

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 | 1 | of | 0 | 6
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Title (4) Control Room Ventilation Isolations Due to Toxic Gas Analyzer Trips

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)
1 2	0 1	8 7	8 7	0 2 17	0 0	1 2	2 9	8 7	Quad Cities Unit Two	0 5 0 0 0 2 6 5 0 5 0 0 0 1 1

OPERATING MODE (9) 2

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)

20.402(b)	20.405(c)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)	73.71(b)
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)
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: Joseph P. Pairitz, Technical Staff Engineer, Ext. 2159
 TELEPHONE NUMBER: 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 NRPDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS

SUPPLEMENTAL REPORT EXPECTED (14)

Expected Submission Date (15) ___ | ___ | ___

Yes (if yes, complete EXPECTED SUBMISSION DATE) NO

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

On December 1, 1987, Quad Cities Unit One was in the REFUEL mode at 0 percent power and Unit Two was in the RUN mode at 95 percent power. At 2200 hours, the Control Room Heating, Ventilation, Air Conditioning (HVAC) System automatically isolated when the Toxic Gas Analyzer Sample Point Selector position was changed. The switch position required changing because the appropriate procedure was not used when the HVAC system was reset following maintenance on November 30, 1987. The isolation probably occurred due to a small amount of moisture present in the sample line.

On December 2, 1987, at 2331 hours, during a training session being conducted as corrective action for the previous day's event, the HVAC isolated again when it was noted that the sulfur dioxide monitor range switch was thought to be mispositioned. When the range switch was ranged down, the isolation occurred. The cause for this event was lack of procedural guidance and training. NRC notification of both these events was completed as required by 10 CFR 50.72(b)(2)(ii).

Corrective actions include installation of permanent signs, upgraded training, procedure revisions, a possible modification.

This report is provided per 10 CFR 50.73(a)(2)(iv).

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The actual trip setpoints are set as follows:

C1: 1.0 ppm
 NH₃: 20.0 ppm
 SO₂: 1.0 ppm

It is not known which detector gave the "Toxic Gas Concentration High" signal since the alarm and isolation were reset immediately. This isolation of the Control Room HVAC system had no effect on plant operation and was not considered a significant event.

On December 2, 1987, at 2331 hours, Unit One was in the REFUEL mode at 0 percent of rated core thermal power and Unit Two was in the RUN mode at 93 percent power. During a training session being conducted as corrective action for the December 1, 1987, event on the Control Room HVAC system, an Equipment Attendant (EA) noticed that the range switch on the SO₂ detector of the Control Room Toxic Gas Analyzer was on the 0-5 ppm scale. The range switch is routinely on the 0-1 ppm scale, so the EA turned the switch to the 0-1 ppm scale. Upon doing so, the SO₂ detector momentarily spiked high causing a "Toxic Gas Concentration High" alarm and an isolation of the Control Room HVAC system. The range switch was immediately placed back on the 0-5 ppm scale, and the alarm and isolation were reset. This isolation of the Control Room HVAC system had no effect on plant operation and was not considered a significant event.

The four-hour NRC notifications required by Federal Regulation 10 CFR 50.72 (b)(2)(ii) were properly made for both events.

C. APPARENT CAUSE OF EVENT:

This report is being submitted in accordance with Federal Regulation 10 CFR 50.73 (a)(2)(iv), which requires the reporting of any event or condition that resulted in the manual or automatic actuation of any Engineered Safety Feature (ESF).

The cause of the Toxic Gas Sample Point Selector not being in the proper position was a failure of the Shift Control Room Engineer (SCRE) to use a procedure when resetting the Control Room HVAC system. On November 30, 1987, at 1025 hours, the Toxic Gas Analyzer was declared operational after maintenance was performed. There were no EAs immediately available, so the SCRE received permission from the Center Desk Nuclear Station Operator (NSO) to reset the isolation of the Control Room HVAC system. The system had been manually isolated (during Toxic Gas Analyzer repairs) to be in a safe configuration since the analyzer was not operable. The SCRE reset the isolation but failed to change the Toxic Gas Sample Point Selector to the proper position of "OPEN A" as required in procedure QOP 5750-9, Control Room Ventilation System. The selector remained in the incorrect position until December 1, 1987, at 2200 hours, when the Shift Foreman discovered the error. Four shifts of EAs had noted the position of the selector as "OPEN C", but they did not recognize that the Control Room HVAC was not in the isolated condition.

