

LICENSEE EVENT REPORT (LER)

Facility Name (1) QUAD-CITIES NUCLEAR POWER STATION, UNIT ONE Docket Number (2) 0 | 5 | 0 | 0 | 0 | 2 | 5 | 4 Page (3) 1 | of | 0 | 4  
 Title (4) Reactor Building and Control Room Ventilation Isolation Due to Relay Coil Failure Attributed to Age

Event Date (5) Month | Day | Year Year LER Number (6) Sequential Number Revision Number Report Date (7) Month | Day | Year Other Facilities Involved (8) Facility Names Docket Number(s)  
 0 | 6 | 2 | 4 | 8 | 7 8 | 7 --- 0 | 1 | 2 --- 0 | 0 | 0 | 7 | 1 | 6 | 8 | 7 0 | 5 | 0 | 0 | 0 | 1 | 1  
 0 | 5 | 0 | 0 | 0 | 1 | 1

OPERATING MODE (9) 4 THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)  
 POWER LEVEL (10) 0 | 9 | 1  
 20.402(b) --- 20.405(a)(1)(1) --- 20.405(a)(1)(11) --- 20.405(a)(1)(111) --- 20.405(a)(1)(iv) --- 20.405(a)(1)(v) ---  
 20.405(c) --- 50.36(c)(1) --- 50.36(c)(2) --- 50.73(a)(2)(1) --- 50.73(a)(2)(11) --- 50.73(a)(2)(111) ---  
 X 50.73(a)(2)(iv) --- 50.73(a)(2)(v) --- 50.73(a)(2)(vii) --- 50.73(a)(2)(viii)(A) --- 50.73(a)(2)(viii)(B) --- 50.73(a)(2)(x) ---  
 73.71(b) --- 73.71(c) --- Other (Specify in Abstract below and in Text)

LICENSEE CONTACT FOR THIS LER (12) Name Carol Kronich, Technical Staff Engineer Ext-2156 TELEPHONE NUMBER AREA CODE 3 | 0 | 9 6 | 5 | 4 | - | 2 | 2 | 4 | 1

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     | B   H  | C   L     | 6   0   8   0 | Y                   |       |        |           |              |                     |

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 June 24, 1987, Quad Cities Unit One was in the RUN mode at 91 percent core thermal power. At 1755 hours, the Reactor Building Ventilation system isolated and the Control Room Ventilation system changed to 100 percent recirculation for no apparent reason. NRC notification was completed at 2110 hours per 10 CFR 50.72. Subsequent investigation revealed that relay armature 1-1701-100B was vibrating rapidly and causing a buzzing sound. This vibration caused a relay contact to open and the aforementioned isolations occurred. The cause for this event was determined to be relay coil failure due to age. The relay coil was replaced like for like and tested satisfactorily at 2355 hours on the same day. Both ventilation systems involved were restored to normal by 0015 hours on June 25, 1987. Modification M-4-1(2)-85-17 has already been initiated to replace all similar relays in the 901(2)-40 and 41 panels with a suitable replacement. This report is submitted to comply with 10 CFR 50.73 (a)(2)(iv).

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

| FACILITY NAME (1)    | DOCKET NUMBER (2)             | LER NUMBER (6) |                   |                 |       |       |       | Page (3) |  |  |
|----------------------|-------------------------------|----------------|-------------------|-----------------|-------|-------|-------|----------|--|--|
|                      |                               | Year           | Sequential Number | Revision Number |       |       |       |          |  |  |
| Quad Cities Unit One | 0   5   0   0   0   2   5   4 | 8   7          | -   0   1   2     | -               | 0   0 | 0   2 | 0   7 | 0   4    |  |  |

PLANT AND SYSTEM IDENTIFICATION:

General Electric - Boiling Water Reactor - 2511 MWT rated core thermal power. Energy Industry Identification System (EIIS) codes are identified in the text as [XX].

EVENT IDENTIFICATION:

The Reactor Building and Control Room Ventilation systems isolated due to relay coil failure attributed to age.

A. CONDITIONS PRIOR TO EVENT:

Unit: One                                      Event Date: June 24, 1987                                      Event Time: 1755  
 Reactor Mode: 4                                      Mode Name: RUN                                      Power Level: 91%

This report was initiated by Deviation Report D-4-1-87-058

RUN Mode(4) - In this position the reactor system pressure is at or above 825 psig, and the reactor protection system is energized, with APRM protection and RBM interlocks in service (excluding the 15% high flux scram).

