Iowa Electric Light and Power Company

September 25, 1992
NG-92-4407

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 #92-014

Gentleman:

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

Very truly yours,

David L. Wilson

David L. Wilson
Plant Superintendent - Nuclear

DLW/JA/eah

cc: Director of Nuclear Reactor Regulation
Document Control Desk
U.S. Nuclear Regulatory Commission
Mail Station P1-137
Washington, D. C. 20555

NRC Resident Inspector - DAEC

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NRC Form 366A
(5 89)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

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

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) Primary Containment Isolation System Actuations Associated With Performance of a Surveillane Test

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	3 1	9 2	9 2	— 0 1 4	— 0 0	0 9	2 5	9 2	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)	1 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
	AREA CODE
Jeff S. Axline, Technical Support Engineer	3 1 9 8 5 1 - 7 6 0 0

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)

On 8/31/92 a Reactor Water Cleanup (RWCU) isolation occurred during performance of an Electrical Protection Assembly (EPA) surveillance test. During a Reactor Protection System (RPS) power supply transfer associated with the surveillance, a trip relay which is manually held in position, inadvertently changed states resulting in the isolation. Corrective actions for this event involve procedure changes that require the RWCU system be taken out of service during RPS transfers except during cold shutdown when it is acceptable to de-energize the RWCU isolation valves in the open position and maintain RWCU in service.

Following completion of the 'A' side EPA surveillance test, both 'A' side EPA breakers tripped causing group II thru V isolations along with half scram and half group I (main steam line isolation) signals. The root cause for the EPA breaker trips could not be determined. Review of the event revealed the most likely sources of the problem to be a spurious signal within an EPA logic card or a voltage transient associated with the 'A' RPS motor generator set output, however, no problems were found during troubleshooting and no subsequent trips have occurred to date.

Neither of the events had an adverse effect on the safe operation of the plant, nor would they have had an adverse effect under any other plant conditions. No loss of a safety function occurred.

I. DESCRIPTION OF EVENT

At 0900 hours on 8/31/92, with the plant operating at 100% power, a Reactor Water Cleanup (RWCU) Primary Containment Isolation System (PCIS) isolation occurred during performance of an Electrical Protection Assembly (EPA) surveillance test. At the beginning of the surveillance, the 'A' Reactor Protection System (RPS) bus was to be transferred from the normal power source ('A' RPS Motor Generator (MG) set) to the alternate power supply to allow calibration of the 'A' channel EPA logic cards. As the power supply transfer causes a momentary loss of power to the 'A' RPS bus, the surveillance procedure directs that the trip relay which initiates an 'A' side RWCU isolation be held in position until the transfer is complete to allow the RWCU system to remain on line. Although the relay was manually held in place during the transfer, the RWCU system isolated (Group V isolation). Following completion of the transfer, the isolation was satisfactorily reset and the RWCU system was returned to service.

At 1944 hours on 8/31/92, following completion of the 'A' side EPA surveillance test, the 'A' RPS bus was transferred back to the 'A' RPS MG set. At 1949 hours, the 'B' RPS bus was transferred to the alternate power supply to perform the 'B' side EPA surveillance. At 2010 hours both 'A' side EPA breakers tripped causing group II thru V PCIS isolations along with half scram and half group I (main steam line isolation) signals. As the signals on the EPA cards do not seal in, the type of trip received could not be determined. At 2214 hours the 'A' RPS bus was re-energized via the 'A' RPS MG set and shortly following, the isolations and trip signals were reset.

II. CAUSE OF EVENT

Review of the RWCU isolation event determined that the direct cause of the isolation was that the trip relay dropped out momentarily when the RPS bus transfer was performed. This relay is a General Electric model CR120A relay. On the front of the relay is a small rounded tab approximately 1/8" in diameter which protrudes through the contact retainer approximately 1/16". This tab can be held in place to prevent the relay from changing states. Discussion with the instrument technician holding the tab during the power supply transfer determined that his finger did not slip, however, he could not be positive that the tab didn't change states, momentarily, under his finger. The root cause of this event is considered to be an inadequate method for blocking a state change on this relay. The relay is located in the back of a cabinet approximately six feet above the floor of the cabinet. The location of the relay combined with the size of the tab which must be held in place makes it difficult to be sure the relay will not momentarily change states.

A root cause for the EPA breaker trips could not be determined. Review of the event revealed the most likely sources of the problem to be a spurious signal within the EPA logic card (A1 EPA) electrically located nearest 'A' MG set or a momentary voltage transient associated with the 'A' RPS MG set output. Either of these conditions would result in both 'A' side EPA breakers tripping.

III. ANALYSIS OF EVENT

The RWCU isolation functioned as designed. Within three minutes of the isolation, the isolation was reset and the RWCU system was placed back in service.

Following the EPA breaker trips, the 'A' RPS bus de-energized and 'A' side PCIS group II-V isolations occurred. Following verification that the isolations occurred as designed, the 'A' RPS bus was re-powered by its MG set and at 2214 hours the half scram signal was reset satisfactorily. At 2220 hours the isolations were reset.

Neither of the events had an adverse effect on the safe operation of the plant, nor would they have had an adverse effect under any other plant conditions. No loss of a safety function occurred.

IV. CORRECTIVE ACTIONS

The EPA surveillance test and appropriate operating instruction have been revised so that the RWCU system is taken off line in all modes except cold shutdown during an RPS bus transfer. In cold shutdown the RWCU system will be allowed to remain in service as long as the appropriate isolation valves are de-energized prior to the transfer.

Immediate corrective actions associated with the EPA trips were to verify that the A1 EPA card was calibrated properly. As both the A1 EPA and A2 (located downstream of A1 EPA) EPA breakers tripped, the cause of the trip was narrowed down to a problem with the MG set or the A1 EPA. Note: The A2 EPA will trip due to a loss of voltage whenever the A1 EPA opens since the A2 EPA is located downstream of the A1. After verifying proper A1 EPA card calibration, the 'A' RPS bus was re-powered by the 'A' MG set and monitored for several minutes for proper operation. No problems were observed. No subsequent trips have occurred to date.

As a followup action, thermography inspections of the 'A' side, 'B' side, and alternate power EPAs (six total) was performed to determine if the A1 card had any components which were hot relative to those on any other cards. No problems were identified. In addition the voltage regulator circuitry on the 'A' and 'B' RPS MG sets will have thermography inspections. Due to the potential for tripping an MG set while removing the circuitry enclosure, this inspection is scheduled to be performed during a plant shutdown.

In addition to the above corrective actions, the EPA manufacturer was contacted to determine if any other course of action should be taken. Due to the low number of spurious trips of EPA breakers at the Duane Arnold Energy Center (DAEC), the only recommendation provided by the manufacturer was to install upgraded EPA cards which seal in trip signals to aid in troubleshooting. These cards have been ordered and are scheduled for installation during the 1993 refuel outage.

V. ADDITIONAL INFORMATION

A. Previous Similar Events

A review of DAEC Licensee Event Reports since 1984 identified only one other spurious trip of an RPS MG set EPA breaker (Ref LER 88-18). No other occurrences of a RWCU isolation due to a relay inadvertently dropping out were identified.

B. EIIS SYSTEM AND COMPONENT CODES

Systems:
- CE - Reactor Water Cleanup System
- JM - Containment Isolation Control System
- JC - Plant Protection System

Components:
- BKR - Electrical Protection Assembly (EPA)
- MG - Motor-Generator Set
- RLY - Relay

These events are being reported pursuant to 10 CFR 50.73(a)(2)(iv).