

LWP-95-084

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September 15, 1995

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

Reference: Quad Cities Nuclear Station
Docket Number 50-265, DPR-30, Unit Two

Subject: Licensee Event Report (LER) 265/94-009 Supplemental Information.

As stated in LER 265/94-009, supplemental information is being provided and is enclosed as Attachment 1. This information constitutes revision 01 to the original LER documentation.

Attachment 2 is a reproduction of the original text of LER 265/94-009.

This report is submitted in accordance with the requirements of the Code of Federal Regulations, Title 10, Part 50.73(a)(2)(ii)(B), "Any event or condition that resulted in the condition of the nuclear power plant, including its principal safety barriers, being seriously degraded or that resulted in the nuclear plant being in a condition that was outside the design basis of the plant."

If there are any questions or comments concerning this letter, please refer them to Nick Chrissotimos, Regulatory Assurance Supervisor at 309-654-2241, ext. 3100.

Respectfully,

COMMONWEALTH EDISON COMPANY
QUAD CITIES NUCLEAR STATION

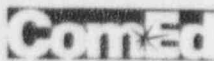
D. B. Cook for

L.W. Pearce
Station Manager

Attachment 1- LER Supplemental Information
Attachment 2- LER 265/94-009 (copy)

cc: J. Schrage
C. Miller
INPO Records Center
NRC Region III

JE221

Quad Cities Nuclear Power Station System Engineering Transmittal

To: N. Chrissotomos

Prepared By: J. Wethington From: D. Cradick Reviewed By: B. Strub 

Date: August 31, 1995

Subject: Supplemental Report to LER #265/94-009

The subject of the LER was: Primary Containment Interlock Doors Defeated to Release Personnel Trapped Inside due to Malfunction of Interlock Door Linkage. This supplemental report is written to address NTS Item #2651809400902.

The Corrective Actions specified in section E of the LER have been completed including investigation and repair of the interlock doors. This was tracked by NTS #2651809400901 and completed under NWRs Q16429 and Q16494.

Work Request Q16429 was completed on 7/11/94. The cause of the door failure was determined to be failure of the Interior Operating Arm Cam Follower. The Cam Follower on the swingplate was also broken. It is believed that the failure of the Interior Operating Arm Cam follower resulted in additional stresses which created the second failure. Per discussion with Doug Clausen, CBI Airlock Services Manager, the most probable cause of the Interior Operating Arm Cam Follower failure is loosening of the nut which holds it in place. Excessive closing force on the door can also contribute to this problem. Mr. Clausen indicated that he had seen failure of this type 2 or 3 times in the past 5-7 years. Both cam followers were replaced. Several other parts were replaced as preventative maintenance. Adjustments were also made to several components in the operating linkage. The door interlocks were functional following these repairs.

A more detailed inspection of the Unit 2 Primary Containment Interlock doors was performed during the recently completed refueling outage, Q2R13 under WR Q16494. Doug Clausen from CBI Airlock Services assisted in the inspection and subsequent troubleshooting and repair. The inspection identified a number additional items that needed attention:

- handwheel keys misaligned
- interior door shaft block bearings not greased
- operating arms spacer washers not installed properly
- door rebound is unacceptable
- door shafts bent slightly
- doors out of balance
- swing plates have slight binding with camfollower
- transfer shaft couplings are chain style
- transfer shaft ends require machining
- restrictor bolt system bolts are broken
- handwheel clutches out of adjustment
- door gaskets need replacement
- several small dings were seen in the doors lower sealing edge



The above discrepancies were repaired. The transfer shaft couplings were upgraded with flex grid couplings per the vendors recommendations. Currently, an inspection of the Drywell personnel interlock is performed each refueling cycle. A preventative maintenance procedure will be developed which incorporates the lessons learned from this inspection (NTS #2651809400903). Performance of this procedure will be formally incorporated into the PM program (NTS #2651809400904).

