

Commonwealth Edison Company
Byron Generating Station
4450 North German Church Road
Byron, IL 61010-9794
Tel 815-234-5441



DATE October 24, 1995

LTR: BYRON 95-0353
FILE: 3.03.0800 (1.10.0101)

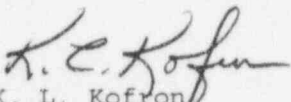
U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Dear Sir:

The Enclosed Licensee Event Report from Byron Generating Station is being transmitted to you in accordance with the requirements of 10CFR50.73(a)(2)(i)(B).

This report is number 95-004; Docket No. 50-454.

Sincerely,


K. L. Kofron
Station Manager
Byron Nuclear Power Station

KLK/PW/ba

Enclosure: Licensee Event Report No. 95-004

cc: H. J. Miller, NRC Region III Administrator
NRC Senior Resident Inspector
INPO Record Center
CECo Distribution List

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SIGNATURE PAGE FOR LICENSEE EVENT REPORT

LER Number
454:95-004

Title of Event: Resistance For Intercell Connection of the 125 Volt
Batteries Has Not Been Measured Due To Procedural Deficiency

Occurred: 09-28/95/ 1255
Date Time

Licensee Contact: R. Choinard

OSR DISCIPLINES REQUIRED: A,B,G

SES / 10/25/95
SES DATE

Acceptance by Station Review:

JS/White / ABG / 10/24/95
OE Disciplines Date

Angela Lopez / AG / 10/25/95
SES Disciplines Date

OBennett / A136 / 10/14/95
RAS Disciplines Date

Paul Miller / AGF / 10/24/95
Other Disciplines Date

____ / ____ / ____
Other Disciplines Date

Approved by: K.C. Kofu / 10/27/95
Station Manager Date

LICENSEE EVENT REPORT (LER)

FACILITY NAME BYRON NUCLEAR POWER STATION										DOCKET NUMBER 0 5 0 0 0 4 5 4					PAGE 1 OF 0 4								
TITLE RESISTANCE FOR INTERCELL CONNECTION OF THE 125 VOLT BATTERIES HAS NOT BEEN MEASURED DUE TO PROCEDURAL DEFICIENCY																							
EVENT DATE			LER NUMBER				REPORT DATE			OTHER FACILITIES INVOLVED													
MONTH	DAY	YEAR	YEAR	SEQ. NUMBER	REVISION	MONTH	DAY	YEAR	FACILITY NAMES Byron Unit 2				DOCKET NUMBER(S) 0 5 0 0 0 4 5 5										
0	9	2	8	9	5	9	5	-	0	0	4	-	0	0	1	0	2	4	9	5	0 5 0 0 0 0 0 0		
OPERATING MODE		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (CHECK ONE OR MORE OF THE FOLLOWING)																					
1		20.402(b)				20.405(e)				50.73(a)(2)(iv)				73.71(b)									
POWER LEVEL		20.405(a)(1)(i)				50.36(c)(1)				50.73(a)(2)(v)				73.71(c)									
0		20.405(a)(1)(ii)				50.36(c)(2)				50.73(a)(2)(vii)				OTHER (Specify in Abstract below and in Text, NRC Form 366A)									
		20.405(a)(1)(iii)				X 50.73(a)(2)(i)				50.73(a)(2)(viii)(A)													
		20.405(a)(1)(iv)				50.73(a)(2)(ii)				50.73(a)(2)(viii)(B)													
		20.405(a)(1)(v)				50.73(a)(2)(iii)				50.73(a)(2)(x)													
LICENSEE CONTACT FOR THIS LER																							
NAME R. CHOINARD, SYSTEM ENGINEERING DEPARTMENT, X2041										TELEPHONE NUMBER 8 1 5 2 3 4 1 - 5 4 4 1													
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT																							
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS														
D				N																			
SUPPLEMENTAL REPORT EXPECTED										EXPECTED SUBMISSION DATE		MONTH	DAY	YEAR									
<input type="checkbox"/> YES, (If yes, complete EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO																							

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

On September 28, 1995, Byron personnel discovered that the Electrical Maintenance surveillances 1/2BHS 8.2.1.2.c-1, "125 Volt Battery Bank 18 Month Surveillance," does not include a step for measuring resistance from the terminal connection on the positive post for cell 1 and the negative post for cell 58.

