

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					Page (3) 1 of 0 3																																																																																																				
Title (4) Bus 13-1 4kv Undervoltage Relay Out Of Tolerance Due To Instrument Setpoint Drift																																																																																																																			
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 2	1 4	8 6	8 6	0 1 1	0 0	0 3	1 0	8 6			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)																																																																																																																
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)		X 50.73(a)(2)(v)		73.71(c)																																																																																																										
			20.405(a)(1)(ii)		50.36(c)(2)		50.73(a)(2)(vii)		Other (Specify																																																																																																										
			20.405(a)(1)(iii)		50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		in Abstract below																																																																																																										
			20.405(a)(1)(iv)		50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)		and in Text)																																																																																																										
			20.405(a)(1)(v)		50.73(a)(2)(iii)		50.73(a)(2)(x)																																																																																																												
<p align="center">LICENSEE CONTACT FOR THIS LER (12)</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td colspan="10">Name Alan J. Blamey, Technical Staff Engineer</td> <td colspan="5">TELEPHONE NUMBER</td> </tr> <tr> <td colspan="10"></td> <td colspan="5">AREA CODE 3 0 9</td> </tr> <tr> <td colspan="10"></td> <td colspan="5">6 5 4 - 2 2 4 1</td> </tr> </table> <p align="center">COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>CAUSE</th><th>SYSTEM</th><th>COMPONENT</th><th>MANUFAC-TURER</th><th>REPORTABLE TO NPRDS</th><th></th><th>CAUSE</th><th>SYSTEM</th><th>COMPONENT</th><th>MANUFAC-TURER</th><th>REPORTABLE TO NPRDS</th><th></th> </tr> <tr> <td>X</td><td>E A</td><td>1 2 7</td><td>G 0 8 0</td><td>N</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table> <p align="center">SUPPLEMENTAL REPORT EXPECTED (14)</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td colspan="10">Yes (If yes, complete EXPECTED SUBMISSION DATE)</td> <td colspan="2">X NO</td> <td colspan="2">Expected Submission Date (15)</td> <td colspan="2">Month Day Year</td> </tr> <tr> <td colspan="10"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> </tr> </table> <p>ABSTRACT (Limit to 1400 spaces, i.e. approximately fifteen single-space typewritten lines) (16)</p>															Name Alan J. Blamey, Technical Staff Engineer										TELEPHONE NUMBER															AREA CODE 3 0 9															6 5 4 - 2 2 4 1					CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS		X	E A	1 2 7	G 0 8 0	N								Yes (If yes, complete EXPECTED SUBMISSION DATE)										X NO		Expected Submission Date (15)		Month Day Year																	
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On February 14, 1986, while Unit 1 was in the REFUEL mode, it was discovered that the undervoltage relay in position AB on Bus 13-1 tripped at 2870 VAC, which is below required Technical Specification limit of 3045 VAC +/- 5 percent. Bus 13-1 provides emergency power to 1A and 1B RHR pumps and 1A Core Spray pump. Undervoltage condition trips above pumps and initiates load shedding and starting and loading of 1/2 Diesel Generator to Bus 13-1. There are two undervoltage relays on this bus, but trip logic requires both to actuate to initiate above actions. Root cause was instrument setpoint drift. Relay was recalibrated to actuate within limits. This is the first occurrence of this type.

This report is being submitted to you in accordance with the requirements of 10 CFR 50.73(a)(2)(v), which requires the reporting of any event or condition that alone could have prevented the fulfillment of the safety function of systems that are needed to mitigate the consequences of an accident.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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	8 6	-	0 1 1	-	0 0	0 2	OF	0 3	
TEXT										

PLANT AND SYSTEM IDENTIFICATION:

General Electric - Boiling Water Reactor - 2511 Mwt rated core thermal power. Energy Industry Identification System (EIIS) codes are identified in the text as [XX].

IDENTIFICATION OF OCCURRENCE:

Routine calibration of the 4kv undervoltage relays on Bus 13-1 showed one relay to be out of the allowable Technical Specification limit due to instrument setpoint drift.

Discovery Date: 2-14-86

Report Date: 3-10-85

This report was initiated by Deviation Report D-4-1-86-23

CONDITIONS PRIOR TO OCCURRENCE:

REFUEL Mode(2) - Rx Power 00% - Unit Load 000 MWe

REFUEL Mode(2) - Refuel - In this position interlocks are established so that one control rod only may be withdrawn when flux amplifiers are set at the proper sensitivity level and the refueling crane is not over the reactor. Also, the trip from the turbine control valves, turbine stop valves, main steam isolation valves, and condenser vacuum are bypassed. If the refueling crane is over the reactor, all rods must be fully inserted and none can be withdrawn.

