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RLB-92-102

April 28, 1992

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) 92-010, 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)(i)(B): The licensee shall report any operation or condition prohibited by the plant's Technical Specification.

Respectfully,

COMMONWEALTH EDISON COMPANY
QUAD CITIES NUCLEAR POWER STATION

Harry Spindler for RLB

R. L. Bax
Station Manager

RLB/TB/plm

Enclosure

cc: J. Schrage
T. Taylor
INPO Records Center
NRC Region III

STMGR 350

IE22

LICENSEE EVENT REPORT (LER)

Form Rev 2.0

Facility Name (1)	Docket Number (2)	Page (3)
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Title (4)

Low Temperature On RPV Bottom Head During Hydrostatic Test

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 3	2 8	9 2	9 2	---	0 1 0	--- 0 0	0 4	2 8	9 2		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)					
	1	___ 20.402(b)	___ 20.405(c)	___ 50.73(a)(2)(iv)	___ 73.71(b)		
POWER LEVEL (10)	0 0 %	___ 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 in Abstract below and in Text)		
		___ 20.405(a)(1)(iii)	X 50.73(a)(2)(i)	___ 50.73(a)(2)(viii)(A)			
		___ 20.405(a)(1)(iv)	___ 50.73(a)(2)(ii)	___ 50.73(a)(2)(viii)(B)			
		___ 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
Thomas Kuksuk, ISI Coordinator Ext. 2176	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	MANUFAC-TURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS	

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)

ABSTRACT:

On 03/28/92 with the Reactor Mode switch in SHUTDOWN, Operations was performing QCOS 201-7 (Reactor Vessel and Class 1 System 10 Year Hydrostatic Test for ISI) on Quad Cities Unit 2 Reactor Vessel. At 0314 on 03/29/92, the Shift Engineer noticed that the bottom head thermocouple (2-263-69 L1) reading on chart recorder 2-263-104 was 166 degrees F. At 0340, it was determined this reading was below the required minimum temperature of 170.7 degrees F as required by curve A of Technical Specification's Figure 3.6-1.

The cause of the event is personnel error. The Reactor Pressure Vessel beltline and Non-beltline temperature points were insufficiently monitored during the test to assure compliance with the minimum required temperatures. A contributing cause of the event was a lack of specific guidance in the QCOS 201-7 procedure for monitoring RPV Vessel temperature points.

The immediate corrective actions included suspending the test and depressurizing the vessel to be within the acceptable Technical Specification temperature-pressure range. The performance of the individual involved will be reviewed and disciplinary action will be administered as deemed appropriate. Future corrective actions include the revision of the RPV Vessel Hydro and System Leakage Test procedures.

This report is being submitted to comply with 10CFR50.73(a)(2)(i)(B).

PLANT AND SYSTEM IDENTIFICATION:

General Electric - Boiling Water Reactor - 2511 MWt rated core thermal power.

EVENT IDENTIFICATION: Low Temperature On RPV Bottom Head During Hyrdrostatic Test.

A. CONDITIONS PRIOR TO EVENT:

Unit: Two Event Date: March 29, 1992 Event Time: 0340
Reactor Mode: 1 Mode Name: SHUTDOWN Power Level: 00%

This report was initiated by Deviation Report D-4-2-92-046.

SHUTDOWN Mode (1) - In this position, a reactor scram is initiated, power to the control rod drives is removed, and the reactor protection trip systems have been deenergized for 10 seconds prior to permissive for manual reset.

B. DESCRIPTION OF EVENT:

On March 28, 1992, with the mode switch in SHUTDOWN, Operations was performing QCOS 201-7 (Reactor Vessel and Class 1 Systems 10 Year Hydrostatic Test for ISI) on the Quad Cities Unit Two Reactor Pressure Vessel (RPV) [AC]. This procedure was being performed to take credit for the 10 year Inservice Inspection (ISI) hydrostatic test and various repairs and replacements performed within the ASME Class 1 boundary. The test requires a 1110 psig test pressure with a 4 hour hold time. The RPV temperature requirements are established by Technical Specifications Figure 3.6-1. Minimum temperature requirements for the beltline (core) region are based on a calculated Effective Full Power Years (EFPY) of 12.731. This corresponds to a beltline minimum temperature of roughly 187.3 degrees F for a 1110 psig RPV test pressure. The non-beltline region temperatures are independent of the EFPY calculation and dependent on RPV pressure. For a 1110 psig RPV pressure, a 170.7 degrees F minimum non-beltline temperature is required.

On 03/28/92, the QCOS 201-7 hydrostatic test started. The 2A Recirculation Pump was used to raise the RPV temperature. Late on 03/28/92, 400 psig RPV pressure was achieved and operations personnel performed leakage walkdowns in the drywell. At 2207, all temperatures for the beltline and non-beltline regions were checked by the Shift Engineer and found to be above the minimum requirements for the 1110 psig pressure. Pressurization continued to 1110 psig using the Control Rod Drive (CRD) [AA] system. The CRD system injected a flow of roughly 72 gpm of water into the RPV. The Reactor Water Cleanup (RWCU) [CE] system was used to reject water inventory to control pressure. At 2345, the

1110 psig pressure was reached and the 4 hour hold time began. From 2207 to 0314, control room chart recorder CR 2-263-104 was occasionally checked by the same Shift Engineer. The beltline temperatures were closest to the limits during the start of the test and were closely monitored. Infrequently, other points on the recorder were looked at and compared to the previous reading to note any changes. After each check, the Shift Engineer informed the Unit Two crew involved with the QCOS 201-7 hydro test that all temperatures were acceptable. At 0314 on 03/29/92, the same Shift Engineer reviewed the required minimum temperatures stated in the procedure for non-beltline thermocouples. He again checked the chart recorder (2-263-104) and noticed that the lower head thermocouple (2-263-69-L1) was reading 166 degrees F. At 0340, it was determined this reading was below the required minimum temperature of 170.7 degrees F as required by curve A of Technical Specification Figure 3.6-1. During this 3 hour and 55 minute hold time, the RPV pressure ranged from 1110 to 1120 psig. The test was suspended at this time and the RPV pressure reduced to 1050 psig to meet the pressure-temperature requirements of Tech. Spec. Figure 3.6-1. Below are the RPV temperature points that were available on control room chart recorder CR 2-263-104 and the temperature data recorded during the hydrostatic test.

