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 HPCI Auto-Initiation

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)
									None	0 5 0 0 0
0 5	0 4	8 4	8 4	0 1 7	0 0	0 6	0 3	8 4	None	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)		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
0 7 5		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
Michael S. Harris, Technical Support Engineer	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	
A	B J										

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 1000 hours, while the reactor was in the run mode at approximately 75% power, the HPCI turbine was inadvertently initiated during the performance of a routine surveillance test of the reactor low-low water level instrumentation that affects the HPCI initiation logic. Within 20 seconds of the initiation (per UFSAR 1, Table 6.3-2, the maximum elapsed time from HPCI initiation to injection is 30 seconds), the operators correctly diagnosed the situation as a false start suspected to be from the ongoing surveillance test affecting the HPCI logic. The HPCI turbine was subsequently manually tripped prior to injection into the vessel. Followup investigation confirmed that HPCI had been initiated due to a personnel error in the performance of the Surveillance Test Procedure and appropriate corrective actions were taken.

All affected systems functioned per design throughout the brief event. There was no affect on public health and safety.

IE22

NRC Form 366
(9-83)

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 4	— 0 1 7	— 0 0	0 2 OF 0 2

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

At 1000 hours, while the reactor was in the run mode at approximately 75% power, the High Pressure Coolant Injection (BJ) turbine was inadvertently auto-initiated, and as such, constituted an unplanned initiation of an engineered safety feature.

Immediately after auto-initiation of the HPCI turbine, operators correctly diagnosed the situation as a false start suspected to be from an ongoing surveillance test of the reactor low-low water level instrumentation that affects HPCI initiation logic. After confirming that reactor power, level, and containment pressure were all normal, operators manually tripped the turbine and the auxiliary oil pump (BJ-P-218) that supplies hydraulic power to the turbine stop and control valves. Although the HPCI injection valve, BJ-V-2312, cycled full open per design, the operators tripped the turbine within 20 seconds of the inititation (per UFSAR Table 6.3-2 the maximum time from initiation to injection is 30 seconds); thereby preventing the HPCI pump from reaching discharge pressure and injecting into the vessel.

Later investigation of the event confirmed that the turbine initiation was the result of a personnel error during the performance of a HPCI operability surveillance procedure. The surveillance procedure tests four channels, one at a time. The first two channels, "A" and "B", had been completed satisfactorily and the Instrument technicians had proceeded with the testing of channel "C". While testing channel "C", an ohmmeter called for in the procedure was inadvertently connected across the terminal strip points of the channel "D" logic. The ohmmeter was placed in the circuit such that its low internal impedance allowed it to act as a jumper and override a normally open low-low water level switch contact (a HPCI initiation signal). Consequently, channel "D" was unknowingly enabled with a false low-low water signal. When channel "C" was subsequently tripped in accordance with the test procedure, the one-out-two twice HPCI intiation logic was enabled and the HPCI turbine auto-initiated per design.

A review of the error and the steps leading up to it yielded the following corrective actions:

1. On May 14, 1984, DAEC Instrument technicians were assembled to discuss the event and the sequence of events in detail. The discussion was very helpful in making the technicians more aware of system subtleties and possible "trouble" areas encountered during testing.
2. The surveillance test procedure was revised to use a voltmeter wherever possible in place of an ohmmeter. This will reduce the possibility of the meter acting as a jumper if placed across the wrong contacts in the future.
3. The terminal strips that are jumpered during this surveillance test are arranged differently than in other panels, and as such, may be confusing to the technician. As a result, the surveillance procedure was also revised to include a note to the technician to inform him of the unique terminal block arrangement.

In addition to the aforementioned corrective actions, there is an ongoing program at DAEC to reduce personnel errors and to promote a heightened awareness of worker safety and procedural compliance.

Throughout this brief event all systems performed per design and the operators responded promptly and correctly. There was no affect on public health and safety. See DAEC LER 84-001 for a previous occurrence with a similar cause.

Iowa Electric Light and Power Company

June 1, 1984
DAEC-84-331

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. 84-017

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