

# REGULATOR INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8705210117 DOC. DATE: 87/05/09 NOTARIZED: NO DOCKET #  
 FACIL: 50-331 Duane Arnold Energy Center, Iowa Electric Light & Pow 05000331  
 AUTH. NAME AUTHOR AFFILIATION  
 PROBST, J. R. Iowa Electric Light & Power Co.  
 MINECK, D. L. Iowa Electric Light & Power Co.  
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 87-010-00: on 870409, w/all fuel removed from vessel, half  
 of primary containment isolation sys Group III isolation  
 valves closed due to de-energization of 4,160-volt ac bus.  
 Caused by inadequate prework review by engineer. w/870509 ltr

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

## NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL
	PD3-1 LA	1 1	PD3-1 PD	1 1
	CAPPUCCI, A	1 1		
INTERNAL:	ACRS MICHELSON	1 1	ACRS MOELLER	2 2
	AEOD/DOA	1 1	AEOD/DSP/ROAB	2 2
	AEOD/DSP/TPAB	1 1	DEDRO	1 1
	NRR/DEST/ADE	1 0	NRR/DEST/ADS	1 0
	NRR/DEST/CEB	1 1	NRR/DEST/ELB	1 1
	NRR/DEST/ICSB	1 1	NRR/DEST/MEB	1 1
	NRR/DEST/MTB	1 1	NRR/DEST/PSB	1 1
	NRR/DEST/RSB	1 1	NRR/DEST/SGB	1 1
	NRR/DLPQ/HFB	1 1	NRR/DLPQ/QAB	1 1
	NRR/DOEA/EAB	1 1	NRR/DREP/EPB	1 1
	NRR/DREP/RAB	1 1	NRR/DREP/RPB	2 2
	NRR/PMAS/ILRB	1 1	NRR/PMAS/PTSB	1 1
	REG FILE 02	1 1	RES DEPY GI	1 1
	RGNS FILE 01	1 1		
EXTERNAL:	EG&G GROH, M	5 5	H ST LOBBY WARD	1 1
	LPDR	1 1	NRC PDR	1 1
	NSIC HARRIS, J	1 1	NSIC MAYS, G	1 1

TOTAL NUMBER OF COPIES REQUIRED: LTTR 43 ENCL 41

## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Duane Arnold Energy Center (DAEC)	DOCKET NUMBER (2) 0 5 0 0 0 3 3 1	PAGE (3) 1 OF 0 3
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## Primary Containment Isolation System Group III Isolation Due to Personnel Error

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)
0 4	0 9	8 7	8 7	0 1 0	0 0	0 5	0 9	8 7	None		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)										
	20.402(b)			20.405(c)			<input checked="" type="checkbox"/> 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 James R. Probst, Technical Support Engineer								TELEPHONE NUMBER 3 1 9 8 5 1 - 7 3 0 8			

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)											
CAUSE	SYSTEM	COMPONENT	MANUFAC- TURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFAC- TURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)								EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR
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) (16)

On April 9, 1987, with all fuel removed from the vessel, closure of half of the Primary Containment Isolation System Group III isolation valves occurred due to the inadvertent de-energization of an essential 4160 VAC bus. This occurred during design change package work on the degraded voltage detection circuit for the bus. An inadequate pre-work review of the effect of removing power supply fuses to this circuit by the Construction Engineer resulted in a trip of the bus feeder breaker on degraded voltage. The root cause of this event was personnel error. The Construction Engineer was informed of the need for complete and accurate review of the effect of work items, as dictated by plant procedures. Loss of power to half of the Group III logic resulted in the isolation. Other Engineered Safety Features designed to initiate were out of service for maintenance at the time of the event and were not challenged.

