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Quad-Cities Nuclear Power Station
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NJK-76-408

November 10, 1976

J. Keppler, Regional Director
Office of Inspection and Enforcement
Region III
U. S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Reference: Quad-Cities Nuclear Power Station
Docket No. 50-265, DPR-30, Unit 2
Appendix A, Sections 3.2.A, and 6.6.B.a, Table 3.2-1

Enclosed please find Reportable Occurrence Report No. RO 50-265/76-15 for Quad-Cities Nuclear Power Station.

This report is submitted to you in accordance with the requirements of Technical Specification 6.6.B.2.

Very truly yours,

COMMONWEALTH EDISON COMPANY
QUAD-CITIES NUCLEAR POWER STATION

N. J. Kalivianakis
Station Superintendent

NJK/GCT/lk

cc: G. A. Abrell

NOV 15 1976

LICENSEE EVENT REPORT

CONTROL BLOCK: [ ] (1–6)

(PLEASE PRINT ALL REQUIRED INFORMATION)

	LICENSEE NAME	LICENSE NUMBER	LICENSE TYPE	EVENT TYPE
01	ILQAD2 (7–8 9–14)	00–00000–00 (15–25)	4111 1 (26–30)	03 (31–32)

	CATEGORY	REPORT TYPE	REPORT SOURCE	DOCKET NUMBER	EVENT DATE	REPORT DATE
01 CON'T	[ ] (57–58)	L (59)	L (60)	050–0265 (61–68)	101276 (69–74)	110706 (75–80)

EVENT DESCRIPTION

02 While performing calibration and functional test surveillance on the Unit Two Reactor
03 Core Isolation Cooling (RCIC) turbine area high temperature switches, five of the
04 sixteen switches were found to trip at temperatures exceeding 200°F. All other
05 switches tripped satisfactorily when tested. This Limiting Condition for Operation
06 is specified in Technical Specification Table 3.2-1, which relates to instrumentation
07

SYSTEM CODE	CAUSE CODE	COMPONENT CODE	PRIME COMPONENT SUPPLIER	COMPONENT MANUFACTURER	VIOLATION
CE (9–10)	E (11)	INSTRU (12–17)	A (43)	F083 (44–47)	N (48)

CAUSE DESCRIPTION

08 (Proximate Cause-Equipment Failure) No mechanical malfunctions were discovered upon
09 inspection of the switches. No relay problems or other electrical malfunctions
10 existed. The apparent cause of this occurrence is attributed to instrument setpoint
drift.

	FACILITY STATUS	% POWER	OTHER STATUS	METHOD OF DISCOVERY	DISCOVERY DESCRIPTION
11	H (9)	000 (10–12)	NA (13–44)	B (45)	Routine Functional Testing (46–80)

	FORM OF ACTIVITY RELEASED	CONTENT OF RELEASE	AMOUNT OF ACTIVITY	LOCATION OF RELEASE
12	Z (9)	Z (10)	NA (11–44)	NA (45–80)

PERSONNEL EXPOSURES

	NUMBER	TYPE	DESCRIPTION
13	000 (7–9 11)	Z (12)	NA (13–80)

PERSONNEL INJURIES

	NUMBER	DESCRIPTION
14	000 (7–9 11)	NA (12–80)

OFFSITE CONSEQUENCES

15 NA (7–8 9–80)

LOSS OR DAMAGE TO FACILITY

	TYPE	DESCRIPTION
16	Z (9)	NA (10–80)

PUBLICITY

17 NA (7–8 9–80)

ADDITIONAL FACTORS

18 (Event Description contd) that provide primary containment isolation functions. The
19 RCIC turbine area temperature switches are provided for the purpose of (cont)

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GPO 881-667

ADDITIONAL FACTORS

Event Description continued

detecting a break in the RCIC steam piping, and initiating a Group V isolation signal to close steamline isolation valves MO-2-1301-16 and MO-2-1301-17. The as-found trip setpoints of the five switches were as follows:

TS-2-1360-14A	204°F
TS-2-1360-14B	235°F
TS-2-1360-15B	210°F
TS-2-1360-16C	201°F
TS-2-1360-17C	210°F

The sixteen temperature switches associated with the RCIC steam piping and turbine are arranged in groups of four, located at four physical areas. Each group is electrically wired such that the four switches will provide an isolation signal by means of a one-out-of-two-twice relay logic scheme. The groups are arranged as follows: the "A" switches are mounted at the turbine exhaust rupture disc, the "B" switches are mounted adjacent to the steam inlet piping, and the "C" and "D" switches are located adjacent to the turbine seals.

Since only one of the "A" switches tripped at a point greater than 200°F, the other three switches would have provided an isolation signal in the event of a high temperature condition at the turbine exhaust. All "D" switches were operable and therefore, were capable of providing a protective function. The "C" switches failed such that an isolation signal would not have been produced until 201°F. However, the "D" temperature switches are located within 3 feet of the "C" switches, and a steam leak would be detected to provide an isolation condition. The failure mode of the "B" switches was such that an RCIC isolation would have occurred at a temperature of 210°F in the vicinity of the steam supply line. However, additional protection was provided by virtue of the RCIC steam high flow isolation being operable. Therefore, a steam line break would have resulted in a high flow condition to cause a RCIC isolation. In both the "C" and "B" switch cases, the margin of failure was not such that a steam line failure or gross leak would go undetected. Therefore, this occurrence did not significantly reduce the reliability of the RCIC system to isolate on a high temperature condition. Since the low steamline pressure and high steam flow Group V isolation sensors were operable, and since this occurrence did not prevent the RCIC system from functioning as designed, no adverse safety implications resulted from this event. (RO 50-265/76-15)

Corrective Action to Prevent Recurrence

The five temperature switches which exceeded Technical Specification limits were re-calibrated and functionally tested so as to trip at setpoints less than 200°F. The "as-left" setpoints for these switches are as follows:

TS-2-1360-14A	184°F
TS-2-1360-14B	184°F
TS-2-1360-15B	185°F
TS-2-1360-16C	184°F
TS-2-1360-17C	186°F

It is felt that these setpoints are both adequate to compensate for instrument drift, as well as being well above normal system operating temperatures so that unnecessary spurious isolations do not occur.

Failure Data

This is the first occurrence whereby the Unit Two RCIC temperature switches exceeded Technical Specification limitations. On April 22, 1974, Unit One RCIC switch TS-1-1360-14B was found to trip at 231°F. This occurrence was reported as Abnormal Occurrence AO 50-254/74-15. The switch was recalibrated to trip at 185°F.

The RCIC temperature switches are manufactured by Fenwall, Inc., model 17002-40, with range -100°F to 600°F.