DESCRIPTION OF OCCURRENCE:

On February 14, 1986, at 11:00, Quad Cities Unit 1 was in the REFUEL mode. It was discovered at this time that the undervoltage relay in position AB on Bus 13-1 was out of tolerance. This anomaly was noted during the Operational Analysis Department review of Work Request Q45427. Work Request Q45427 was used by the Operational Analysis department to check/calibrate the undervoltage relays on Bus 13-1 on February 13, 1986. The undervoltage relay was calibrated to within the Technical Specification tolerance on February 13, 1986. Due to the small deviation from the allowed tolerance this anomaly was not discovered until the test was reviewed on February 14, 1986.

This calibration/check is required once each refueling outage per Technical Specification Table 4.2-1. Technical Specification Table 3.2-2 states that the undervoltage relays must actuate in a +/- 5 percent tolerance about 3045 volts (2893 volts to 3197 volts). The undervoltage relay in position AB was found to actuate at 2870 volts, 0.7% out of the allowable tolerance.

There are two undervoltage relays which sense Emergency Bus 13-1 voltage. The trip logic is such that both relays are required to actuate to initiate an undervoltage trip. This trip initiates an automatic start of the 1/2 Diesel Generator [EK], removes nonessential loads from emergency buses, and trips the 1A and 1B Residual Heat Removal (RHR)[80] and 1A Core Spray [8M] pumps if running. Since the undervoltage relay in position AB did not trip within the allowable tolerance, the required Technical Specification undervoltage trip of 3045 volts +/- 5 percent was not operable.

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TEXT										

This report is being submitted to you in accordance with the requirements of 10 CFR 50.73 (a)(2)(v), which requires the reporting of any event or condition that alone could have prevented the fulfillment of the safety function of systems that are needed to mitigate the consequences of an accident.

APPARENT CAUSE OF OCCURRENCE:

The cause of this event was failure of the 4KV undervoltage relay, in position AB, to actuate at the proper low voltage set point due to instrument setpoint drift.

Further investigation showed no signs of damage and no work was performed on this relay since the previous calibration/check during the last Unit 1 refueling outage. Therefore, based on the proven reliability of the General Electric IAV relay, the Station considers this to be an isolated case of instrument drift.

ANALYSIS OF OCCURRENCE:

Bus 13-1 provides emergency power to 1A and 1B RHR pumps and 1A Core Spray pump via the normal offsite power supply or the 1/2 Diesel Generator. Failure of the undervoltage trip function on this bus could result in damage to operating equipment fed from the bus and also prevent starting of the 1/2 Diesel Generator. In this occurrence, the undervoltage relay was found to trip at 2870 VAC, which is just below the lower Technical Specification limit of 2893 VAC. The probability of the bus voltage decreasing to that level and remaining there for a period of time is low. A lower bus voltage would have actuated the undervoltage relay. However, if the bus voltage did decrease to that level and no operator action was taken to manually load the diesel generator to Bus 13-1, the Bus 13-1 degraded voltage relays would automatically initiate loading of the 1/2 Diesel Generator to Bus 13-1. Upon sensing a bus voltage of 3840 VAC +/- 2 percent, the degraded voltage relays initiate loading the diesel generator after an approximate five minute time delay. In addition, if the undervoltage condition was caused by a degradation of offsite power such that incoming voltage was low, Bus 13 undervoltage relays would sense the undervoltage condition. Undervoltage on Bus 13, which is the normal feed to Bus 13-1, initiates separation of Bus 13-1 from Bus 13 and starting and loading the 1/2 Diesel Generator to Bus 13-1.

The 1C and 1D RHR pumps and the 1B Core Spray pump which are fed from Bus 14-1, would have been available to supply emergency core cooling during an undervoltage condition if needed.

CORRECTIVE ACTION:

The 4KV undervoltage relay was immediately calibrated to meet Technical Specification requirements. Based on the past operating experience with the undervoltage relays and their proven reliability, no further corrective actions are deemed necessary.

FAILURE DATA:

An NPRDS search was conducted and no failures of this type were found. There is no record of previous failures of this type at the station.

