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April 18, 1994
ND3MNO:3563

Beaver Valley Power Station, Unit No. 1
Docket No. 50-334, Licensee No. DPR-66
LER 94-002-00

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Gentlemen:

In accordance with Appendix A, Beaver Valley Technical Specifications, the following Licensee Event Report is submitted:

LER 94-002-00, 10 CFR 50.73.a.2.v.D, "Inoperable Diesel Generator Due to Inadequate Electrical Separation in Control Circuit."

L. R. Freeland
General Manager
Nuclear Operations

GFZ/ke

Attachment

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PDR ADOCK 05000334
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cc: Mr. T. T. Martin, Regional Administrator
United States Nuclear Regulatory Commission
Region 1
475 Allendale Road
King of Prussia, PA 19406

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United States Nuclear Regulatory Commission
Washington, DC 20555

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Director, Safety Evaluation & Control
Virginia Electric & Power Co.
P.O. Box 26666
One James River Plaza
Richmond, VA 23261

LICENSEE EVENT REPORT (LER)

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (JMNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

Beaver Valley Power Station Unit 1

DOCKET NUMBER (2)

05000 3 3 4

PAGE (3)

1 OF 03

TITLE (4)

Inoperable Diesel Generator Due to Inadequate Electrical Separation in Control Circuit

EVENT DATE (5)			LER NUMBER (6)			REPORT NUMBER (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
03	18	94	94	002	00	04	18	94	N/A	05000
									FACILITY NAME	DOCKET NUMBER
										05000

OPERATING MODE (9) 1

POWER LEVEL (10) 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)

20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
20.405(a)(1)(i)	50.36(c)(1)	X 50.73(a)(2)(v)	73.71(c)
20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER
20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	Specify in Abstract Below and in Text, NRC Form 366A
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 (12)

NAME

L. R. Freeland, General Manager Nuclear Operations

TELEPHONE NUMBER (include Area Code)

4 1 2 6 4 3 - 1 2 5 8

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRRDS
B	EK	XXXX	XXXX	N					

SUPPLEMENTAL REPORT EXPECTED (14)

EXPECTED
SUBMISSION
DATE (15)

MONTH DAY YEAR

YES

(If yes, complete EXPECTED SUBMISSION DATE)

X

NO

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On March 18, 1994, during review of a Duquesne Light Company Engineering Memorandum, a deficiency involving inadequate electrical separation in the No. 1 Emergency Diesel Generator governor and engine control circuit was identified. The deficiency involved the use of a non-safety related relay in a safety related system. A Westinghouse Model KLF Relay, used to provide diesel generator protection in the event of a loss of field, was found to be powered from the safety related 125 volt DC (VDC) system which supplies power to the No. 1 Emergency Diesel Generator governor and engine control circuit. A failure of the KLF Relay is postulated to cause a loss of the safety related 125 VDC system powering the governor and engine control circuit, and a loss of the field flash contactor. This condition has existed since original plant construction. The knife switch which provides the circuit connections to the KLF relay has been opened under administrative control. Administrative procedural controls will re-instate the KLF Relay protection during diesel generator surveillance testing, and re-isolate the relay when testing is completed. There were minimal safety implications as a result of this event. A KLF Relay failure capable of generating enough short circuit current (20 amperes) to disable the start circuit by tripping its supply breaker is improbable due to the physical design of the relay.

REQUIRED NUMBER OF DIGITS/CHARACTERS
FOR EACH BLOCK

BLOCK NUMBER	NUMBER OF DIGITS/CHARACTERS	TITLE
1	UP TO 46	FACILITY NAME
2	8 TOTAL 3 IN ADDITION TO 05000	DOCKET NUMBER
3	VARIES	PAGE NUMBER
4	UP TO 76	TITLE
5	6 TOTAL 2 PER BLOCK	EVENT DATE
6	7 TOTAL 2 FOR YEAR 3 FOR SEQUENTIAL NUMBER 2 FOR REVISION NUMBER	LER NUMBER
7	6 TOTAL 2 PER BLOCK	REPORT DATE
8	UP TO 18 -- FACILITY NAME 8 TOTAL -- DOCKET NUMBER 3 IN ADDITION TO 05000	OTHER FACILITIES INVOLVED
9	1	OPERATING MODE
10	3	POWER LEVEL
11	1 CHECK BOX THAT APPLIES	REQUIREMENTS OF 10 CFR
12	UP TO 50 FOR NAME 14 FOR TELEPHONE	LICENSEE CONTACT
13	CAUSE VARIES 2 FOR SYSTEM 4 FOR COMPONENT 4 FOR MANUFACTURER NPRDS VARIES	EACH COMPONENT FAILURE
14	1 CHECK BOX THAT APPLIES	SUPPLEMENTAL REPORT EXPECTED
15	6 TOTAL 2 PER BLOCK	EXPECTED SUBMISSION DATE