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The cause of the December 1, 1987, "Toxic Gas Concentration High" alarm which isolated the Control Room HVAC system when the Shift Foreman moved the sample point selector from "OPEN C" to "OPEN A" is could have been due to a small amount of moisture present in the "OPEN A" position sample line. This moisture then could have aggravated the chlorine sample probe for a few moments as it passed through the system. This would produce an erratic or upscale reading, actuating the alarm and isolation.

The cause of the "Toxic Gas Concentration High" alarm and Control Room HVAC isolation on December 2, 1987, was a result of inadequate training and the lack of any procedure to provide guidance as to how the sulfur dioxide detector range switch worked. The range switch is provided to allow for accurate SO₂ readings. The trip setpoint is 1 ppm, which is 20 percent of full scale (0-5 ppm range). The trip setpoint provides a trip at 20 percent of whatever scale is selected. The reading at the time of this event was approximately 0.55 ppm and so when the range switch was ranged down to 0-1 ppm, the 20 percent threshold was exceeded and the isolation was initiated.

The EA involved (and others) on their rounds routinely range this switch down to the lower 0-1 ppm scale to get more accurate readings. No information has been readily available to describe the potential results of this action because it is not a part of QOP 5750-9.

D. SAFETY ANALYSIS OF EVENT:

The safety consequences of the Toxic Gas Sample Point Selector being in the "OPEN C" position instead of the "OPEN A" position were minimal since the Toxic Gas Analyzer would still have isolated the Control Room HVAC system if toxic gases were present in the Control Room. Also, the Control Room HVAC system could have been manually isolated if necessary.

The isolations of the Control Room HVAC system did not create any safety consequences since the isolated condition is the "safe" configuration of the system. Neither toxic gases nor radioactive gases would have been able to be introduced into the Control Room while the HVAC system was isolated.

E. CORRECTIVE ACTIONS:

To ensure that the Toxic Gas Sample Point Selector is in the proper position, the following actions will be taken:

- 1) Permanent signs will be placed at the controls of the A and B Control Room HVAC Trains and at the isolation reset switches to remind the operator to check the position of the selector. Nuclear Tracking System (NTS) number 2542008710801 will track this commitment.
- 2) The EA's re-training will be upgraded in the area of Control Room HVAC to stress the purpose of the sample point selector and to train them on determination of which mode the HVAC system is operating (NTS 2542008710802).

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- 3) The EA's round sheet, QOS 005-S12, Operators' Surveillance/Turnover Sheets Unit 1 Equipment Attendants, will be modified to have the EA log the Control Room HVAC mode before checking the sample point selector (NTS 2542008710803).
- 4) The possibility of performing a modification that would automatically change the sample point selector when the mode of the Control Room HVAC system changes will be investigated (NTS 2542008710804).

The SCRE involved was counselled by an Operating Engineer and is aware of the importance of using the appropriate procedure. This is deemed to be adequate corrective action.

To prevent a recurrence of the SO₂ detector's range switch event, a caution card was placed on the range switch warning not to change the range. A permanent sign will be placed near the range switch cautioning that changing the range may cause an isolation of the Control Room HVAC System and advising that the Instrument Maintenance Department be called before changing ranges (NTS 2542008710805). The experience of isolating the Control Room HVAC system by turning the range switch on the SO₂ detector and subsequent discussion of the significance of this event is deemed to be adequate corrective action for the EA involved. This event will be a part of both licensed and non-licensed operator required reading (NTS 2542008710806). The station training lesson plans will be revised to provide adequate information on this system (NTS 2542008710807). Finally, QOP 5750-9 will be revised to describe the range switch function of the sulfur dioxide monitor (NTS 2542008710808).

The possible moisture in the "OPEN A" sample line affecting the chlorine sample probe is considered an isolated incident. No corrective action is necessary at this time.

F. PREVIOUS EVENTS:

<u>Licensee Event Report</u>	<u>Description</u>
254/86-029	Control Room Ventilation isolated due to ammonia analyzer failure (broken belt on timing mechanism)
254/87-010	Control Room Ventilation Trip due to power loss to Toxic Gas Analyzer - Design deficiency.
254/87-013	Control Room Ventilation isolation due to chlorine monitor problems caused by defective procedures or corrosion.
254/87-014	Control Room Ventilation isolation caused by chlorine analyzer spike during electrical storm.

LICENSED EVENT REPORT (LER) TEXT CONTINUATION

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G. COMPONENT FAILURES:

No component failures were identified.



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RLS-87-378

December 29, 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) 87-027, Revision 06, 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. Bak
Station Manager

RLB/MSK/dak

Enclosure

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

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