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ACCESSION NBR: 9010310238 DOC. DATE: 90/10/17 NOTARIZED: NO DOCKET #
 FACIL: 50-331 Duane Arnold Energy Center, Iowa Electric Light & Pow 05000331
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 SMITH, B.K. Iowa Electric Light & Power Co.
 HANNEN, R.L. Iowa Electric Light & Power Co.
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 90-017-00: on 900920, RWCU sys isolation & standby filter unit initiation due to inadvertent loss of B instrument.

DISTRIBUTION CODE: IE22T COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 4
 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:

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	AEOD/DOA	1 1	AEOD/DSP/TPAB	1 1
	AEOD/ROAB/DSP	2 2	NRR/DET/ECMB 9H	1 1
	NRR/DET/EMEB 7E	1 1	NRR/DLPQ/LHFB11	1 1
	NRR/DLPQ/LPEB10	1 1	NRR/DREP/PRPB11	2 2
	NRR/DST/SELB 8D	1 1	NRR/DST/SICB 7E	1 1
	NRR/DST/SPLB8D1	1 1	NRR/DST/SRXB 8E	1 1
	REG FILE 023	1 1	RES/DSIR/EIB	1 1
	RGN3 FILE 01	1 1		
EXTERNAL:	EG&G BRYCE, J.H	3 3	L ST LOBBY WARD	1 1
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R I D S / A D S

DCD

Iowa Electric Light and Power Company

October 17, 1990

DAEC-90-0874

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 #90-017

Gentlemen:

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

Very truly yours,



Rick L. Hannen
Plant Superintendent - Nuclear

RLH/BKS/sjo

cc: Director of Nuclear Reactor Regulation
Document Control Desk
U.S. Nuclear Regulatory Commission
Mail Station P1-137
Washington, D. C. 20555

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File A-118a

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LICENSEE EVENT REPORT (LER)

EXPIRES: 4/30/92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 90 MINS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-536) U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20540, AND TO THE PAPERWORK REDUCTION PROJECT (3190-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503

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

TITLE (4) **Reactor Water Cleanup System Isolation and Standby Filter Unit Initiation Due to Inadvertent Loss of the 'B' Instrument AC System Bus**

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 NAME		DOCKET NUMBER(S)		
09	20	90	90	017	00	10	17	90	None		0 5 0 0 0		
												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)	<input type="checkbox"/>	20.408(a)	<input checked="" type="checkbox"/>	60.73(a)(2)(iv)	<input type="checkbox"/>	72.71(b)	<input type="checkbox"/>
20.408(a)(1)(i)	<input type="checkbox"/>	60.38(a)(1)	<input type="checkbox"/>	60.73(a)(2)(v)	<input type="checkbox"/>	72.71(a)	<input type="checkbox"/>
20.408(a)(1)(ii)	<input type="checkbox"/>	60.38(a)(2)	<input type="checkbox"/>	60.73(a)(2)(vi)	<input type="checkbox"/>	OTHER (Specify in Abstract below and in Text, NRC Form 356A)	
20.408(a)(1)(iii)	<input type="checkbox"/>	60.73(a)(2)(i)	<input type="checkbox"/>	60.73(a)(2)(vii)(A)	<input type="checkbox"/>		
20.408(a)(1)(iv)	<input type="checkbox"/>	60.73(a)(2)(ii)	<input type="checkbox"/>	60.73(a)(2)(vii)(B)	<input type="checkbox"/>		
20.408(a)(1)(v)	<input type="checkbox"/>	60.73(a)(2)(iii)	<input type="checkbox"/>	60.73(a)(2)(viii)	<input type="checkbox"/>		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
Brian K. Smith, Technical Support Specialist	3 1 9 8 5 1 - 7 4 5 6

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

CAUSE	SYSTEM	COMPONENT	MANUFAC TURE	REPORTABLE TO NPROS	CAUSE	SYSTEM	COMPONENT	MANUFAC TURE	REPORTABLE TO NPROS
A	E	D I N V T E	2 0 9	N					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

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

On September 20, 1990, with the plant shutdown, power was lost to the 'B' Instrument AC System bus. This resulted in a Primary Containment Isolation System Group V isolation of the Reactor Water Cleanup System and also initiated operation of the 'B' Control Building Ventilation Standby Filter Unit. The loss of the bus was due to the 'B' Instrument AC inverter transfer override switch inadvertently selected to prevent the auto-transfer of bus load to the standby 'B' Instrument AC regulating transformer. The root cause for the override of the auto-transfer is unknown. Actions were taken to restore the affected systems. Subsequent corrective action removed the transfer override switch to prevent recurrence of this event.

