NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

LICENSEE EVENT REPORT (LER)

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

TITLE (4)
APRM RPS Trip While in 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 2	0 2	8 5	8 5	— 0 0 4	— 0 0	0 3	0 4	8 5	None	0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
N		20.402(b)	20.405(c)	X 50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10)	0 0 0	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
Michael S. Harris, Technical Support Engineer	AREA CODE 3 1 9 — 8 5 1 - 7 3 0 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	
X	I G	D E T									

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)

At 2351 hours on 2/2/85, the Duane Arnold Energy Center experienced a Reactor Protection System Trip shortly after a controlled shutdown for a scheduled refuel outage due to an Average Power Range Monitor upscale (>15% reactor power) trip. At the time of the event, the reactor had been in shutdown for approximately four (4) hours with pressure less than 200 psig. All control rods were fully in prior to the RPS trip and there was no subsequent rod movement or post-scram transient.

The APRM scram originated from a shorted LPRM that has common inputs to the "A" and "B" APRM channels. Investigation is underway to determine the LPRM failure mode and to implement corrective actions.

As the reactor was at 0% power and in the shutdown mode, no vessel parameter changes were experienced.

IE 22
1/1

NRC Form 366
(9-83)

Iowa Electric Light and Power Company

March 4, 1985
DAEC-85- 187

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

Subject: Duane Arnold Energy Center
Docket No. 50-331
Op. License DPR-49
Licensee Event Report No. 85-004

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
Duane Arnold Energy Center

DLM/MSH/kp

attachment

cc: Mr. James G. Keppler
Regional Administrator
Region III
U. S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

NRC Resident Inspector - DAEC

File A-118a

IE22
1/1

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 5	— 0 0 4	— 0 0	0 2 OF 0 2

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

At 1853 hours on 2/2/85, the Duane Arnold Energy Center completed a controlled reactor shutdown to begin a scheduled 16-week refuel outage. At 2351 hours, with reactor pressure at less than 200 psig, the reactor protection system tripped on an Average Power Range Monitor upscale (>15% reactor power) trip stemming from APRM (IG) channels "A" and "B". As the reactor mode switch was in shutdown and all control rods were fully in prior to the event, there was no control rod movement or transient.

At DAEC, the APRM subsystem has six (6) APRM channels, each of which averages input signals from a number of Local Power Range Monitor channels (80 total). APRM channels A, C, and E are associated with the "A" Reactor Protection trip system (JC); APRM channels B, D, and F are associated with the "B" RPS trip system. APRM channels E and F average output signals from 20 LPRM's each; APRM channel A and B average outputs from 20 shared LPRM's and APRM channels C and D share and average outputs from the remaining 20 LPRM's. An APRM upscale or inoperative trip initiates the associated RPS neutron monitoring system trip. When the reactor is in other than the run mode, the upscale trip is set at a fixed 15% of rated power, whereas the upscale trip varies with recirculation loop flow in the run mode.

Immediately prior to the event, an LPRM upscale trip was received from LPRM number 32-17C. As the outputs of this LPRM are shared by APRM channels "A" and "B", both RPS neutron monitoring system trips were initiated thereby completing minimum RPS initiation logic. At 2353 hours, LPRM 32-17C was bypassed and the RPS trips were reset without further incident.

Preliminary troubleshooting has revealed that there was a diminished resistance point along the LPRM signal output. Testing has indicated that this problem is not located in the LPRM cabinet or cabling, but is most likely stemming from the signal cable connector beneath the vessel or a failed detector. It is anticipated that the LPRM will be repaired and returned to operable status prior to startup as part of DAEC's ongoing LPRM maintenance program during the outage.

All systems performed per design throughout the event. As the reactor was at 0% power and in the shutdown mode, no vessel parameter changes were experienced.