The investigation also identified several weaknesses involving the emergency operation of the Drywell personnel air lock doors. These weaknesses involved personnel safety concerns, difficulties in communication with personnel inside the airlock, and insufficient detail on how to defeat the interlock in an emergency. QCOP 1600-5, Emergency Operation of the Drywell Personnel Airlock Doors, was revised to provide more detailed information on the steps needs to defeat the interlock feature in an emergency. The attachments associated with the procedure have been significantly enhanced and critical components have been color coded on Unit 2 to facilitate easy identification. Critical components on the Unit 1 Interlocks will be color coded during upcoming refueling outage, Q1R14(NTS #2651809400905).

QCAP 650-5, Drywell and Torus Entry, was also revised to address personnel safety concerns identified in this event. These improvements include:

- Establishment of a communications system
- Verification of operational Drywell and Interlock area phones
- Verification of adequate lighting
- Spare SCBA for each entry team member
- Verification of the emergency tool box/procedure in both the Drywell and Interlock areas



Commonwealth Edison

Quad Cities Nuclear Power Station
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ATTACHMENT 2

GGC-94-090

June 15, 1994

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

Reference: Quad Cities Nuclear Power Station
Docket Number 50-265, DPR-30, Unit Two

Enclosed is Licensee Event Report (LER) 94-009, Revision 00, for Quad Cities Nuclear Power Plant Station.

This report is submitted as a voluntary report only.

The following commitments are being made by this letter:

- The interlock doors will be repaired during the next outage of sufficient duration.
- A supplemental report, including any additional corrective actions determined, will be submitted upon the completion of the investigation.

If there are any questions or comments concerning this letter, please refer them to Nick Chrissotimos, Regulatory Assurance Administrator at 309-654-2241, ext. 3100.

Respectfully,

COMMONWEALTH EDISON COMPANY
QUAD CITIES NUCLEAR POWER STATION

G. G. Campbell
Station Manager

GGC/TB/plm

Enclosure

cc: J. Schrage
C. Miller
INPO Records Center
NRC Region III

~~9406290306~~ 5 pp.

LICENSEE EVENT REPORT (LER)

Form Rev. 2-90

| | | |
|---|---|--------------------|
| Facility Name (1) Quad Cities Unit Two | Docket Number (2) 0 5 0 0 0 2 6 5 1 of 0 4 | Page (3) 1 of 4 |
|---|---|--------------------|

Title (4)
Primary Containment Interlock Doors Defeated To Release Personnel Trapped Inside
Due To Malfunction Of Interlock Door Linkage.

| 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 | 5 | 2 | 2 | 9 | 4 | 9 | 4 | -- | 0 | 0 | 9 | -- | 0 | 0 | 0 | 6 | 1 | 5 | 9 | 4 | | 0 | 5 | 0 | 0 | 0 | | |
| OPERATING MODE (9) 04 | | | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11) | | | | | | | | | | | | | | | | | | | | | | | | | |
| POWER LEVEL (10) 0 2 5 | | | 20.402(b) | | | 20.405(c) | | | 50.73(a)(2)(iv) | | | 73.71(b) | | | | | | | | | | | | | | | | |
| | | | 20.405(a)(1)(i) | | | 50.73(a)(1) | | | 50.73(a)(2)(v) | | | 73.71(c) | | | | | | | | | | | | | | | | |
| | | | 20.405(a)(1)(ii) | | | 50.36(c)(2) | | | 50.73(a)(2)(vii) | | | <input checked="" type="checkbox"/> Other (Specify in Abstract below and in Text) | | | | | | | | | | | | | | | | |
| | | | 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 Joe Manemann, Regulatory Assurance, Ext. 3190 | | | | | | | | | |
| 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 |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| SUPPLEMENTAL REPORT EXPECTED (14) | | | | | | | | | |
| <input checked="" type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE) <input type="checkbox"/> NO | | | | | | | | | |
| Expected Submission Date (15) Month Day Year | | | | | | | | | |

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

ABSTRACT:

On May 22, 1994 Unit 2 had dropped to approximately 25% of rated core thermal power for a drywell entry. While inside the interlock, trouble-shooting a problem with the drywell interlock doors [BD], the entry team was unable to open the outer door [DR] and initiated emergency procedures to exit the drywell.