The cause of the surveillance deficiencies in Electrical Maintenance surveillances 1/2BHS 8.2.1.2.c-1, "125 Volt Battery Bank 18 Month Surveillance," could not be determined. The original surveillance, BHS 8.2.1.2.c-1 which was not unit specific, had this error and it was written over twelve years ago. The surveillance was revised to include measurement of the resistance from the terminal connection to the positive post for cell 1 and the terminal connection to the negative post for cell 58. All other battery surveillances are being reviewed.

No previous problems had been noted with this surveillance. This event is reportable per 10CFR 50.73(a)(2)(i)(B) as operation prohibited by Technical Specifications.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME	DOCKET NUMBER	LER NUMBER						PAGE													
BYRON NUCLEAR POWER STATION		YEAR	SEQ. NUMBER	REVISION																	
		0	5	0	0	0	4	5	4	9	5	-	0	0	4	-	0	0	0	2	OF

TEXT Energy Industry Identification System (EIS) codes are identified in the text as [XX]

A. PLANT CONDITIONS PRIOR TO EVENT:

Event Date/Time 09-28-95 / 1255

Unit 1 MODE 1 - Power Operations Rx Power 98% RCS [AB] Temperature/Pressure NOT/NOP

Unit 2 MODE 1 - Power Operations Rx Power 99% RCS [AB] Temperature/Pressure NOT/NOP

B. DESCRIPTION OF EVENT:

On September 28, 1995, Byron personnel discovered that Electrical Maintenance surveillances 1/2BHS 4.8.2.1.2.c-1, "125 Volt Battery Bank 18 Month Surveillance," does not include a step for measuring resistance from the terminal connection on the positive post for cell 1 and the terminal connection on the negative post for cell 58. The surveillance was written for Technical Specification surveillance requirements 4.8.2.1.2.c.1), 2), and 3). These surveillance requirements are for the 125 volt DC [EJ] sources.

The error was discovered when a system engineer was reviewing past surveillances to find out what the previous resistance measurements were for the terminal connections.

The surveillance requirement 4.8.2.1.2.c.3) says that at least once per 18 months each 125-volt battery bank and its associated charger shall be demonstrated OPERABLE by verifying that:

"3) The resistance of each cell-to-cell and terminal connections is less than or equal to 150 E(-6) ohm."

The surveillance measures all cell-to-cell and terminal connections except for the terminal connection on the positive post for cell 1 and the negative post for cell 58. This omission exists in both the Unit 1 and Unit 2 surveillances. A review of the previous revisions to the surveillances indicates that this has always been the case.

Station personnel also discovered that surveillances:

- 1BVS 8.2.1.2.d-1, "Unit 1 125 Volt Battery Bank 111 Service Test,"
- 1BVS 8.2.1.2.d-2, "Unit 1 125 Volt Battery Bank 112 Service Test,"
- 2BVS 8.2.1.2.d-1, "Unit 2 125 Volt Battery Bank 211 Service Test," and
- 2BVS 8.2.1.2.d-2, "Unit 2 125 Volt Battery Bank 212 Service Test,"

measure resistance for terminal connections at cells 1 and 58 mentioned above. But the surveillances do not have any acceptance criteria for the resistance measurements. Resistance measurements were added to the Unit 1 surveillance in revision 6 dated March 2, 1988 and to the Unit 2 surveillance in revision 2 dated December 28, 1987. So from initial plant startup until these dates, resistance measurements for terminal connections on the positive post for cell 1 and the negative post for cell 58 are missing.

This event is reportable pursuant to the requirements of 10CFR 50.73(a)(2)(i)(B) as operation prohibited by Technical Specifications.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME BYRON NUCLEAR POWER STATION	DOCKET NUMBER 0 5 0 0 0 4 5 4	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="3">LER NUMBER</th> <th colspan="2">PAGE</th> </tr> <tr> <th>YEAR</th> <th>SEQ. NUMBER</th> <th>REVISION</th> <th></th> <th></th> </tr> <tr> <td>9 5</td> <td>0 0 4</td> <td>0 0</td> <td>0 3</td> <td>OF 0 4</td> </tr> </table>	LER NUMBER			PAGE		YEAR	SEQ. NUMBER	REVISION			9 5	0 0 4	0 0	0 3	OF 0 4
LER NUMBER			PAGE														
YEAR	SEQ. NUMBER	REVISION															
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TEXT Energy Industry Identification System (EIS) codes are identified in the text as (XX)

C. CAUSE OF EVENT:

The cause of the surveillance deficiencies in Electrical Maintenance surveillances 1/2BHS 8.2.1.2.c-1, "125 Volt Battery Bank 18 Month Surveillance," could not be determined. The original surveillance BHS 8.2.1.2.c-1 which was not unit specific had this error and it was written over twelve years ago.

