LICENSEE EVENT REPORT (LER) Form Rev. 2.0

Facility Name (1)	Docket Number (2)	Page (3)
Quad Cities Unit Two	0 5 0 0 0 2 6 5	1 of 0 5

Title (4)
The High Pressure Coolant Injection System was "Declared Inoperable due to a Procedural Deficiency" which allowed isolation of the Turbine Exhaust Vacuum

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 7	9 6	9 6	-- 0 0 1	-- 0 0	0 6	2 1	9 6		0 5 0 0 0
										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)			
4		20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10)		20.405(a)(1)(i)	50.36(c)(1)	X 50.73(a)(2)(v)	73.71(c)
9 9		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)	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
Nick Chrissotimos, Regulatory Assurance, Ext. 3100	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

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 May 24, 1996, upon completion of an issue screening for Problem Identification Form (PIF) #96-1874, the Operating Department determined that the Unit 2 High Pressure Coolant Injection System (HPCI) [BJ] had been inoperable from April 17, 1996 until April 23, 1996. During this time period the M02-2399-40 and M02-2399-41 valves had been closed. These valves isolate the HPCI turbine exhaust line vacuum breakers. An analysis of HPCI system operation in this configuration has not been performed.

Deficiencies in several normal operating and surveillance procedures allowed operation in this configuration. These operating procedures were corrected. The procedures were incorrect due to deficiencies in the implementation of the modification which installed these vacuum breakers (M04-1(2)-91-013). The modification process will be reviewed to ensure that all recommendations contained in the modification approval letter are dispositioned before a modification is closed out. This event will also be reviewed during licensed operator and engineering continuing training. An Emergency Notification System (ENS) call was made at 1455 hours on May 24, 1996.

The consequences of this event were minimal. The Unit 2 HPCI system was available to start automatically during the entire time that the turbine exhaust line vacuum breakers were isolated. The turbine exhaust line was drained when the vacuum breakers were isolated. Had a design basis accident occurred while they were isolated, HPCI would have started and refilled the reactor vessel as designed.

PLANT AND SYSTEM IDENTIFICATION:

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

EVENT IDENTIFICATION: The High Pressure Coolant Injection System was Declared Inoperable due to a Procedural Deficiency which allowed isolation of the Turbine Exhaust Vacuum Breaker Line.

A. CONDITIONS PRIOR TO EVENT:

Unit: Two Event Date: April 17, 1996 Event Time: 2100
Reactor Mode: 4 Mode Name: Run Power Level: 99

This report was initiated by Licensee Event Report LER265\96-001.

RUN (4) - In this position the reactor system pressure is at or above 825 psig, and the reactor protection system is energized, with APRM protection and RBM interlocks in service (excluding the 15% high flux scram).

B. EVENT DESCRIPTION

On May 24, 1996 at 1335 hours the Operating Department determined that the Unit 2 High Pressure Coolant Injection (HPCI) system had been inoperable from April 17, 1996 until April 23, 1996. An ENS notification was made at 1455 hours on May 24, 1996. The inoperability determination was made on the basis of an issue screening that had been completed for Problem Identification Form (PIF) #96-1874. This PIF was written to identify that the operating procedures allowed HPCI operation with the turbine exhaust line vacuum breakers isolated and Unit 2 had operated in this configuration from April 17, 1996 until April 23, 1996. During this time the MO2-2399-40 and MO2-2399-41 valves had been closed due to an engineering concern addressed under PIF #96-1482. The concern was resolved and the valves reopened. These valves isolate the turbine exhaust line vacuum breakers. General Electric Service Information letter (SIL) #30 indicates that there may be adverse effects on the system if the turbine exhaust vacuum breakers are not available. Since operation in this configuration has not been analyzed, it was decided that the HPCI system must be declared inoperable any time the turbine exhaust line vacuum breakers are isolated.

The investigation into operation in this configuration had begun on April 26, 1996. Based on his investigation, the system engineer on May 21, 1996, wrote PIF #96-1874 to ensure that an issue screening would be completed. The investigation included interviews with the modification design engineer who had recommended the subject procedure changes when the vacuum breakers were installed under modification MO4-1(2)-91-013. It also included interviews with system engineers at three other nuclear plants and General Electric. Based on these discussions and reviews of plant design documents, it was determined that operations in this configuration had not been analyzed and might be outside of the design basis.