At approximately 0520 personnel outside the interlock removed the local leak rate test tap caps to provide air flow into the interlock. This started the 60 minute Limiting Condition for Operation (LCO) clock for opening an operable air lock door to repair an inoperable door or remove personnel.

Inside the interlock, emergency disassembly of the interlock linkage coupling was required to defeat the interlocks, and at 0529 the outer door was opened. At 0601 the outer door was secured, stopping the 60 minute LCO clock at 41 minutes.

The doors were locked closed and taken out of service to maintain primary containment. At 0642 a voluntary ENS notification was made to the NRC.

A voluntary LER is being submitted to report this event. The cause of the event and recommended corrective actions will be determined based on inspection and repair by the vendor during the next outage of sufficient duration. Further information will be provided as a supplement to this report.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

Form Rev. 2.0

| FACILITY NAME (1) | DOCKET NUMBER (2) | LER NUMBER (6) | | | PAGE (3) |
|----------------------|-------------------------------|----------------|-------------------|-----------------|----------------|
| | | Year | Sequential Number | Revision Number | |
| Quad Cities Unit Two | 0 5 0 0 0 2 6 5 | 9 4 - | 0 0 9 - | 0 0 | 2 OF 0 4 |

TEXT Energy Industry Identification System (EIS) codes are identified in the text as [XX]

PLANT AND SYSTEM IDENTIFICATION:

General Electric - Boiling Water Reactor - 2511 Mwt rated core thermal power.

EVENT IDENTIFICATION: Primary Containment Interlock Doors defeated to release personnel trapped inside due to malfunction of interlock door linkage.

A. CONDITIONS PRIOR TO EVENT:

Unit: Two Event Date: May 22, 1994 Event Time: 0520
Reactor Mode: 04 Mode Name: RUN Power Level: 025

This report was initiated by Licensee Event Report 265\94-009.

RUN (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).

B. DESCRIPTION OF EVENT:

On May 22, 1994 Unit 2 had dropped to approximately 25% of rated core thermal power for a drywell entry to determine the cause of increased leakage in the containment. At 0333 the initial entry was made into the drywell through the interlock doors [BD] with no problems noted. During subsequent passages through the interlocks it was noted that the inner door [DR] was difficult to unlatch when opened. On approximately the fourth trip into the drywell the inner door could not be opened so the outer door was reopened, and a discussion of the problem took place among all members of the entry team outside the drywell interlock.

Three members of the entry team re-entered the interlock and made an adjustment to the outer door limit switch. The adjustment was made because it appeared the adjusting screw was backed out two turns from its normal position. The outer door was then closed and the inner door opened. As the inner door unlatched, a 'snap' was heard by another team member who remained outside of the interlocks. The inner door opened, but when they attempted to close the door, it would not close. Two of the team members pulled on the inner door, while the third member turned the handwheel to close the door. The door appeared to be closed and latched but the indication stopped short of showing completely latched. The team attempted to operate the outer door but it would not open. The inner door latch was loosened and re-tightened and another attempt was made to open the outer door without success.

One team member outside the interlocks watched the door's handwheels and linkage move slightly with no movement of the outside door. At 0517 Operating and Mechanical Maintenance personnel were notified that three people were trapped in the interlock. At approximately 0520 the local leak rate test tap caps were removed to provide air flow into the interlock. Because the inner door was not fully closed, the 60 minute allowable time period for opening an operable air lock door to repair an inoperable door or remove personnel was entered.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

Form Rev. 2.0

| FACILITY NAME (1) | DOCKET NUMBER (2) | LER NUMBER (6) | | | PAGE (3) |
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| Quad Cities Unit Two | 0 5 0 0 0 2 6 5 | 9 4 | - | 0 0 9 | - |
| | | | | 0 0 | 3 OF 0 4 |

TEXT Energy Industry Identification System (EIS) codes are identified in the text as [XX]

Inside the interlock, a toolbox for emergency disassembly of the interlock linkage was opened by the entry team. The toolbox included the vendor's procedure to disengage a coupling to defeat the interlocks in case of emergency. The coupling was disassembled and at 0529 the outer door was opened.

