

LICENSEE EVENT REPORT (LER)

Form Rev. 2.0

Facility Name (1) Quad Cities Unit One	Docket Number (2) 0 5 0 0 0 2 5 4	Page (3) 1 of 0 4
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Title (4)
"B" Control Room HVAC Inoperable Due to Failure of a Compressor Motor Contactor

Event Date (5)			LEI 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	0 4	9 4	9 4	- 0 0 2	- 0 0	0 1	2 9	9 4	Quad Cities Unit Two	0 5 0 0 0 2 6 5	
									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)	9 7	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)
		<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)
		<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> Other (Specify in Abstract below and in Text)
		<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	
		<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
		<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME Dale Thayer, Ext. 3109	TELEPHONE NUMBER AREA CODE 3 0 9 6 5 4 - 2 2 4 1
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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				N					

SUPPLEMENTAL REPORT EXPECTED (14)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	Expected Submission Date (15)	Month	Day	Year

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

A. ABSTRACT:

Unit 1 was in the RUN mode holding load at 97% of rated core thermal power, and Unit 2 was in the SHUTDOWN mode at 0% power, at 1400 hours on 01/04/94, at which time the "A" Control Room [NA] Heating Ventilation Air Conditioning (HVAC) [VI] was out of service for maintenance, and the "B" Control Room HVAC was operating. At 1400 hours, a burning smell was noticed by Control Room personnel. The electrical breaker for the Refrigeration Condensing Unit (RCU) [RFU] for the "B" HVAC was hot.

The breaker for the RCU was manually opened, making the "B" Control Room HVAC inoperable. The two (2) fuses for the control power for the RCU breaker were found to be blown.

The cause of the event was a coil failure in the contactor which resulted from cumulative cycling of the compressor.

The contactor has been replaced. A hot gas bypass system for the compressor will be installed to reduce cycling of the compressor/motor.

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TEXT Energy Industry Identification System (EIIIS) 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: "B" Control Room HVAC Inoperable Due to Failure of a Compressor Motor Contactor.

A. CONDITIONS PRIOR TO EVENT:

Unit: One Event Date: January 4, 1994 Event Time: 1400
 Reactor Mode: 04 Mode Name: Run Power Level: 97

This report was initiated by Licensee Report 254\94-002.

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 01/04/94, Unit 1 was operating in the RUN mode holding load at 800 MWe, and Unit 2 was in the SHUTDOWN mode at 0% power for a maintenance outage. The "B" Heating Ventilating Air Conditioning (HVAC) [VI] was operating and the "A" Control Room HVAC was out of service for maintenance. At 1345 hours on 01/04/94, the Control Room [NA] air was noted as being warm. Also, a burning scent (similar to burnt insulation) was noted in the Control Room. An operator was dispatched to investigate the "B" Control Room HVAC.

At 1400 hours, the operator identified the source of the burning scent to be the electrical breaker for the "B" Control Room HVAC Refrigeration Condensing Unit (RCU) [RFU]. The breaker was opened, making the "B" Control Room HVAC inoperable. At 1415 hours, the two (2) fuses for the control power for the RCU breaker were found to be blown. The "A" Control Room HVAC was returned to service and placed in operation at 1600 hours to supply ventilation to the Control Room.

At 1641 hours on 01/04/94, an ENS phone call was made, reporting the "B" Control Room HVAC as a single train failure. The report was made due to a conservative station interpretation of Technical Specification Section 3/4.8.H titled "Control Room Emergency Filtration System". The station policy for Control Room Emergency Filtration operability requires the "B" train HVAC compressor also to be operable. Since the maximum operating temperature for the temperature sensitive equipment cooled by the Control Room HVAC was not achieved, this report is considered voluntary.

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C. APPARENT CAUSE OF EVENT:

The cause of the event was the failure of the "B" Control Room HVAC compressor motor contactor. The contactor failed due to high current and overheating which occurred when a piece of ceramic shield broke and fell into the core area of the contactor. The ceramic shield is part of an assembly called a grid which functions to provide protection for the molded case from the heat of the arc that occurs when the contactor opens under load. The contactor is the original equipment installed in 1984 and has been in service since 1985.

The failure of the ceramic shield appears to have resulted due to the cumulative cycling of the contactor. One cause of the cycling of the contactor is a result of the compressor being sized such that it will handle the heat load under extreme conditions. However, under normal operating conditions, the compressor frequently cycles as opposed to running continuously with its load being modulated.

A previous cause of cycling the contactor was the control of cooling water to the condenser which frequently caused trips/restarts of the compressor resulting in additional cycles of the contactor.

D. SAFETY ANALYSIS OF EVENT:

The safety function of the Control Room HVAC is to maintain habitability. Since the filtration capability was not lost, the ability to maintain habitability was not impacted. Another concern is the effect of elevated temperatures on the associated plant equipment; specifically, control room instrumentation, essential service inverters, and ATWS inverters. Existing plant procedures provide for compensatory actions if control room HVAC is lost. These station procedures did not have to be invoked because the temperature limits were not achieved.

E. CORRECTIVE ACTIONS:

1. CORRECTIVE ACTIONS COMPLETED:

- a. The contactor has been replaced, tested, and operates satisfactorily.
- b. The motor was meggered for informational purposes, and no discrepancies were noted.
- c. The "Control Room Emergency Filtration System Monthly Surveillance Test" was performed satisfactorily to demonstrate operability.
- d. Operating procedures were previously revised to correct the control of cooling water to the condenser.

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2. CORRECTIVE ACTIONS TO BE COMPLETED:

a. Take action as required to reduce cycling of the compressor/motor as follows:

- (1) Install a hot gas bypass system for the compressor to reduce cycling by inducing a larger heat load on the compressor to better match its capacity (NTS #2541809400201).
- (2) Monitor the results of the hot gas bypass system to assess the effectiveness of this change, and determine if additional corrective actions are needed (NTS #2541809400202).

b. Review the Tech. Spec. station interpretations to determine the bases upon which the interpretations were developed, and revise the interpretations as necessary to be in concert with the established bases (NTS #2541809400203).

F. PREVIOUS EVENTS:

A review of maintenance history determined there were no failures of this contactor or similar contactors due to a similar cause. There was a failure of the Control Room HVAC compressor (08/04/92) which was caused by excessive cycling. This was identified in NRC Inspection Report 50-254(265)/92018.

G. COMPONENT FAILURE DATA:

There are no NPRDS codes for the control room HVAC system.