

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	
Title (4) RCIC Area High Temperature Switch would not actuate due to excess sealing varnish applied by technician.														
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   4	1   6	9   7	9   7	--   0   1   3	--   0   0	0   5	0   8	9   7		0   5   0   0   0				
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)											
POWER LEVEL (10) 0   0   0			20.402(b)			20.405(c)			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)			<input checked="" type="checkbox"/> 50.73(a)(2)(vii)			<input type="checkbox"/> Other (Specify		
			20.405(a)(1)(iii)			50.73(a)(2)(i)			50.73(a)(2)(viii)(A)			in Abstract		
			20.405(a)(1)(iv)			50.73(a)(2)(ii)			50.73(a)(2)(viii)(B)			below and in		
20.405(a)(1)(v)			50.73(a)(2)(iii)			50.73(a)(2)(x)			Text)					
LICENSEE CONTACT FOR THIS LER (12)														
NAME Charles Peterson, Regulatory Affairs Manager, ext. 3609										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					
AI4														
SUPPLEMENTAL REPORT EXPECTED (14)														
YES (If yes, complete EXPECTED SUBMISSION DATE)										Expected Submission Date (15)		Month	Day	Year
<input checked="" type="checkbox"/> NO														
ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)														

## ABSTRACT

On 041697, at 0300 hours, Unit One (U1) was in Mode 4. Instrument technicians found the 1-1360-14D, Reactor Core Isolation Cooling (RCIC) High Temperature Switch, would not actuate as expected. Investigation identified excess sealing varnish around the temperature switch capillary plunger which bound the plunger to the housing preventing response.

The root cause of this event is a personnel error by the technician who calibrated the 1-1360-14D temperature switch. The varnish was removed and the switch was calibrated and tested. Calibration and testing was performed on the U2 RCIC Area High temperature switches as well as the U1 and U2 High Pressure Coolant Injection (HPCI) Area High Temperature Switches and none were found degraded.

The safety consequences of this event to on-site personnel and the general public were minimal. The 1-1360-14A/B/C temperature switches would have actuated to isolate the RCIC system had an actual high temperature condition occurred.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

Form Rev. 2.0

FACILITY NAME (1)  Quad Cities Unit One	DOCKET NUMBER (2)  0 5 0 0 0 2 5 4	LER NUMBER (6)			PAGE (3)
		Year	Sequential Number	Revision Number	
		9 7 -	0 1 3 -	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: RCIC Area High Temperature Switch would not actuate due to excess sealing varnish applied by technician.

A. CONDITIONS PRIOR TO EVENT:

Unit: 1                      Event Date: 041697                      Event Time: 0300  
Reactor Mode: 4              Mode Name: Cold Shutdown              Power Level: 000

This report was initiated by Licensee Event Report LER254\97-013.

Cold Shutdown (4) - Mode switch in Shutdown position with average reactor coolant temperature  $\leq 212$  degrees F.

B. DESCRIPTION OF EVENT:

On 041697, at 0300 hours, Unit One (U1) was in Mode 4 for forced outage Q1F41. Balance of Work (BOW) Team instrument technicians performing interim procedure 97-0054 of QCIS 1300-05, "Refuel Outage RCIC Turbine Area High Temperature Isolation Calibration and Functional Test", determined the 1-1360-14D, Reactor Core Isolation Cooling (RCIC) [BN] High Temperature Switch [TS], would not actuate as expected. The investigation identified excess sealing varnish around the temperature switch capillary plunger which bound the plunger to the housing preventing response to varied temperature. The varnish was determined to have been applied after calibration during refueling outage Q1R14. This resulted in the 1-1360-14D temperature switch being inoperable from September 1996 until 041797. This is contrary to Technical Specification Table 3.2.A-1, item 5.c., which requires a minimum of two channels per trip system operable or the closure of the RCIC Steam Supply Isolation valves within one hour along with declaring the RCIC System inoperable.

