

# ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:8812140232 DOC.DATE: 88/12/05 NOTARIZED: NO DOCKET #  
 FACIL:50-331 Duane Arnold Energy Center, Iowa Electric Light & Pow 05000331  
 AUTH.NAME AUTHOR AFFILIATION  
 AXLINE,J.S. Iowa Electric Light & Power Co.  
 HANNEN,R.L. Iowa Electric Light & Power Co.  
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 88-017-00:on 881106,Group III isolation occurred due to  
 RPS motor-generator relay failure.W/881205 ltr.

W/8 ltr.

DISTRIBUTION CODE: IE22D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 4  
 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

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HALL,J.R.	1 1		
INTERNAL: ACRS MICHELSON	1 1	ACRS MOELLER	2 2
ACRS WYLIE	1 1	AEOD/DOA	1 1
AEOD/DSP/TPAB	1 1	AEOD/ROAB/DSP	1 1
ARM/DCTS/DAB	1 1	DEDRO	1 1
NRR/DEST/ADS 7E	1 0	NRR/DEST/CEB 8H	1 1
NRR/DEST/ESB 8D	1 1	NRR/DEST/ICSB 7	1 1
NRR/DEST/MEB 9H	1 1	NRR/DEST/MTB 9H	1 1
NRR/DEST/PSB 8D	1 1	NRR/DEST/RSB 8E	1 1
NRR/DEST/SGB 8D	1 1	NRR/DLPQ/HFB 10	1 1
NRR/DLPQ/QAB 10	1 1	NRR/DOEA/EAB 11	1 1
NRR/DREP/RAB 10	1 1	NRR/DREP/RPB 10	2 2
NRR/DRIS/SIB 9A	1 1	NUDOCS-ABSTRACT	1 1
REG FILE 02	1 1	RES/DSIR/EIB	1 1
RES/DSR/PRAB	1 1	RGN3 FILE 01	1 1
EXTERNAL: EG&G WILLIAMS,S	4 4	FORD BLDG HOY,A	1 1
H ST LOBBY WARD	1 1	LPDR	1 1
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*AP*  
*2/2/89*

**LICENSEE EVENT REPORT (LER)**

APPROVED OMB NO. 3185-0188  
EXPIRES 8/31/88

FACILITY NAME (1)										DOCKET NUMBER (2)				PAGE (3)	
Duane Arnold Energy Center (DAEC)										0 5 0 0 0 3 3 1				1 OF 0 3	
TITLE (4)															

<u>1/2 Group III Isolation Due to Reactor Protection System Motor-Generator Relay Failure</u>					
<u>EVENT DATE (E)</u>	<u>DESCRIPTION</u>	<u>INITIATION</u>	<u>CAUSE</u>	<u>EFFECTS</u>	<u>CORRECTIVE ACTION</u>
08/19/78	Reactor protection system motor-generator relay failure.	Operator initiated reactor shutdown.	Motor-generator relay failure.	Reactor shutdown.	Relay replaced.

EVENT DATE (E)										LER NUMBER (L)				REPORT DATE (R)				OTHER FACILITIES INVOLVED (O)														
MONTH			DAY			YEAR				SEQUENTIAL NUMBER		REVISION NUMBER		MONTH		DAY		YEAR				FACILITY NAME					DOCKET NUMBER(S)					
																		None										0 5 0 0 0				
1	1	0	6	8	8	8	8	8	8	0	1	7	0	0	1	2	0	5	8	8						0 5 0 0 0						

OPERATING MODE (9)		N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following: (11))									
POWER LEVEL (10)	0 0 0		20.402(b)		20.405(e)	XX	60.734a)(2)(iv)		73.71(b)			
			20.405(e)(1)(i)		60.36(a)(1)		60.734a)(2)(v)		73.71(d)			
			20.402(a)(1)(ii)		60.36(a)(3)		60.734a)(2)(vi)		OTHER (Specify in Abstract below and in Test NRC Form 365A)			
			20.405(e)(1)(iii)		60.734a)(2)(i)		60.734a)(2)(vii)(A)					
			20.405(e)(1)(iv)		60.734a)(2)(ii)		60.734a)(2)(vii)(B)					
	20.405(e)(1)(v)		60.734a)(2)(iii)		20.734a)(2)(ii)							

NAME		LICENSEE CONTACT FOR THIS LER (12)	
Jeff S. Axline, Technical Support Engineer		TELEPHONE NUMBER	
		AREA CODE	
		3   1   9	8   5   1   -   7   6   0   0

[illegible]

SUPPLEMENTAL REPORT EXPECTED DATE		EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
YES (if yes complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO				

ABSTRACT Limit to 600 words or approximately fifteen single-space typewritten lines (16)

On November 6, 1988 at 1720 hours the plant was shutdown for the Cycle 9/10 refuel outage when a Primary Containment Isolation System (PCIS) half Group III ("B" side) isolation was received. Investigation of the trip revealed that it had occurred due to a trip of the "B" Reactor Protection System (RPS) motor-generator (MG) set.

