

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)
Duane Arnold Energy CenterDOCKET NUMBER (2)
0 5 0 0 0 3 1 3 1 1 1 OF 0 3TITLE (4)
Unplanned RWCU Isolation

| EVENT DATE (6) | | | 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 | 1 | 2 | 3 | 8 | 5 | 8 | 5 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | |
| | | | | | | | | | | None | 0 | 5 | 0 | 0 | 0 | 0 |

| OPERATING MODE (9) | | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more of the following) (11) | | | | | | | | | | | | | | | | | | | | | |
|-----------------------------|---|--|-----------------|------------------|-------------------|------------------|-----------------|-----------|-------------|-------------|----------------|-----------------|------------------|-----------------|----------------|-----------------|------------------|----------------------|----------------------|-----------------|----------|----------|--|
| POWER LEVEL (10) 0 1 8 0 | N | 20.402(b) | 20.405(a)(1)(i) | 20.405(a)(1)(ii) | 20.405(a)(1)(iii) | 20.405(a)(1)(iv) | 20.405(a)(1)(v) | 20.406(c) | 50.36(c)(1) | 50.36(c)(2) | 50.73(a)(2)(i) | 50.73(a)(2)(ii) | 50.73(a)(2)(iii) | 50.73(a)(2)(iv) | 50.73(a)(2)(v) | 50.73(a)(2)(vi) | 50.73(a)(2)(vii) | 50.73(a)(2)(viii)(A) | 50.73(a)(2)(viii)(B) | 50.73(a)(2)(ix) | 73.71(b) | 73.71(c) | OTHER (Specify in Abstract below and in Text, NRC Form 366A) |
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LICENSEE CONTACT FOR THIS LER (12)
NAME
Kenneth S. Putnam, Technical Support EngineerTELEPHONE NUMBER
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 NPDs | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPDs | CAUSE | SYSTEM |
| X | CIE | | | No | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

SUPPLEMENTAL REPORT EXPECTED (14)
YES (If yes, complete EXPECTED SUBMISSION DATE) ☐ NO ☒
EXPECTED SUBMISSION DATE (15)
MONTH DAY YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On January 23, 1985 during normal power operation, the Reactor Water Cleanup (RWCU) System (CE) isolated twice as a result of momentary spurious signals in the Reactor Water Cleanup Leak Detection instrumentation (CE/JM). On January 25, 1985 the system also isolated in an identical manner. In each event the RWCU system was verified to be free of actual leakage conditions and returned to normal operation. This event is a repetition of events reported in LER's 84-019, 84-022, 84-036 and 84-039.

Maintenance personnel inspected the system and found no apparent cause for the spurious signals. The system will be extensively tested during the present refuel outage (commenced February 1, 1985) in an effort to eliminate spurious actuations.

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PDR ADOCK 05000331
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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/85

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| FACILITY NAME (1) Duane Arnold Energy Center | DOCKET NUMBER (2) 0 5 0 0 0 3 3 1 8 5 - 0 0 1 1 - 0 0 0 2 OF 0 3 | LER NUMBER (6) | | | PAGE (3) | | |
| | | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | | | |
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

At 1817 hours on January 23, 1985 the Reactor Water Cleanup (RWCU) system isolated in response to a momentary spurious signal from the RWCU steam leak detection system. The plant was in normal operation at approximately 80% power at the time of the event. Operators immediately inspected the RWCU room and found no actual leakage condition existed. The system was restored to normal status at 1833 hours. The system reisolated at 1935 hours. The RWCU room was again inspected and maintenance personnel were instructed to perform a functional test of the RWCU steam leak detection system. An instrumentation and controls engineer was called in to aid instrument technicians in troubleshooting the system. The system tested satisfactorily with no problems found that would cause the isolation signal. The system was returned to normal status at 2213 hours.

The same event recurred on January 25, 1985 at 0848 hours. Once again inspection of the system found it free of leakage with no detectable equipment problem. The system was restored to normal service with no further problems at 0927 hours.

In each event the isolation originated on the "B" train of the system isolation logic and the associated isolation valves (CE-ISV-2701 and CE-ISV-2740) closed per design.

The spurious isolation of the RWCU system has been a recurrent problem (see LER 84-039). 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 will be performed during the current refuel outage as 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.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/21/85

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| FACILITY NAME (1) Duane Arnold Energy Center | DOCKET NUMBER (2) 0 5 0 0 0 3 3 1 | LER NUMBER (6) | | | PAGE (3) | | |
| | | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | | | |
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TEXT (If more space is required, use additional NRC Form 386A's) (17)

One possible cause of the problem that is being investigated further is the relatively low differential voltage setpoint between the inlet vent air thermocouples and the outlet air thermocouples that is designed to initiate a system isolation on high differential temperatures. The associated differential temperature setpoint is 14°. For one pair of thermocouples the voltage differential is only 0.324 mV. A voltage bias of this low magnitude could make the system susceptible to isolations caused by momentary voltage fluctuations or electrical noise. Steam leak detection systems associated with the HPCI and RCIC systems that contain identical components but with a higher differential temperature setting (and consequently a significantly higher differential voltage setpoint) have not experienced similar problems.

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

February 22, 1985

DAEC-85-158

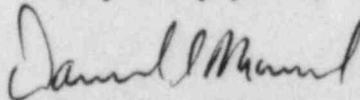
U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555

Subject: Duane Arnold Energy Center
Docket No. 50-331
Op. License DPR-49
Licensee Event Report No. 85-001

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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