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)

Unplanned RPS Trip Due to Upscale Neutron Monitoring Signal

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 7	0 9	8 5	8 5	0 3 4	0 0	0 8	0 8	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
James R. Probst, Technical Support Engineer	AREA CODE 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	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	
B	I G	A M P	G 0 8 2	Yes							

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)

On July 9, 1985 at 0850 hours, the reactor was in cold shutdown mode and refueled with all control rods inserted. During reenergization of the "B" Reactor Protection System (RPS) motor-generator set following planned maintenance, the "A" RPS logic tripped. Subsequent tests revealed an upscale spike of the "B" Average Power Range Monitor (APRM) will sometimes occur during this sequence. The APRM circuitry was thoroughly examined. Investigation revealed that there were operational amplifiers installed within the Local Power Range Monitor (LPRM) circuitry for the "A" and "B" APRMs which can produce an upscale signal in an APRM channel upon energizing. Some APRM channels receive signals from LPRMs powered from the opposite RPS bus. The operational amplifiers were replaced.

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

On July 9, 1985, at 0850 hours, the plant was in cold shutdown with the reactor refueled and all control rods fully inserted. The "A" RPS motor-generator set was being reenergized following planned deenergization for breaker maintenance when the "B" RPS tripped. With the "A" RPS logic still deenergized, and therefore in a tripped condition, the subsequent "B" RPS trip resulted in a full RPS trip. Since all of the control rods were inserted, this RPS trip did not result in actual control rod movement.

The process computer was not available due to breaker maintenance. Therefore, in an effort to fully analyze the RPS trip, the RPS logic was not reset until the "A" RPS motor-generator set had been reenergized a second time. As this was done, it was noted there was an upscale noise spike on the "B" APRM (EIIS System IG). The noise spike would have tripped the "B" logic had the logic been reset. This event is similar to one occurring on June 10, 1985, and reported in LER 85-020. In that event the "A" APRM spiked upscale following energization of the "B" RPS logic. Continuing investigation by DAEC into APRM noise spikes was noted in that report.

The APRM circuits were examined in detail between July 10 and July 18, 1985. Examination of the LPRMs feeding the "A" and "B" APRMs found that some operational amplifiers in the LPRM circuitry were saturating when first energized, thus producing a high output voltage and an upscale signal. The saturating LPRMs contained either an Intech 2036 or new replacement Zeltex ZEL-1ACM467 operational amplifier. The saturating operational amplifiers were replaced with original type Zeltex ZEL-1ACM467 operational amplifiers (which do not saturate). The APRM system vendor (General Electric) is being informed of the results of the investigation. As a test, the "A" and "B" RPS motor-generator sets were deenergized and reenergized, with no upscale signals on the APRMs resulting. Although no actual control rod movement occurred, this event is being reported pursuant to 10 CFR 50.73(a)(2)(iv) which requires reporting "...Any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System (RPS)..." not resulting from a preplanned sequence.

Iowa Electric Light and Power Company

August 8, 1985
DAEC-85-0721

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. 85-034

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/JRP/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

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