LICENSEE EVENT REPORT (LER)

Facility Name (1)	Docket Number (2)	Page (3)
QUAD-CITIES NUCLEAR POWER STATION, UNIT TWO	0 5 0 0 0 2 6 5	1 of 0 4

Title (4) Unit Two Scram When Mode Switch Was Moved Caused by Switch Position Uncertainty Due to Design

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)
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0 5	2 2	8 8	8 8	---	0 1 1 1	--- 0 0	0 6	0 9	8 8		0 5 0 0 0

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)	x 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
		___ 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)	

LICENSEE CONTACT FOR THIS LER (12)

Name	TELEPHONE NUMBER
	AREA CODE
Robert F. Thomann, Technical Staff Engineer, Ext. 2188	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	
B	J C	H S	G 0 8 0	Y							

SUPPLEMENTAL REPORT EXPECTED (14)		Expected Submission Date (15)	Month	Day	Year
___ Yes (If yes, complete EXPECTED SUBMISSION DATE)	x NO				

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

On May 22, 1988, Quad Cities Unit Two was in the REFUEL mode at 0 percent thermal power. The reactor fuel was removed and the vessel cavity was flooded. At 0045 hours, the reactor mode switch was moved from the REFUEL mode to the STARTUP/HOT STANDBY mode to prepare for control rod drive relatching. In moving the mode switch, the Nuclear Station Operator (NSO) went slightly past the target position. This caused part of the RUN logic to engage and a full reactor scram signal occurred due to condenser low vacuum. NRC notification of this event was completed at 0255 hours to comply with 10CFR50.72.

The cause of this event was a design deficiency which caused an uncertainty of the reactor mode switch position when it was moved from REFUEL to STARTUP/HOT STANDBY. To correct this condition, the mode switch will be replaced per modification M4-1(2)-86-26 when the new switch is available. This report is provided to comply with 10CFR50.73(a)(2)(iv).

1622 1/1

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].

EVENT IDENTIFICATION:

Unit Two reactor scram occurred due to uncertainty of mode switch position when moving it from REFUEL to STARTUP/HOT STANDBY.

A. CONDITIONS PRIOR TO EVENT:

Unit: Two Event Date: May 22, 1988 Event Time: 0045
Reactor Mode: 3 Mode Name: Startup/Hot Standby Power Level: 00%

This report was initiated by Deviation Report D-4-2-88-026.

Startup/Hot Standby Mode (3) - In this position, the reactor protection scram trips, initiated by condenser low vacuum and main steamline isolation valve closure are bypassed, the low pressure main steamline isolation valve closure trip is bypassed and the reactor protection system is energized, with IRM and APRM neutron monitoring system trips and control rod withdrawal interlocks in service.

B. DESCRIPTION OF EVENT:

On May 22, 1988, Quad Cities Unit Two was in the REFUEL mode at 0 percent thermal power with the reactor fuel removed and the vessel cavity flooded. At 0045 hours, in preparation for relatching Control Rod Drives (CRD) [AA,DRIV] following maintenance, the Unit Two Nuclear Station Operator (NSO) moved the reactor mode switch [HS] from REFUEL to STARTUP/HOT STANDBY. While turning the mode switch, the NSO went slightly past the STARTUP/HOT STANDBY position to make sure that the switch actuated all of its contacts during the position change. In doing so, part of the RUN logic was engaged and a full scram [JC] occurred. A condenser [SG,COND] low vacuum signal caused the scram.

No control rod movement occurred as a result of the scram because all rods were fully inserted and the CRD system was off. At 0053 hours, the NSO moved the reactor mode switch back to the REFUEL position and the scram was reset.

NRC notification of this event was completed at 0255 hours to meet the requirements of 10CFR50.72.

C. APPARENT CAUSE OF EVENT:

This report is submitted to comply with reporting requirements of 10CFR50.73(a)(2)(iv): The licensee shall report any event or condition that resulted in a manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System (RPS).

The intermediate cause of the Unit Two scram was because the NSO moved the mode switch past the STARTUP/HOT STANDBY position and some of the logic for the RUN position engaged. The root cause of the scram was due to the design of the mode switch. The reactor mode switch does not have a positive means of ensuring the mode switch is properly positioned, i.e. there is no "click stop" at each of its four positions. As a result, the NSO was not certain that the mode switch had completely changed its position from REFUEL to STARTUP/HOT STANDBY. This problem has been documented in General Electric Service Information Letter (SIL) number 397, dated November 1983.

D. SAFETY ANALYSIS OF EVENT:

The safety consequences of this event are minimal. At the time of the scram, Unit Two was in a refuel outage with the fuel removed and the vessel cavity flooded. When the RUN mode was partially engaged, the condenser low vacuum bypass contacts disengaged. As a result, the protection systems that should have been bypassed while a unit is not in RUN were not bypassed. This caused the system to react in a conservative manner, actuating the Unit Two scram as designed.

E. CORRECTIVE ACTIONS:

The BWR Owners Group has contracted General Electric to design and qualify a modified SB-9 mode switch to replace the existing mode switch. According to General Electric personnel, the modified SB-9 switch should resolve the problems associated with the current switch. As an interim measure, temporary procedures are being developed to administratively control the mode switch movement to include verifying appropriate relay position. These newly developed procedures will be permanently implemented until the mode switch can be replaced (Nuclear Tracking System: 2652008802601). In addition, this event will be reviewed at Operating Department tailgate meetings (NTS 2652008802602). The mode switch replacement will be completed per modification M-4-1(2)-86-26 when the new switch is available.(Nuclear Tracking System: Unit One - 2542008802601; Unit Two - 2542008802602).

F. PREVIOUS EVENTS:

One other event is documented at Quad Cities Station (since implementation of 10CFR50.73 reporting requirements) that involved the reactor mode switch.

LER NUMBER	TITLE
LER-254/88-008	Group I Isolation in Startup/Hot Standby Mode Caused by Reactor Mode Switch Rotational Play.

A Nuclear Plant Reliability Data System (NPRDS) search showed one other similar event. The corrective action was to replace the switch with a General Electric SB-9 switch

G. COMPONENT FAILURE DATA:

The reactor mode switch is a product of General Electric Company model number SB-1.

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Quad Cities Nuclear Power Station
22710 206 Avenue North
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Telephone 309/654-2241

RLB-88-198

June 8, 1988

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

Reference: Quad-Cities Nuclear Power Station
Docket Number 50-265, DPR-30, Unit Two

Enclosed is Licensee Event Report (LER) 88-011, Revision 00, 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): the licensee shall report any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature, including the Reactor Protection System.

Respectfully,

COMMONWEALTH EDISON COMPANY
QUAD-CITIES NUCLEAR POWER STATION

R. L. Bax
Station Manager

RLB/MSK/djb

Enclosure

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

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