At approximately 0535 the local leak rate test tap caps were reinstalled. The inner door was secured in the closed position using the strongbacks that hold the door during local leak rate testing. At 0601 the outer door was secured stopping the 60 minute LCO clock at 41 minutes. At 0642 a voluntary ENS notification was made to the NRC.

At 1047 the LCO was again entered when the outer door was reopened to gag shut the inner equalizing valve and take the interlock doors out of service. At 1052 the doors were secured and the LCO exited with a total of 46 minutes used out of the allowable 60 minutes per year.

A Nuclear Work Request has been written to investigate and repair the problem with the interlock doors. These repairs will occur during the next outage of sufficient duration.

A voluntary LER is being submitted to report this event. Problem Identification Form (PIF) 94-1279 was written by the Shift Engineer to report the failure of the primary containment interlock doors.

C. APPARENT CAUSE OF EVENT:

The actual cause of the door failure and recommended corrective actions will be determined based on inspection and repair by the vendor during the next outage of sufficient duration. Further information will be provided as a supplement to this report.

D. SAFETY SIGNIFICANCE OF EVENT:

The safety significance of this event was minimal. Technical Specification section 3.7.b. and 3.7.c. addresses the operability of the interlock doors and the interlock mechanism. Unit Two had been within Technical Specification limits at all times during and since this event occurred.

- Section 3.7.b. allows for one of the two interlock doors to be inoperable provided that the operable door is maintained in the closed position and either the inoperable door is returned to operable status within 24 hours or the operable door is locked closed. Additionally, the breaching of primary containment by the opening of the operable door is allowed during entry to repair the inoperable door or to facilitate the removal of personnel for a cumulative time not to exceed one hour per year. Continued operation is then permitted provided that the operable air lock door is verified locked every 31 days.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

Form Rev. 2.0

| FACILITY NAME (1) | DOCKET NUMBER (2) | LER NUMBER (6) | | | PAGE (3) | |
|----------------------|-------------------------------|----------------|-------------------|-----------------|----------------|--|
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TEXT Energy Industry Identification System (EIIIS) codes are identified in the text as [XX]

- Section 3.7.c. allows an inoperable interlock mechanism provided that the Operable air lock door is locked closed and verified closed at least once every 31 days.

During this event, primary containment was breached for a total of 46 minutes in the process of removing the personnel from the interlock and installing the gag on the equalizing valve. This is within the 60 minute requirement of Technical Specification Section 3.7.b.

The interlock door handwheels have been taken out of service and locked. A step has been added to QOS 005-S3, Operations Monthly Surveillance Test Assignment Sheet, to ensure that the operable door is verified locked closed at least once every 31 days. These actions satisfy the requirements for continued operation in Tech Spec sections 3.7.b. and 3.7.c.

E. CORRECTIVE ACTIONS:

The immediate corrective actions associated with this event were to:

- Place strongbacks on the inner door to ensure that it stayed closed.
- Disconnect and gag closed the inner equalizing valve.
- Documented QOS 005-S3 to ensure that the operable door is verified locked closed at least once per 31 days as required by Tech. Spec 3.7.A.7.b.(2)
- The inner and outer interlock door handwheels were taken out of service and locked closed.
- A Nuclear Work Request has been written to investigate and repair the problem with the interlock doors (NTS#2651809400901).
- A supplemental report, including any additional corrective actions determined, will be submitted upon the completion of the investigation (NTS#2651809400902).

F. PREVIOUS EVENTS:

After review of the Nuclear Tracking System data base since January 1, 1988, there were no LER's generated which involved primary containment interlock doors.

G. COMPONENT FAILURE DATA:

No specific related component failures have been previously identified.