The cause for the RPS MG set trip was failure of a normally energized relay (General Electric CR120A) in the MG set control circuitry. The cause of the relay failure was its contact retainer. This retainer was of a type susceptible to ignition from the heat produced by the relay. The day before the relay failure the MG set was load tested under various load conditions. It is suspected that additional ambient heat produced under high load conditions may have contributed to the relay failure.

ImmEDIATE corrective actions following the trip of the MG set were to switch the "B" RPS bus to the alternate power supply and verify automatic functions for the Group III isolation. Following verification, the Group III isolation was reset. To repair the MG set, a new relay with a contact retainer which is not susceptible to ignition from relay heat was installed.

This event had no effect on the safe operation of the plant.

8812140232 881205  
PDR ADOCK 05000331  
S PNU

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104  
EXPIRES: 8/31/88

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER(6)			PAGE(3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
Duane Arnold Energy Center	05000331	88	017	00	2	OF 3

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

## I. DESCRIPTION OF EVENT:

On November 6, 1988 at 1720 hours the plant was shutdown for the Cycle 9/10 refuel outage when a Primary Containment Isolation System (PCIS) (EIIS System Code JM) half Group III ("B" side) isolation was received. Investigation of the trip revealed that it had occurred due to a trip of the "B" Reactor Protection System (RPS) (EIIS System Code JC) motor-generator (MG) set (JC-MG, DAEC 1G-61).

## II. CAUSE OF EVENT:

The cause for the RPS MG set trip was failure of a normally energized relay (JC-RLY, General Electric CR120A) in the MG set control circuitry. A visual inspection of the relay indicated that portions of it were burnt and non-functional causing the contacts which are closed while the relay is energized, to open. Once the contacts were open, the MG set shutdown. The cause of the relay failure was its contact retainer. This retainer was of a type susceptible to ignition from the heat produced by the relay. The day before the relay failure the MG set was load tested under various load conditions. It is suspected that additional ambient heat produced under high load conditions may have contributed to the relay failure.

## III. ANALYSIS OF EVENT:

Following the trip of the MG set, the "B" RPS bus was re-powered by the alternate power supply. Loss of the RPS bus power supply does not cause the loss of a safety function, however many circuits powered by the RPS bus default to actuation of a safety function on loss of power. As many systems were tagged out for maintenance at the time of the trip, only the Group III "B" side components isolated. The Group III components functioned as designed. This event had no effect on the safe operation of the plant, nor would it have an effect on safe operation during any other plant conditions.

## IV. CORRECTIVE ACTIONS:

Immediate corrective actions following the trip of the MG set were to switch the "B" RPS bus to the alternate power supply and verify automatic functions for the Group III isolation. Following verification, the Group III isolation was reset.

A new CR120A relay with a contact retainer which is not susceptible to ignition from relay heat was installed. The same relay on the "A" RPS MG set was inspected and found to have the non-flammable retainer clip already installed (See Additional Information).

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104  
EXPIRES: 8/31/88

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER(6)			PAGE(3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
Duane Arnold Energy Center	05000331	88	- 017	- 00	3	OF 3

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

The problem associated with CR120A relay retainer clips being flammable was identified in GE SIL #229. In response to this SIL the DAEC identified where these relays were used in plant circuitry and replaced the retaining clips with an updated (non-flammable) version. The search for applicable relays failed to find those in the MG set voltage regulator due to the fact that the regulator was supplied as a complete unit without internal component types being distinctly specified.

Since the above search failed to identify the RPS MG set CR120A relays, an inspection of both RPS MG set control cabinets was performed. This inspection verified that there were no other normally energized CR120A relays in use in the MG set control circuitry. On this basis this event is considered to be an isolated occurrence and replacement of the affected relay with a new updated CR120A relay is considered adequate to prevent recurrence. To ensure that any new CR120A relays received are equipped with non-flammable retainer clips before installation, the part number database will be updated to note this requirement by December 16, 1988.

V. ADDITIONAL INFORMATION:

A search of plant documentation indicated two similar previous events. In 1983 the 1K relay in the "A" RPS MG set was found burnt following an MG set trip. In 1987 the 1K relay in the "A" RPS MG set was again found burnt. It is assumed that the replacement relay used in 1983 was of the flammable type. The relay installed in 1987 has been identified to be of the non-flammable type. No further problems have occurred with this relay.

This event is being reported pursuant to 10 CFR 50.73(a)(2)(iv).

Iowa Electric Light and Power Company

December 5, 1988  
DAEC-88-0912

Mr. A. Bert Davis  
Regional Administrator  
Region III  
U. S. Nuclear Regulatory Commission  
799 Roosevelt Road  
Glen Ellyn, IL 60137

Subject: Duane Arnold Energy Center  
Docket No: 50-331  
Op. License DPR-49  
Licensee Event Report #88-017


Gentlemen:

In accordance with 10 CFR 50.73 please find attached a copy of the subject Licensee Event Report.

Very truly yours,

 12-5-88  
Rick L. Hannen  
Plant Superintendent - Nuclear

RLH/JSA/go

cc:   
ATTN: Document Control Desk  
Washington, D. C. 20555

NRC Resident Inspector - DAEC

File A-118a

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