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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 88-018-00:on 881018,completion of RPS trip logic due to spurious trip.W/881207 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.

NOTES:

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	PD3-3 LA	1	1	PD3-3 PD	1	1
	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
	NRC PDR	1	1	NSIC HARRIS,J	1	1
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RIDS/ADDS

NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)
Duane Arnold Energy Center (DAEC)

DOCKET NUMBER (2): 0 5 0 0 0 3 3 1 1

PAGE (3): 1 OF 0 3

TITLE (4): Completion of Reactor Protection System Trip Logic Due to Spurious Trip of Electrical Protection Assembly Breaker Concurrent with Surveillance Test

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

OPERATING MODE (9): N

POWER LEVEL (10): 0 0 0

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

20.402(b)	20.405(c)	X 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 Abstract below and in Text, NRC Form 366A)
20.405(a)(1)(iii)	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 (12)

NAME: Jeff S. Axline, Technical Support Engineer

TELEPHONE NUMBER: AREA CODE 3 1 9 8 5 1 - 7 6 0 0

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)

X NO

EXPECTED SUBMISSION DATE (15): MONTH | DAY | YEAR

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

On October 18, 1988 at 1328 hours the plant was shutdown for the Cycle 9/10 refuel outage when a full Reactor Protection System trip and Group I through V isolations were received. Investigation determined that the event occurred due to a trip of a "B" Reactor Protection System (RPS) Motor-Generator (MG) set Electrical Protection Assembly (EPA) breaker concurrent with a surveillance test in progress. It is suspected that a spurious signal within the EPA caused the EPA breaker to trip. Various inspections and load tests indicated no problems with the MG set or EPA breaker.

Following the EPA breaker trip, the "B" RPS bus was repowered by the alternate power supply. Group V (Reactor Water Cleanup) isolation valves and Secondary Containment isolation dampers isolated as a result of the trip. Various other Primary Containment system valves and breakers were out of service for maintenance at the time of the event and the Control Rod Drives were isolated. Primary Containment was not required at the time of the trip. 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.

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NRC Form 366
(9-83)

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER(6)			PAGE(3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Duane Arnold Energy Center	0 5 0 0 0 3 3 1	8 8	- 018	- 00	2 OF 3

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

I. DESCRIPTION OF EVENT:

On October 18, 1988 at 1328 hours the plant was shutdown and defueled for the Cycle 9/10 refuel outage when a full Reactor Protection System trip and Group I through V isolations (EIIS System Code JM) were received. Investigation determined that the event occurred due to a trip of a "B" Reactor Protection System (RPS) (EIIS System Code JC) Motor-Generator (MG) set (JC-MG, DAEC 1G-61) Electrical Protection Assembly (EPA) breaker (JC-BKR, DAEC EPA-B2) concurrent with a surveillance test in progress. The surveillance test had already inserted an "A" side RPS trip.

II. CAUSE OF EVENT:

It is suspected that an isolated spurious signal within the EPA caused the EPA breaker to trip. Various inspections and load tests indicated no problems with the MG set or EPA breaker.

III. ANALYSIS OF EVENT:

Following the EPA breaker trip, the "B" RPS bus was repowered by the alternate power supply. Loss of the RPS bus power supply does not cause the loss of a safety function, however many circuits perform their intended safety function on a loss of power. Group V (Reactor Water Cleanup) isolation valves and Secondary Containment isolation dampers isolated as a result of the trip. Various other Primary Containment system valves and breakers were out of service for maintenance at the time of the event and the Control Rod Drives were isolated. Primary Containment was not required at the time of the trip. 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 EPA breaker were to locally inspect the MG set. Upon inspection it was determined that the B2 EPA breaker was tripped while the B1 EPA breaker was still closed in. (The B1 and B2 EPA breakers are in series between the MG set and the "B" RPS bus). The MG set was still running normally.

Further corrective actions involved the following:

On October 19, 1988 the EPA breaker was visually inspected by electrical maintenance personnel. No problems were found. Following this inspection, the calibration of the EPA breaker was checked. The breaker trip points were slightly out of tolerance but not to the extent that this alone would have caused the trip. The EPA breaker was recalibrated to the appropriate specifications. On October 20, 1988 the voltage regulator cabinet on the MG set was cleaned and inspected. No abnormal conditions were found. The MG set was then load tested with satisfactory results. It was decided at this time

that the MG set would be left out of service until a more extensive load test could be performed. On November 5, 1988 an eight hour load test was performed. Generator output voltage and EPA breaker trip signals were monitored on a strip chart recorder. Throughout the entire test the MG set functioned satisfactorily without any EPA trip functions occurring. On November 6, 1988 the MG set was placed back in service. Approximately one hour after the unit was placed back in service it tripped. Upon investigation it was determined that the MG set as well as the EPA breakers had tripped. This trip was determined to be unrelated to the previous EPA breaker trip. The relay which failed causing the MG set to trip on November 6, 1988 could not have failed in a way which would have caused the EPA breaker to trip while maintaining the MG set in an operating condition as it was found after the EPA trip on October 18, 1988. (See LER 88-017 for further discussion of the November 6, 1988 MG set trip).

As inspections and testing of the MG set and EPA breaker did not indicate any problems with the equipment, no further corrective actions are planned at this time. To provide additional information in the event that a spurious trip of this type occurs in the future, a method to seal in the tripping parameter (overvoltage, undervoltage, underfrequency) will be determined by June 1, 1989 with implementation thereafter.

V. ADDITIONAL INFORMATION:

A search of plant documentation indicated two previous occurrences of RPS EPA breaker spurious trips. Both events occurred in 1983 and involved tripping of the alternate power supply EPA breakers. Exact causes for these trips were not determined, however it is very likely that a fluctuation in bus voltage to the alternate power supply was the cause. This is not a likely cause in the current event due to the fact that the MG set flywheel buffers the RPS bus from fluctuations in bus voltage supplying the motor of the MG set.

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

Iowa Electric Light and Power Company

December 7, 1988
DAEC-88-0910

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 #88-018

Gentlemen:

In accordance with 10 CFR 50.73 please find attached a copy of the subject Licensee Event Report. This report was not submitted as required by 10 CFR 50.73 on November 17, 1988 (30 day requirement). The late reporting resulted from a misdiagnosis of the reportability of the event. Subsequent review identified the need to report the Primary Containment isolation portion of the event as an ESF actuation.

Very truly yours,

Rick Hannen 12-7-88

Rick L. Hannen
Plant Superintendent - Nuclear

RLH/JSA/go

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

NRC Resident Inspector - DAEC

File A-118a

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