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

EXPIRES: 4/30/92.

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503

FACILITY NAME (1) Duane Arnold Energy Center	DOCKET NUMBER (2) 0 5 0 0 0 3 3 1	LER NUMBER(S)			PAGE(S)	
		YEAR 9 0	SEQUENTIAL NUMBER - 017	REVISION NUMBER - 00	2	OF 3

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

I. DESCRIPTION OF EVENT:

On September 20, 1990, with the plant shutdown, power was lost to the 'B' Instrument AC System (EIIS System Code ED) bus. This resulted in a Primary Containment Isolation System (PCIS, EIIS System Code JM) Group V isolation of the Reactor Water Cleanup System (RWCU, EIIS System Code CE). Also, operation of the 'B' Control Building Ventilation Standby Filter Unit (SFU, EIIS System Code VI) was initiated.

II. CAUSE OF EVENT

Investigation into the event revealed that the loss of the 'B' Instrument AC bus was due to a failure of the 'B' Instrument AC inverter to auto-transfer bus load to the standby 'B' Instrument AC regulating transformer coupled with a blown fuse in the inverter. These resulted in the loss of power to the bus.

During normal operation, each Instrument AC System bus is supplied power from an uninterruptible inverter that inverts 125 VDC (from station batteries and chargers) to 120 VAC. This design ensures continued instrument power during transients that could result in the loss of essential AC power. The inverter continually checks for anomalies (out-of-synchronization, voltage transients, current transients, etc.) that will disturb its AC output. If it detects an anomaly and/or is called upon to exceed its specified capacity, it will auto-transfer bus load to the regulating transformer. When the inverter senses the end of the anomaly, it allows the regulating transformer to auto-transfer the load back. However, system design provides a transfer override switch for manually preventing auto-transfers. This is necessary for maintenance and testing of the system.

On September 20, a load anomaly of unknown origin occurred that affected the 'B' Instrument AC bus. Investigation following this event found that the inverter auto-transfer to the regulating transformer had been inadvertently overridden; the transfer override switch was in the 'override' rather than the 'normal' position. With the auto-transfer overridden, the inverter was unable to transfer loads to the regulating transformer and was forced to continue supplying bus load. The anomaly was such that a fuse blew to protect the inverter.

The cause for the loss of the 'B' Instrument AC bus was due to the inverter being unable to auto-transfer bus load. The root cause for the transfer override switch being in override is unknown.

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

EXPIRES: 4/30/92

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FACILITY NAME (1) Duane Arnold Energy Center	DOCKET NUMBER (2) 0 5 0 0 0 3 3 1	LER NUMBER(6)			PAGE(3)	
		YEAR 9 0	SEQUENTIAL NUMBER - 017	REVISION NUMBER - 00	3	OF 3

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

III. ANALYSIS OF EVENT

During this event, the plant was shutdown with no fuel movement in progress. The Instrument AC System is not a safety-related system and is not required for safe shutdown. The resultant PCIS Group V RWCU System isolation and 'B' SFU initiation had no adverse effect on the plant. All system responses were per design.

IV. CORRECTIVE ACTIONS

Operations personnel immediately verified that the appropriate automatic actions had occurred as a result of the loss of the 'B' Instrument AC bus. Actions were then taken to reenergize the 'B' Instrument AC bus from the regulating transformer. Subsequently, the PCIS Group V isolation logic was reset, the RWCU System restored to operation, and the 'B' SFU was shutdown and placed in its normal standby condition.

Event investigation identified the blown fuse in the inverter and subsequently identified the transfer override switch in override. The fuse was replaced and the transfer override switch returned to normal to restore auto-transfer capability. Proper operation of the 'B' Instrument AC System was verified.

A subsequent modification to both the 'A' and 'B' Instrument AC inverters removed the transfer override switch and installed test pins. This modification will prevent inadvertently blocking auto-transfers. However, maintenance and testing can be performed by installation of a jumper across the test pins.

V. ADDITIONAL INFORMATION

A review of previous Licensee Event Reports revealed several occurrences that involved RWCU System isolations and/or SFU initiations. However, only two previous events were identified similar to this event.

* On December 11, 1986, a SFU initiation occurred when maintenance personnel inadvertently bumped open breakers while reinstalling the Instrument AC distribution panel cover following maintenance. The root cause for this event was personnel error (See LER 86-026).

* On March 18, 1987, spurious voltage fluctuations on the Instrument AC bus were attributed with causing a SFU initiation. The root cause of these fluctuations was unknown (See LER 87-006).

This event is being reported in accordance with 10 CFR 50.73 (a)(2)(iv).