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## 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 (DAEC)	05000331	87	010	00	02	OF	03

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

On April 9, 1987, with all fuel removed from the vessel, an essential 4160 VAC bus was inadvertently de-energized during design change work. There are two 4160 VAC Essential Buses (EIIS System Code EA) at the Duane Arnold Energy Center. The loss of one of these, bus 1A4 (EA-BU-1A004), resulted in closure of half of the Primary Containment Isolation System Group III isolation valves due to loss of power to half of this group's logic. Other Engineered Safety Features were out of service and therefore not challenged. A Group III isolation (EIIS Code JM) is provided in the event of a loss of power to minimize the possibility of untreated releases via the Reactor Building exhaust.

A design change package undertaken during this refueling outage adds backup fuses to the control circuits of equipment used for plant shutdown outside of the Control Room. The addition of backup fuses will ensure that the reactor can be brought to cold shutdown without replacement of control fuses blown by a postulated fire in the main control room panels. As part of this work, the removal of the fuses for the essential 4160 VAC bus 1A4 degraded voltage detection circuit was required. In determining the effect upon the plant of this action, a contract Construction Engineer failed to note that de-energization of a normally energized relay within this circuit would result in a degraded voltage signal being received by the essential bus feeder breakers (via contacts of the relay). Upon receipt of such a signal, the feeder breakers from offsite sources are designed to trip open. Based upon the Construction Engineer's description of the effect of the fuse removal, the pulling of the fuses was approved for work.

The intermediate cause of the half Group III isolation was a trip of this group's normally energized logic due to loss of power. The root cause was personnel error. The Construction Engineer failed to note the specific effects on plant components and systems of pulling the fuses. Per plant procedure, these effects must be included on the evaluation form used when planning the work. As part of the procedural process independent verification of the plant's response to the proposed work may be requested by the party which performed the initial review or the Operations Shift Supervisor responsible for approving the work. This was waived, as the removal of the fuses appeared straight-forward with no apparent risk with the plant in shutdown. The Construction Engineer was informed of the need for complete and accurate review of the effect of changes, such as pulling fuses, to plant systems. The importance of adequate review of such items regardless of plant mode has been emphasized to Operations personnel.

When the fuses were pulled at 0846 hours on April 9, 1987, the 4160 VAC breaker supplying offsite power to essential bus 1A4 tripped as per design. The alternate offsite power source breaker for bus 1A4 was out of service for outage related activities. The Emergency Diesel Generator supplying power to the bus in the event of a degraded voltage condition was disassembled for maintenance and therefore did not start. The cause of the loss of power to 1A4 was determined soon after the event occurred. The bus was re-energized at 0912 hours the same day.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104  
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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Duane Arnold Energy Center (DAEC)	05000331	87	010	00	03	OF	03

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

Essential bus 1A4 was inadvertently de-energized during the 1980 refueling outage due to an electrician's error while changing out a battery cell (LER 80-014). During the 1985 refueling outage, 1A4 was inadvertently de-energized when its supply feeder breaker was bumped by a worker coming to the aid of an injured co-worker (LER 85-020). It is unlikely the design change activities that caused the loss of an essential bus on April 9, 1987 would be performed when at power. Loss of an essential bus at power results in an operational transient and actuation of numerous Engineered Safety Features, including initiation of a Standby Diesel Generator (EIIS System Code EK). This event is being reported in accordance with 10 CFR 50.73(a)(2)(iv) as an unexpected automatic actuation of an Engineered Safety Feature.

Iowa Electric Light and Power Company

May 9, 1987  
DAEC-87-0506

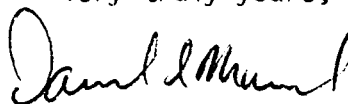
U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D. C. 20555

Subject: Duane Arnold Energy Center  
Docket No. 50-331  
Op. License DPR-49  
Licensee Event Report No. 87-010

Gentlemen:

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

Very truly yours,



Daniel L. Mineck  
Plant Superintendent - Nuclear

DLM/JRP/go

Attachment - LER 87-010

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

NRC Resident Inspector - DAEC

File A-118a

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