The original pre-operational test and subsequent special tests were reviewed to find out when and why the resistance measurements were missing. But that review was inconclusive.

D. SAFETY ANALYSIS:

A high resistance connection can have two possible affects on battery performance. First, the connection could heat to the point where the connection becomes even more degraded and limits the conduction of electrical current. Second, high resistance could introduce additional voltage drop in the battery. This voltage drop could cause the overall voltage of the battery to be lowered to the point where it can no longer supply sufficient voltage to the connected loads.

Surveillances 1/2BVS 8.2.1.2.d-1/2 (a total of four surveillances) measures the battery's ability to meet its design function.

Surveillances 1/2BVS 8.2.1.2.d-1/2, step F.1.8.1.3 states, "Monitor every intercell connection with resistance reading above 150 micro ohms for high temperature during the test. At the end of the test notify Electrical Maintenance of those intercell resistance readings above 150 micro ohms." This ensures that any degraded connection is monitored for heat related damage and ensures that the connection is repaired.

There has been at least one case where the resistance measured for a terminal connection to bus was greater than 150 X E(-6) ohm. In March of 1995, System Engineering Department (SED) completed surveillance 2BVS 8.2.1.2.d-2 for the Unit 2, 212 battery bank. During performance of the surveillance, the resistance for the terminal connection on cell 1 to the positive bus was measured at 184 E(-6) ohm. The surveillance requires the user to monitor the temperature of any connection with a resistance reading above 150 E(-6) ohm during the service test. This was done and no unusual measurements were noted.

SED completed the surveillance and all acceptance criteria were met. So this increase in resistance did not affect the ability of the battery to perform its design function. Also SED reported the high resistance value to Electrical Maintenance Department. They later cleaned this connection as part of a work request. But they did not remeasure the resistance prior to entering Mode 4. So this parameter could have been out of specification at that time. 2BVS 8.2.1.2.d-2 is done in Modes 5 or 6 when Technical Specifications do not require the batteries to be operable.

A search into the previously executed battery service tests showed that all previous service tests performed on 111, 112, 211 and 212 batteries passed the functional test. This is a discharge test using the design duty cycle.

A battery performance test (1/2BVS 8.2.1.2.e-1/2) may be performed in lieu of the service test when performed on the five year frequency. A review was also performed on previously executed performance tests and it showed that all results were acceptable and there was no unusual battery terminal degradation.

In conclusion, batteries 111, 112, 211, and 212 were always capable of performing their design function. This conclusion is based on the 18 Month Battery Service Test results and the 5 year Battery Performance test results.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME	DOCKET NUMBER	LER NUMBER			PAGE		
BYRON NUCLEAR POWER STATION		YEAR	SEQ. NUMBER	REVISION			
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		9	5	-	0	0	4
				-	0	0	
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TEXT Energy Industry Identification System (EIS) codes are identified in the text as [XX]

E. CORRECTIVE ACTIONS:

1. The Electrical Maintenance surveillances will be revised to add resistance measurements for the terminal connections at cells 1 and 58 to the bus bars. NTS item 454-180-95-0004-01 will track this action.
2. All battery surveillances will be reviewed and revised, if needed, to measure resistance for the terminal connection on the first and last cell to the positive and negative busses. NTS item 454-180-95-0004-02 will track this action.

F. PREVIOUS OCCURRENCES:

a). Event Search (PIR, LER)

There were several events that documented procedural problems for 1/2BHS 8.2.1.2.b-1, "125 Volt Battery Bank Quarterly Surveillance." To address these concerns procedural enhancements were made. No events documenting procedural problems for 1/2BHS 8.2.1.2.c-1 were found.

b). Industry Search (OPEX's, NPRDS)

No applicable industry events were found.

c). NWR

There are numerous work requests written for the 125 VDC batteries. Some of the work requests document high resistance readings for cell-to-cell connections. The corrective maintenance for these work requests generally involved cleaning the connections.

G. COMPONENT FAILURE DATA:

Not Applicable