The subject procedures, QCOP 2300-1, 2300-4, 2300-6 and 2300-8 and QCOS 2300-1, 2300-6, 2300-13 and 2300-18, were changed to require that the HPCI system be declared inoperable when the turbine exhaust vacuum breakers are isolated. Changes to these operating procedures were implemented on May 28, 1996. Additionally, a new procedure, QCOS 2300-20, was implemented at this time to give the operators directions in the event the vacuum breakers were isolated.

C. APPARENT CAUSE

The root cause of this event was a failure to implement all the recommended procedure changes when the HPCI turbine exhaust vacuum breaker isolation valves were installed. The modification approval letter for this installation recommended the following wording for procedure changes which were not implemented.

1. Engineering "does recommend that HPCI be considered administratively inoperable when the containment isolation valves are closed for stroke testing."

2. "Start-up of the HPCI turbine with water in the turbine exhaust line is not recommended."

3. "Whenever the MO 2399-40 or 41 is inoperable closed, the HPCI system is degraded."

4. "The HPCI system is not ready for an automatic restart, when any of the primary containment isolation valves have been closed."

If this wording or very similar wording had been implemented in the operating procedures, it would have been clearer to the operating department that the HPCI system was not operable with the turbine exhaust vacuum breakers isolated.

A contributing cause for this event was a deficiency in operator training. The six current and former Senior Reactor Operators interviewed as a part of this investigation all were under the impression that the HPCI system was operable with the vacuum breakers isolated because the system could be run in an emergency. This impression was in spite of the following words which were in the lesson plan for the one time training on the modification which installed the vacuum breakers: "A turbine restart with water in the turbine exhaust line can cause HPCI to trip on high turbine exhaust pressure or can cause opening of the pressure rupture disk."

D. SAFETY ANALYSIS OF THE EVENT

The consequences of this event were minimal. The Unit 2 HPCI system was available to start automatically during the entire time that the turbine exhaust line vacuum breakers were isolated. The turbine exhaust line was drained prior to the vacuum breakers being isolated. Had a design basis accident occurred while they were isolated, HPCI would have started and refilled the reactor vessel as designed. If the operator had taken manual control of HPCI as directed by the emergency procedures, the system would have remained in operation and would have continued to maintain reactor level.

In the event that the HPCI system tripped with the turbine exhaust vacuum breakers isolated, it would have restarted at a reactor vessel level of 44 inches if the initiation signal was still present. On the restart of the system it is indeterminate at this time as to whether the turbine rupture disks would have actuated or there would have been damage to the torus or turbine exhaust piping due to the slug of water present in the exhaust line.

The Automatic Depressurization System (ADS)[RV] and the Low Pressure Coolant Injection (LPCI)[BO] systems were operable during this event and would also have provided protection for the fuel in the event of a Loss of Coolant Accident.

E. CORRECTIVE ACTIONS

Corrective actions which have been completed are:

1. Operating procedures, QCOP 2300-1, 2300-4, 2300-6 and 2300-8 and QCOS 2300-1, 2300-6, 2300-13 and 2300-18, have been changed and a new vacuum breaker outage procedure, QCOS 2300-20, has been implemented to clearly make the HPCI system inoperable whenever the vacuum breakers are isolated in the future.

2. Engineering departments have been trained on this event and the importance of dispositioning all recommendations in modification approval letters.

3. Licensed operators have been trained on the above procedure changes.

Corrective actions which will be implemented are:

1. This event will be included as part of continuing training for both the licensed operators and the engineering departments. This training will be completed by September 30, 1996. (NTS 2651809600101, Training)

2. Operator training lesson plans will be revised to clearly state that the HPCI system is inoperable with the turbine exhaust line vacuum breakers isolated. This will be completed by August 31, 1996. (NTS 2651809600102, Training)

3. The modification process will be reviewed and changed as necessary to ensure that all recommendations contained in the mod approval letter are either implemented or dispositioned by the appropriate department. This review will be completed and any necessary changes implemented by December 31, 1996. (NTS 2651809600103, Design Engineering). (NTS 2651809600104, Design Engineering)

4. Installed Modifications will be sampled to determine if all appropriate recommendations from the modification approval letters have been implemented. The review will be completed by December 31, 1996. (NTS 2651809600105, Design Engineering)

F. PREVIOUS EVENTS

A review of the Licensee Event Reports (LER) for the last two years revealed no similar LERs.

G. COMPONENT FAILURE DATA

There were no component failures associated with this event.