DESCRIPTION OF EVENT:

On June 24, 1987, at 1755 hours, Quad Cities Unit One was operating in the RUN mode at 91 percent of rated core thermal power. At this time, the following alarms were received in the control room for no apparent reason: Reactor Building Vent [VA] Isolation [JM] (panel 912-5, alarm A-1), Control Room Vent [VI] Isolation [JM] (912-5, E-2), and Unit One Control Room Vent Isolation (901-5, D-8). Neither Standby Gas Treatment System (SBGTS) [BH] trains autostarted, but the Unit Two Reactor Building suction damper [BH] 2-7503 did close. The A SBGTS train was in "Primary" and the B SBGTS train was in "Standby". No other unusual annunciators or computer alarms were received. The Shift Engineer and Shift Foreman were immediately notified and went to the Auxiliary Electric Room [FA] to check relays associated with this system.

This event caused the Reactor Building Ventilation system to isolate and the Control Room Ventilation system to go to the 100 percent recirculation mode. Because the Reactor Building Ventilation system had isolated, at 1800 hours the A SBGTS train was manually started to provide adequate ventilation in the Reactor Building. At 1835 hours, the Shift Engineer and Shift Foreman found relay 1-1701-100B in the 901-41 panel buzzing and hot. An Equipment Operator then pulled fuse 1-1701-708B (which was associated with the aforementioned relay) to de-energize the coil in the relay. It appears that as the relay coil started to fail it caused the relay armature to vibrate rapidly which created a buzzing sound. The vibration caused a contact to open and resulted in actuations of the Reactor Building and Control Room ventilation isolation systems. This relay is a part of the Reactor Building Ventilation system process radiation monitoring system [IL].

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

| FACILITY NAME (1)   | DOCKET NUMBER (2)             | LER NUMBER (5) |                   |                   |                 |                 |       | Page (3) |       |  |
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|                     |                               | Year           | Sequential Number | Sequential Number | Revision Number | Revision Number |       |          |       |  |
| Mad Cities Unit One | 0   5   0   0   0   2   5   4 | 8   7          | -                 | 0   1   2         | -               | 0   0           | 0   3 | OF       | 0   4 |  |
| XT                  |                               |                |                   |                   |                 |                 |       |          |       |  |

At 2110 hours, NRC notification per 10 CFR 50.72 was completed via the Emergency Notification System (ENS).

C. APPARENT CAUSE OF EVENT:

This event is being reported in accordance with 10 CFR 50.73 (a)(2)(iv), which requires the licensee to report any condition or event that results in the manual or automatic actuation of any Engineered Safety Feature (ESF).

The cause of this event is attributed to the failure of the coil in relay 1-1701-100B, due to age.

D. SAFETY ANALYSIS OF EVENT:

The safety implications of this event were minimal. When the 1-1701-100B relay dropped out momentarily, it caused the isolations and the Unit Two Reactor Building damper, 2-7503, to close. The SBGTS did not auto start because this relay is associated with the B SBGTS train only. Since the A SBGTS train was in "primary", and it did not receive any auto start signal, neither train started, as designed. Both trains of SBGTS were operable during this event, and would have been able to function as designed, and there was a redundant channel of the process radiation monitor available at the time the relay dropped out. Therefore the safety implications of this event were minimal.

E. CORRECTIVE ACTION:

Work Request Q58308 was written on June 24, 1987 for the Electrical Maintenance Department to replace the burnt coil in relay 1-1701-100B in the 901-41 panel. A coil was removed from an identical spare relay and installed in relay 1-1701-100B according to General Electric Instruction GEH 2466E.

The coil replacement was completed at 2322 hours, and at 2342 hours, the B SBGTS train was placed in "Primary" (A SBGTS train was placed in "Standby"). At 2355 hours, QIS 34-S2 (Reactor Building Ventilation Monitoring Functional Test) was performed by the Instrument Maintenance Department successfully to verify operability of the replaced relay coil. At 0010 hours on June 25, 1987, the Reactor Building Ventilation was restored to normal and at 0015 hours the B SBGTS train was turned off and placed in "Primary". The Control Room Ventilation was subsequently returned to its normal configuration.

