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REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9010020374 DOC.DATE: 90/08/23 NOTARIZED: NO DOCKET #
FACIL:50-331 Duane Arnold Energy Center, Iowa Electric Light & Pow 05000331
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RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 90-012-00:on 900823 & 26,reactor protection sys trips occurred during routine maintenance while shutdown.
W/9 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 5
TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

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	NRR/DET/EMEB 7E	1	1	NRR/DLPQ/LHFB11	1	1
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	NRR/DST/SRXB 8E	1	1	REG FILE 02	1	1
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EXTERNAL:	EG&G BRYCE,J.H	3	3	L ST LOBBY WARD	1	1
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Iowa Electric Light and Power Company

September 21, 1990
DAEC-90-0793

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 #90-012

Gentlemen:

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

Very truly yours,

Rick Hannen 9-21-90

Rick L. Hannen
Plant Superintendent - Nuclear

RLH/BKS/sjo

cc: Director of Nuclear Reactor Regulation
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File A-118a

SEP 24 1990

NRC Form 366A (6-89)

U S NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO 3150-0104

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

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)

Duane Arnold Energy Center

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

PAGE (3) 1 OF 0 4

TITLE (4)

REACTOR PROTECTION SYSTEM TRIPS DURING ROUTINE MAINTENANCE WHILE SHUTDOWN

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 8	2 3	9 0	9 0	– 0 1 2	– 0 0	0 9	2 1	9 0	None	0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (8)	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(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	TELEPHONE NUMBER
	AREA CODE
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	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	

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 fifteen single-space typewritten lines) (16)

During the refueling outage in August, 1990, two separate events occurred that resulted in full Reactor Protection System (RPS) logic trips. On August 23rd, while restoring a level transmitter to service, a pressure surge in the common reference line occurred while filling and venting the transmitter. This surge caused two Level Indicating Switches to trip and resulted in a full RPS logic trip. The root cause was due to insufficient formal guidance for performance of this outage specific evolution. On August 26th, while reinstalling a Local Power Range Monitor (LPRM) cable guard, a worker inadvertently pulled the LPRM cable out of the connector when attempting to catch the guard after it had been dropped. The LPRM spiked and was sensed by the 'A' and 'B' Average Power Range Monitors and resulted in a full RPS logic trip. The root cause was due to several contributing factors effecting working conditions.

In both events, corrective actions were taken to resolve the event and the RPS trip was reset. There was no effect on the safe shutdown condition of the plant in either case.

This report documents two events that occurred while the plant was shutdown for refueling during August, 1990. Both occurred during preparations to return the plant to operation after refueling was complete.

I. DESCRIPTION OF EVENT:

On August 23, personnel were restoring the Reactor Vessel Water Level Flood-up Range Level Transmitter (EIIS System Code AD) to service. One sensing line is normally connected to the Reactor Vessel Head (EIIS System Code AD). During refueling the Reactor Vessel Head has to be removed, therefore the sensing line is also removed. To maintain flood-up level range indication, the sensing line is also disconnected from the transmitter and test equipment installed that simulates a calculated reference input thus maintaining flood-up level indication in the Control Room. Once refueling is complete and the Reactor Vessel Head is reinstalled, the test equipment is removed and the sensing line reconnected to the Reactor Vessel Head and to the level transmitter. Following this, the level transmitter and the sensing line must be filled with water and all entrapped air vented out. During this evolution, one sensing line isolation valve "popped" open causing a pressure surge in the line, a common reference line for several instruments. Two Nuclear Steam Supply System Level Indicating Switches (LISs) sensed the pressure surge and tripped which resulted in a full Reactor Protection System (RPS, EIIS System Code JC) logic trip; however, all Control Rods (EIIS System Code AA) were already fully inserted so no rod motion occurred.

On August 26, personnel were reinstalling a cable guard on a Local Power Range Monitor (LPRM, EIIS System Code IG) under the vessel after work on the associated Transversing Incore Probe (TIP, EIIS System Code IG) was completed. The guard protects the LPRM connector. The guard was dropped during reinstallation. As the worker grabbed for it, the worker's arm inadvertently caught the LPRM cable and pulled it loose from the connector. This LPRM inputs to both the 'A' and 'B' Average Power Range Monitors (APRMs, EIIS System Code IG). A LPRM spike occurred when the cable was pulled out which was sensed by the APRMs and resulted in a full RPS logic trip. Coincident to this, post-maintenance testing was ongoing for one Position Indicating Probe (PIP, EIIS System Code IG), with the associated Control Rod withdrawn. When the full RPS logic trip occurred, the Control Rod fully inserted as expected.

II. CAUSE OF EVENT

For the August 23rd event, the root cause was determined to be due to insufficient formal guidance for performance of the outage specific evolution to compensate for the high sensitivity of the instruments on the common reference line. Normally, filling and venting of this type of instrument is a routine evolution. However, following refueling, filling and venting this level transmitter is more difficult due to having to completely refill the sensing lines after being disconnected. During normal operation, instruments do not require this degree of filling and venting. Personnel were aware that this evolution would affect a common reference line. Personnel were exercising precautions in the operation of the isolation valve. However, the valve still "popped" open and caused the pressure surge in the line.

For the August 26th event, the root cause was determined to be due to several contributing factors including: personnel were required to wear two complete sets of protective clothing, plastics, and full-face masks; working in a confined space; high temperatures; and very noisy. These contributed to the worker loosing hold of the guard and dropping it. The worker's response to catch the guard was expected.

III. ANALYSIS OF EVENT

The RPS automatically functions to preserve the integrity of the fuel cladding and the reactor coolant system. During these events, the plant was shutdown with no fuel movement in progress. The full RPS logic trips had no effect on the safety of the plant. The RPS functioned as required. During the August 26th event, one Control Rod fully inserted due to the trip, but caused no significant effect on the plant. It is unlikely that either event as described here would occur during normal power operation.

IV. CORRECTIVE ACTIONS

For the August 23rd event, personnel completed the filling and venting of the level transmitter and returned it to service. Once complete, the RPS trip was reset. The event was discussed with those personnel directly involved to ensure that they fully understood the event. Actions have been taken to provide formal procedural guidance to personnel when performing this evolution for future outages, including steps to physically prevent an inadvertent RPS trip from occurring.

For the August 26th event, under vessel work was stopped and the RPS trip was reset. The LPRM connector was repaired, tested, and returned to service. LPRM cable guard installation was completed with no further problems. The event was discussed with personnel directly involved to ensure that they understood the event.

V. ADDITIONAL INFORMATION

A review of previous Licensee Event Reports revealed several occurrences that involved RPS trips; however, none similar to these events.

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