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 RWCU Isolation

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)
1 1	0 1	8 4	8 4	— 0 3 9	— 0 0	1 1	3 0	8 4	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)			
POWER LEVEL (10)	0 5 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
Kenneth S. Putnam, Technical Support Engineer	AREA CODE 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	
X	C E			No							

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 November 1, 1984 during normal power operation, the Reactor Water Cleanup System isolated as a result of a momentary spurious signal in the Reactor Water Cleanup isolation logic. The system was verified to be free of valid isolation parameters and returned to normal service.

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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)

At 1331 hours on November 1, 1984 the Reactor Water Cleanup (RWCU) system isolated as a result of a spurious signal from its isolation logic. The reactor was in normal run mode at approximately 50 percent power. A high differential flow alarm was received in the Control Room followed by indications that the system outlet valve (CE-ISV-2740) and the outboard inlet valve (CE-ISV-2701) had closed. Operators immediately isolated the redundant inboard inlet isolation valve (CE-ISV-2700) and inspected system instrumentation to verify that no system isolation parameters actually existed. The system was then unisolated without further difficulties.

A review of the computer alarm logs and system isolation logic revealed that it is unlikely that there was sufficient time for the valves to have closed after the receipt of the high differential flow alarm. Moreover the high differential flow alarm only registered for a period of approximately one second. Isolation logic requires that a differential flow condition must exist for at least fifteen seconds prior to the initiation of isolation. Hence it is believed that some other isolation logic peturbation initiated the valve closure and the differential flow alarm was a result of the isolation valve closure rather than the initial cause. No system evolutions were in progress at the time of the event and no other alarms were received that would indicate any valid isolation logic parameter had caused the system isolation.

The spurious isolation of the RWCU system has been a recurrent problem (see LER 84-036). Diagnosis of the root cause of these isolations and determination of corrective actions has been hampered by the random and instantaneous nature of the spurious isolation signals. The isolations occur in various modes of plant operation and at various times of day. They do not appear to be related to any specific surveillance testing, plant evolutions, maintenance activity or plant conditions. When the isolations occur the isolation signal appears to be of extremely short duration ending without leaving any specific evidence of the original source of the signal.

Maintenance has done special inspections of the system and has not found any problems with the system which would cause the spurious isolations. In addition, the system is functionally tested routinely under surveillance test procedures and has performed satisfactorily. A portion of the system has not been inspected because of its location in a relatively high radiation area. Included in this portion of the system are thermocouples, cabling, and flow elements. Inspection of this portion of the system is tentatively scheduled for early 1985 during the refuel outage when radiation levels in the area are expected to be significantly lower. Several actions are planned to detect possible sources of the spurious signal. All associated thermocouple elements, wiring and cable shields will be inspected for possible loose or corroded connections or improper cable shielding. Cable continuity checks will be performed for related circuitry. Monitoring equipment is being investigated for portions of the isolation logic to aid in tracking down the source of the signal.

The isolation of the reactor water cleanup system is reportable as actuation of an engineered safety feature (containment isolation). The isolation components performed their function as designed. However, the unnecessary challenge of an engineered safety feature and spurious actuations are undesirable.

Iowa Electric Light and Power Company

November 30, 1984
DAEC-84-762

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. 84-039

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/KSP/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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