CONTROL ROOM CHART RECORDER - CR 2-263-104

Point #1 RPV Flange	TE 2-263-69-A1	(non-beltline)
Point #2 RPV Steam	TE 2-263-69-B1	(non-beltline)
Point #3 RPV Below Water	TE 2-263-69-C1	(non-beltline)
Point #4 FW Nozzle N4B	TE 2-263-69-D1	(non-beltline)
Point #7 RPV Above Skirt	TE 2-263-69-H1	(non-beltline)
Point #9 RPV Bottom Head	TE 2-263-69-L1	(non-beltline)
Point #10 RPV Head	TE 2-263-66-A1	(non-beltline)
Point #13 RPV Core	TE 2-263-69-F2	(beltline)
Point #14 RPV Core	TE 2-263-69-F3	(beltline)

APPROX TIME	POINT: (In Degrees Fahrenheit) #1	#2	#3	#4	#7	#9	#10	#13	#14
3/28									
2200	173.6	187.0	189.0	183.1	183.6	184.0	177.9	189.0	189.3
2245	176.7	189.9	192.1	185.9	186.5	172.5	180.8	192.2	192.4
2300	177.6	190.4	192.6	186.4	187.7	170.6	181.4	192.5	192.8
2330	178.6	190.9	193.1	186.6	187.5	168.1	181.8	193.1	193.3
3/29									
0015	180.2	192.0	193.6	187.3	187.8	166.1	182.0	193.4	193.8
0100	181.9	192.7	193.9	187.4	188.1	164.3	183.4	193.0	194.0
0200	182.8	193.1	194.1	187.8	188.3	165.1	184.2	193.9	194.4
0300	183.6	193.6	194.6	188.1	188.8	166.4	185.0	194.4	194.7
0314	183.7	193.7	194.7	188.5	189.0	166.7	185.2	194.6	194.9
0320	173.9	193.8	194.8	188.4	189.0	166.8	185.2	194.7	195.0

C. APPARENT CAUSE OF EVENT:

This report is being submitted in accordance with 10CFR50.73(a)(2)(i)(B), which requires the reporting of any operation or condition prohibited by the Plant's Technical Specifications. The cause of this event is personnel error. The Shift Engineer performing the test also wrote the QCOS 201-7 procedure. He understood the RPV pressure/temperature curve requirements. The actual temperature points, however were insufficiently monitored during the test to assure compliance with the minimum required temperatures. A contributing cause of the event was a lack of specific guidance in the QCOS 201-7 procedure for monitoring RPV temperature points. The test procedure contains the Technical Specification temperature curve and a list of beltline and non-beltline temperature points. However, the procedure did not specify the essential temperature points to monitor or the frequency for checking them.

During post discussions of this event, it was determined that the temperature drop was associated with the injection of water through the CRD system. The CRD system injects cold water into the bottom of the RPV and produces a localized cool spot. The bottom head temperature dropped from 184.0 to 164.3 degrees F and then stabilized at roughly 166 degrees F.

D. SAFETY ANALYSIS OF EVENT:

The safety significance of this event was minimal. Boiling Water Reactor Engineering Department (BWRED) evaluated the unanticipated event using analysis methods of ASME Section XI Appendix E. Margin against crack initiation required in Appendix E is about 2. During the pressure-temperature conditions of this event, a margin against crack initiation of at least 4.2 was calculated. This margin of 4.2 is about twice the Appendix E required margin of 2. The unanticipated low bottom head temperature which occurred during the hydrostatic pressure test had a sufficient margin against crack initiation and propagation. Therefore, the vessel can be operated safely without concerns for its structural integrity.

E. CORRECTIVE ACTIONS:

Immediate corrective actions were taken to restore the RPV to within the required temperature-pressure range of Tech. Spec. Figure 3.6-1. The test was suspended and the RPV was depressurized to 1050 psig. This 1050 psig pressure was within the acceptable range on Tech. Spec. Figure 3.6-1 for the RPV temperature at this time.

The performance of the Shift Engineer has been reviewed and disciplinary action will be administered.

Additional corrective action for this event includes the revision of two procedures. The QCOS 201-7 procedure, along with QCOS 201-4 (Reactor Vessel and Primary Systems Leakage Test), will be revised to clearly state which thermocouples are essential during the performance of these procedures. This revision will also provide a better method to document at what interval the thermocouples are to be monitored and the minimum thermocouple temperature requirements. A note will also be added to make personnel aware of the effect that the cool water can have on RPV temperature when the CRD system is started (NTS #2652009204601).

F. PREVIOUS EVENTS:

There are no previous reportable occurrences that match this event. An incident similar to this involving deficient procedures is documented in Licensee Event Report 04-02-90-013, Torus Level Below Technical Specification Limit Due To Procedure Deficiency.

G. COMPONENT FAILURE DATA:

There is no component failure associated with this event.