EVENT SUMMARY AND CAUSE CODES

4-1-86-23

 REV, 0 12/85
PGK

<input type="checkbox"/>	Lost generation	<input type="checkbox"/>	Reactor trip	<input type="checkbox"/>	NRC violation, level___
<input type="checkbox"/>	Cost > \$25,000	<input type="checkbox"/>	ESF actuation	<input type="checkbox"/>	GSEP event, class_____
<input type="checkbox"/>	Hazard or Spill	<input checked="" type="checkbox"/>	NRC reportable	<input checked="" type="checkbox"/>	Tech Spec LCO
<input type="checkbox"/>	Personnel injury	<input checked="" type="checkbox"/>	LER	<input type="checkbox"/>	Potential or future loss
Component type			SALP functional area___		

Failure mode				Department		
X	C	E	M	9	NS-C&E	Relay out of adjustment
X						
X						

Licensed? L or blank		Type		Detail code	
Level		Department			
A					
A					
A					

Type		Detail code		Department	
B					
B					
B					

Type	Detail code
C	

Type of deficiency

Detail code

Procedure type

D		
D		
D		

Type Licensed? Level Department

E			
E			
E			



Commonwealth Edison

DEVIATION REPORT

BUR NO

4 - 1 - 86 - 23

STA UNIT YEAR NO

PART 1 TITLE OF DEVIATION

BUS 13-1 4KV UNDERVOLTAGE RELAY OUT OF TOLERANCE

OCCURRED

2-14-86

1100

DATE

TIME

SYSTEM AFFECTED

6700

PLANT STATUS AT TIME OF EVENT

U-1 - 2

0%

MODE U-2 - 4 POWER (%) 96%

Q 45427

TESTING

☒ YES☐ NO

WORK REQUEST NO

DESCRIPTION OF EVENT

DURING THE CALIBRATION OF THE BUS 13-1 4KV UNDERVOLTAGE RELAYS BY OAD, THE RELAY IN POSITION AB WAS FOUND TO BE OUT OF TOLERANCE. THIS RELAY WOULD HAVE TRIPPED AT A BUS VOLTAGE OF 2870 VAC WHICH IS OUTSIDE OF THE TECH. SPEC. VALUE OF 3045 VAC \pm 5% (THAT'S 2893 VAC ON THE LOW SIDE). THIS VALUE WAS CONFIRMED USING A SECOND QA VOLTMETER. THE RELAY ON THE OTHER TWO PHASES HAD AS FOUND VALUE WITHIN THE TECH. SPEC. LIMITS T.S. TABLE 3.2-2.

POTENTIALLY SIGNIFICANT EVENT PER NSD DIRECTIVE A-07

☐ YES☒ NO10CFR50.72 NRC RED PHONE
NOTIFICATION MADE☐ 1 HOUR
☒ 4 HOUR

50.72 b (2) (III)

1454

☐ NO

TIME

DAVID B. COOK

2-14-86

RESPONSIBLE SUPERVISOR

DATE

PART 2 OPERATING ENGINEER'S COMMENTS

THE RELAY WAS RECALIBRATED WITHIN THE PROPER LIMITS.

☐ NON REPORTABLE EVENT☒ 30 DAY REPORTABLE/10CFR 73 (a)
(2) (V)☐ 5 DAY REPORT PER 10CFR21☐ ANNUAL/SPECIAL REPORT REQUIRED

A.L.R. #

L.E.R. # 86-11

NOTIFICATION

REGION III

DATE

TIME

NSD

DATE

TIME

☐ CECO CORPORATE NOTIFICATION MADE
IF ABOVE NOTIFICATION IS PER 10CFR21

TELECOPY

CECO CORPORATE OFFICER

DATE

TIME

PRELIMINARY REPORT
COMPLETED AND REVIEWED

G. TIETZ

2-14-86

OPERATING ENGINEER

DATE

INVESTIGATION REPORT & RESOLUTION
ACCEPTED BY STATION REVIEW*H. Sullivan**D. B. Cook*RESOLUTION APPROVED AND
AUTHORIZED FOR DISTRIBUTION

STATION MANAGER

3/14/86
DATEIE22
11



Commonwealth Edison

Quad Cities Nuclear Power Station
22710 206 Avenue North
Cordova, Illinois 61242
Telephone 309/654-2241

NJK-86-65

March 10, 1986

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

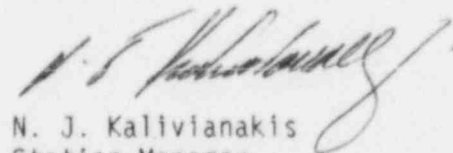
Reference: Quad-Cities Nuclear Power Station
Docket Number 50-254, DPR-29, Unit One

Enclosed please find Licensee Event Report (LER) 86-011, Revision 00, for Quad-Cities Nuclear Power Station.

This report is submitted to you in accordance with the requirements of the Code of Federal Regulations, Title 10, Part 50.73(a)(2)(v), which requires the reporting of any event or condition that alone could have prevented the fulfillment of the safety function of systems that are needed to mitigate to consequences of an accident.

Respectfully,

COMMONWEALTH EDISON COMPANY
QUAD-CITIES NUCLEAR POWER STATION



N. J. Kalivianakis
Station Manager

NJK/MSK/dak

Enclosure

cc: J. Wojnarowski
A. Madison
INPO Records Center
NRC Region III

0437H