to extend the charge duration to provide a 72-hour charge period starting at 0600 EST on 12-25-91. The cell appeared to be charging normally at the time and, therefore, extending the charge duration would provide a more positive means of determining the continued acceptability of the cell.

At 0600 EST on 12-28-91, the single-cell charger was removed. Shortly after disconnecting the charger, a voltage reading of 2.26 V was obtained. Approximately 7 hours later, the measured cell voltage was 2.163 V and, on 12-30-91, a voltage reading of 2.20 V was obtained. However, on 1-6-92, the float voltage of cell # 24 was measured to be 2.09 V. Due to this unacceptable reading, the action requirements of TS 3.8.2.1 were promptly entered. These action requirements provide for a 2-hour time period to restore an inoperable required dc electrical source to operable status. The contingency action to jumper out the cell had been determined to be acceptable and was implemented within the required time.

Prior to the last voltage measurement for cell No. 24, further engineering review had determined that a temporary internal short had probably developed within the cell after it was placed on single-cell charge. Therefore, an inoperable condition should have been considered to exist and, consequently, a failure to implement the action requirements of TS 3.8.2.1 had occurred on 12-23-91.

## D. CAUSE OF EVENT

The cause for the observed behavior of cell No. 24 is considered to be related to battery aging phenomena.

The root cause for the failure to initially recognize the abnormal low cell voltage readings as an operability concern is considered to be procedure inadequacy. While Procedure 27915-C contains adequate guidance to ensure completion of TS required actions if cell voltage is found to be below the TS allowable value for measurements taken without a single-cell charger installed, no precaution was provided in the single-cell charging section of the procedure to indicate that the TS requirements should also be implemented for low cell voltage readings obtained while single-cell charging.

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## E. ANALYSIS OF EVENT

A 5-year performance discharge test was performed for battery 1AD1B during the Fall 1991 refueling outage. The performance of the battery, including cell No. 24, was satisfactory at that point. Based on the displayed capacity of the battery during that testing, calculations have determined that any possible negative impact of cell No. 24 on overall battery capacity would not have prevented the battery from being able to supply its associated emergency loads under accident conditions. Additionally, the other three battery banks of the Class 1E 125 V-dc system were fully operable and capable of supplying their associated emergency loads. Based on these considerations, there was no adverse effect on plant safety nor on the health and safety of the public as a result of this event.

## F. CORRECTIVE ACTIONS

1. A replacement cell for battery cell No. 24 is expected to be installed by 2-15-92. The cell will remain jumpered out until the replacement occurs.
2. A precaution has been added to the single-cell charging section of Procedure 27915-C to indicate that the shift supervisor and the maintenance foreman should be immediately notified if measured cell voltage drops below the TS allowable value of greater than 2.10 V.
3. Training on single-cell charging, including a discussion of this event, will be provided to appropriate maintenance personnel during 1992 continuing training.

## G. ADDITIONAL INFORMATION

1. Failed Components Identification

Battery Cell No. 24  
Manufacturer - C&D Batteries  
Model No. LCY-37

2. Previous Similar Events

None.

3. Energy Industry Identification System Codes

dc Power System, Class 1E - EJ