Modification M-4-1(2)-85-17 has already been initiated to replace all CR120A model relays in the 901(2)-40 and 41 panels with a suitable replacement. It is expected that events of a similar nature will be prevented when this modification is completed.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

|   |  |                |                                    |                              |          |             |
|---|--|----------------|------------------------------------|------------------------------|----------|-------------|
| FACILITY NAME (1)<br>Quad Cities Unit One<br>CT | DOCKET NUMBER (2)<br>0   5   0   0   0   2   5   4 | LER NUMBER (6) |                                    |                              | Page (3) |             |
|   |  | Year<br>8   7  | Sequential Number<br>-   0   1   2 | Revision Number<br>-   0   0 | 0   4    | OF<br>0   4 |

PREVIOUS EVENTS:

A review of previous events identified the following:

| <u>Licensee Event Reports</u> | <u>Description</u>   |
|-------------------------------|--|
| 1. 254/85-013                 | Relay coil failure caused SBGTS to autostart and Reactor Building and Control Room Ventilation Systems to isolate. |
| 2. 254/83-10/03L              |  |
| 3. 254/83-15/03L              |  |

COMPONENT FAILURE DATA:

|              |                  |
|--------------|------------------|
| Manufacturer | General Electric |
| Nomenclature | Relay            |
| Model #      | CR120A           |
| Part #       | CR120A04002AA    |



Commonwealth Edison

DEVIATION REPORT

DVR NO. 04 - 01 - 87 - 058  
STA UNIT YEAR NO.

|   |  |  |  |
|---|--|--|--|
| PART 1 TITLE OF DEVIATION<br><b>Relay 1-1701-100B Failure</b> |  | OCCURRED<br>DATE: <b>6-24-87</b> TIME: <b>1755</b> |  |
| SYSTEM AFFECTED<br><b>1700 Process Rad</b>                    | PLANT STATUS AT TIME OF EVENT<br>MODE: <b>Run</b> , POWER(%) <b>91</b> | WORK REQUEST NO.<br><b>058308</b>                  | TESTING<br><input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |

DESCRIPTION OF EVENT

Received Reactor Building Vent isolation, Control Room vent isolation, and unit one Control Room vent isolation alarm (901-5, D-8.) SBGTS did not auto start ("A" was in primary, "B" was in standby), but the Unit Two Reactor Building suction damper 2-7503 did close. SE and SF found relay 1-1701-100B in 901-41 panel buzzing and hot. Apparently, the relay dropped out momentarily, causing the above auto actions.

POTENTIALLY SIGNIFICANT EVENT PER NSD DIRECTIVE A-07  YES  NO

10CFR50.73 NRC RED PHONE NOTIFICATION MADE  1 HOUR  4 HOUR **2110**  NO

RESPONSIBLE SUPERVISOR: **Paul D. Knoespel** DATE: **6/24/87**

PART 2 OPERATING ENGINEER'S COMMENTS

The relay was replaced and tested. The reactor building vents remained isolated while repairs were made. Beacuse only one relay failed and it only failed momentarily and because the b SBGTS was in standby, there was no SBGTS auto start.

|  |   |
|--|---|
| <input type="checkbox"/> NON REPORTABLE EVENT<br><input checked="" type="checkbox"/> 30 DAY REPORTABLE/10CFR50.73(a) (2)(IV)<br><input type="checkbox"/> 5 DAY REPORT PER 10CFR21<br><input type="checkbox"/> ANNUAL/SPECIAL REPORT REQUIRED | NOTIFICATION: _____ REGION III _____ DATE _____ TIME _____<br>_____ NSO _____ DATE _____ TIME _____<br><input type="checkbox"/> CECO CORPORATE NOTIFICATION MADE IF ABOVE NOTIFICATION IS PER 10CFR21<br>TELECOPY: _____ CECO CORPORATE OFFICER _____ DATE _____ TIME _____ |
|--|---|

A.I.R. # \_\_\_\_\_  
L.S.R. # **87-012**

PRELIMINARY REPORT COMPLETED AND REVIEWED J. Swales 6/25/87  
OPERATING ENGINEER DATE

INVESTIGATION REPORT & RESOLUTION ACCEPTED BY STATION REVIEW [Signature] R.A. Pabey

RESOLUTION APPROVED AND AUTHORIZED FOR DISTRIBUTION [Signature] 7-21-87  
STATION MANAGER DATE



**Commonwealth Edison**

Quad Cities Nuclear Power Station  
22710 206 Avenue North  
Cordova, Illinois 61242  
Telephone 309/654-2241

RLB-87-182

July 16, 1987

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

Reference: Quad-Cities Nuclear Power Station  
Docket Number 50-254, DPR-29, Unit One

Enclosed please find Licensee Event Report (LER) 87-012, Revision 00, for Quad-Cities Nuclear Power Station.

This report is submitted in accordance with the requirements of the Code of Federal Regulations, Title 10, Part 50.73(a)(2)(iv), which requires the reporting of any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature.

Respectfully,

COMMONWEALTH EDISON COMPANY  
QUAD-CITIES NUCLEAR POWER STATION

R. L. Bax  
Station Manager

RLB/MSK/klm

Enclosure

cc: I. Johnson  
R. Higgins  
INPO Records Center  
NRC Region III

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