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)		DOCKET NUMBER (2)		LER NUMBER (4)			PAGE (3)
Beaver Valley Power Station Unit 1		05000 3 3 4		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	OF 02 03
				9 4	- 0 0 2 -	0 0	

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

DESCRIPTION OF THE EVENT

On March 18, 1994, during review of a Duquesne Light Company Engineering Memorandum, a deficiency involving inadequate physical separation in the No. 1 Emergency Diesel Generator governor and engine control circuit was identified. This deficiency involved the use of a non-safety related relay in a safety related application. A Westinghouse Model KLF Relay, used to provide diesel generator protection in the event of a loss of field, was found to be powered from the safety related 125 volt DC (VDC) system which supplies power to the No. 1 Emergency Diesel Generator governor and engine control circuit. This relay senses the applied voltage to the diesel generator field and will initiate a trip signal for the diesel generator only during testing, if the applied voltage is less than the setpoint value. The trip signal is automatically disabled during diesel generator emergency operation. A failure of the KLF Relay is postulated to cause a loss of the safety related 125 VDC system and disabling of the diesel generator field flash contactor. The No.2 Emergency Diesel Generator is not affected by this design because the control circuit was previously modified to conform with 10 CFR 50 Appendix "R", and the KLF relay was electrically isolated from the 125VDC system powering the No. 2 Emergency Diesel Generator control circuit.

CAUSE OF THE EVENT

The cause for this event was an original design deficiency. The No.1 Emergency Diesel Generator governor and engine control circuit does not meet electrical separation requirements.

CORRECTIVE ACTIONS

The following corrective actions have been take as a result of this event:

1. The knife switch which provides the circuit connections for the KLF relay has been opened under administrative control. The knife switch will remain open to ensure No. 1 Emergency Diesel Generator reliability during Loss Of Offsite Power, and Safety Injection conditions. Administrative procedural controls have been generated to re-instate the KLF Relay protection during diesel generator surveillance testing and to re-isolate the relay the relay following testing.
2. A modification will be initiated to either install isolation between the KLF Relay and the 125 VDC power system or install a qualified relay.
3. The No. 2 Emergency Diesel Generator control circuit was reviewed and found to be unaffected by this circuit design, as it was previously modified to conform with 10 CFR 50 Appendix "R".

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Beaver Valley Power Station Unit 1	05000 3 3 4	9 4	- 0 0 2 -	0 0	03 OF 03

TEXT (If more space is required, use additional copies of NRC Form 365A) (17)

REPORTABILITY

This written report is being submitted in accordance with 10CFR50.73 a.2.v.D, as an event or condition that alone could have prevented the fulfillment of the safety function of one train of a system that is needed to mitigate the consequences of an accident.

SAFETY IMPLICATIONS

There were minimal safety implications as a result of this event. During periods of planned maintenance on the unaffected No. 2 Emergency Diesel Generator, there existed a low probability of a KLF Relay failure which would cause a loss of the No. 1 Emergency Diesel Generator. This failure would require a short circuit of sufficient magnitude to cause the 20-ampere 125 VDC power circuit breaker to trip in order to disable the No. 1 Emergency Diesel Generator governor and engine control circuit. The No. 2 Emergency Diesel Generator control circuit was unaffected.

PREVIOUS OCCURRENCES

This is the first reported occurrence involving an electrical separation or component qualification deficiency in the Unit 1 Emergency Diesel Generator Governor and Engine Control Circuits.

DIESEL GENERATOR RELIABILITY

The following is a summary of the past 20, 50 and 100 start and load demands for the Unit 1 emergency diesel generators, trended in accordance with NUMARC 87-00 Rev. 1, Appendix D (Data as of March 31, 1993):

Unit 1

	<u>Start Failures</u>	<u>Load Failures</u>	<u>Total</u>	<u>Trigger</u>
Past 20 Site Demands	0/20	0/20	0/20	3/20
Past 50 Site Demands	0/50	0/50	0/50	4/50
Past 100 Site Demands	0/100	0/100	0/100	5/100
EDG 1-1 Past 25 Demands	0/25	0/25	0/25	4/25
EDG 1-2 Past 25 Demands	0/25	0/25	0/25	4/25