The plunger assembly was cleaned and the switch adjusted within tolerance per procedure. The switch was subsequently installed, functionally tested, and returned to operable status.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

Form Rev. 2.0

FACILITY NAME (1)  Quad Cities Unit One	DOCKET NUMBER (2)  0   5   0   0   0   2   5   4	LER NUMBER (6)						PAGE (3)			
		Year		Sequential Number		Revision Number					
		9   7	-	0   1   3	-	0   0	3   OF   0   4				

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

**C. CAUSE OF THE EVENT:**

The root cause of this event is a skill-based personnel error by the technician who calibrated the 1-1360-14D temperature switch in February 1996. The technician applied excessive sealing varnish to the setpoint adjustment screw. The excess varnish dripped down the capillary plunger and dried between the plunger and it's housing. The sealing varnish is applied per procedure to the setpoint adjustment screw after calibration to prevent setpoint drift due to vibration/movement of the screw. The procedure (step H.10.f. of QCIS 1300-05) states, "If adjusting nut lacks friction and rotates freely, then apply a drop of sealing varnish to threads to prevent setpoint drift."

A contributing factor to this event is the lack of a post calibration functional test for temperature switches which have had the varnish applied. A functional test would have discovered this problem prior to returning the temperature switch to operable status.

**D. SAFETY ANALYSIS:**

The safety function of the 1-1360-14A/D temperature switches is to sense an abnormally high area temperature which is indicative of a steam leak. The RCIC Area High Temperature Isolation logic is arranged in a one-out-of-two-taken-twice configuration. A high temperature on either the 1-1360-14A or B combined with a high temperature on either the 1-1360-14C or D initiates a RCIC steam supply valve isolation and a RCIC turbine trip.

The safety consequences of this event to on-site personnel and the general public were minimal. The 1-1360-14D temperature switch was inoperable from the end of refueling outage Q1R14 (September 1996) until 041797. The 1-1360-14A, B, and C, RCIC Area High Temperature Switches, were operable throughout the time period the 1-1360-14D temperature switch was inoperable. Had an actual high temperature condition occurred, the 1-1360-14A/B and the 1-1360-14C would have actuated to isolate the RCIC system.

**E. CORRECTIVE ACTIONS**

Corrective Actions Completed:

1. The immediate corrective action was to remove the excess varnish from the 1-1360-14D temperature switch. The switch was then calibrated and functionally tested.
2. Since the problem could be generic to other similar switches, calibration and functional testing was performed on the U2 RCIC Area High temperature switches as well as the U1 and U2 High Pressure Coolant Injection (HPCI) Area High temperature switches. None were found degraded in a like manner.

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 One				0   5   0   0   0   2   5   4				9   7   -		0   1   3   -		0   0   4   OF   0   4	
TEXT Energy Industry Identification System (EIS) codes are identified in the text as [XX]													

Corrective Actions To Be Completed:

1. A change will be made to QCIS 1300-05 and QCIS 2300-07, "Refuel HPCI Turbine Area High Temperature Isolation Calibration and Functional Test", to add a caution on the amount of sealing varnish applied to set screws and to include a requirement to bench test switches if and after varnish has been applied after calibration adjustments (NTS 254-180-97-01301, Maintenance - Work Analysts; expected completion date 040198).

**F. PREVIOUS OCCURRENCES:**

A search of recent LER history was conducted and found the following LERs where a safety system was made inoperable due to a poor work practice.

265/95-062 Wrong fuse drawer opened on Bus 24 due to inadequate work practices.

254/96-018 Technical Specification functional test requirement missed due to inadequate written communications and poor work practices.

The above two items were reviewed in conjunction with this event. No common cause modes were identified between the three events.

A review of PIFs relating to these temperature switches found one related event, DVR 4-1-90-111. This event had all four U1 HPCI Area Temperature switch setpoints higher than the Technical Specification allowable trip level. The root cause of the event was not identified. However, based on the symptoms detailed in the report and the associated documentation, it can be concluded the causes are unrelated.

**G. COMPONENT FAILURE DATA:**

Component Description:	Temperature Switch
Manufacturer:	United Electric Controls Company
Model Number:	88B