ATTACHMENT H (Page 1 of 1)

CORRECTIVE ACTION FORM

Sections 1, 7 and at least one other section (2, 3, 4, 5 or 6) must be completed on each Corrective Action form.

1. NTS# 265180960010 1 Source Document LER 2-96-001

2. INITIATION SECTION:
☐ *SQV Response ☒ Corrective Action Commitment

*Response must contain the following information: Action to Correct the Finding and Prevent Recurrence, Expected Completion Date of C/A, and Statement as to Why this Deficiency was not Identified by Station Personnel.

Assigned To: A Chernick/Diekamp Due Date: 9-30-96
Response/Commitment Description (Attach additional pages, as necessary) Include training on LER 2-96-001 in licensed operator and engineering retraining.

3. TRANSFER SECTION: Current Due Date: _____

Old Owner: _____ New Owner: _____
REASON: _____

4. EXTENSION REQUEST SECTION:

Original Due Date: _____ Requested Due Date: _____
REASON: _____

5. SEVERITY LEVEL CHANGE:

Old Severity Level: _____ Requested Severity Level: _____
REASON: _____

6. CLOSEOUT SECTION: (Attach all closeout documents) _____

7. ACCEPTANCE/REVIEW AND APPROVAL SIGNATURE SECTION:

_____ Date _____
Implementor (Receiving for Transfers)

_____ Date _____
Supervisor (Receiving for Transfers)

Review Only: _____ Date _____
Reg. Assurance Supervisor (NRC Commitments Only)

Review Only: _____ Date _____
Rad Chem Supt. (Radiological/Hazmat/Environmental Issues)

** A Chernick Date 6/19/96
Department Manager (Receiving for Transfers)

_____ Date _____
SQV Director (required for SQV Responses, Severity Level Changes or Extension of SQV Items only)

** _____ Date _____
Station Manager (Required for all NRC Commitments, SQV Responses and Commitments, all Due Date Extensions, and all Closeout items.)

**Not required for transfers within the same Department

ATTACHMENT H (Page 1 of 1)

CORRECTIVE ACTION FORM

Sections 1, 7 and at least one other section (2, 3, 4, 5 or 6) must be completed on each Corrective Action form.

1. NTS# 265180960102 Source Document LER 2-96-001

2. INITIATION SECTION:

☐ *SQV Response ☒ Corrective Action Commitment

*Response must contain the following information: Action to Correct the Finding and Prevent Recurrence, Expected Completion Date of C/A, and Statement as to Why this Deficiency was not Identified by Station Personnel.

Assigned To: A Chernick/Dietmen Due Date: 8-31-96

Response/Commitment Description (Attach additional pages, as necessary) Revise HPCI lesson plans to clearly state that the HPCI system is inoperable with the ~~220~~ turbine exhaust vacuum breakers isolated

3. TRANSFER SECTION: Current Due Date: _____

Old Owner: _____ New Owner: _____

REASON: _____

4. EXTENSION REQUEST SECTION:

Original Due Date: _____ Requested Due Date: _____

REASON: _____

5. SEVERITY LEVEL CHANGE:

Old Severity Level: _____ Requested Severity Level: _____

REASON: _____

6. CLOSEOUT SECTION: (Attach all closeout documents) _____

7. ACCEPTANCE/REVIEW AND APPROVAL SIGNATURE SECTION:

_____ Date _____
Implementor (Receiving for Transfers)

_____ Date _____
Supervisor (Receiving for Transfers)

Review Only: _____ Date _____
Reg. Assurance Supervisor (NRC Commitments Only)

Review Only: _____ Date _____
Rad Chem Supt. (Radiological/Hazmat/Environmental Issues)

** _____ Date 6/19/96
Department Manager (Receiving for Transfers)

_____ Date _____
SQV Director (required for SQV Responses, Severity Level Changes or Extension of SQV Items only)

** _____ Date _____
Station Manager (Required for all NRC Commitments, SQV Responses and Commitments, all Due Date Extensions, and all Closeout Items.)

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ATTACHMENT H (Page 1 of 1)

CORRECTIVE ACTION FORM

Sections 1, 7 and at least one other section (2, 3, 4, 5 or 6) must be completed on each Corrective Action form.

1. NTS# 265180960010 3 Source Document LER 2-96-001

2. INITIATION SECTION:
☐ *SQV Response ☒ Corrective Action Commitment

*Response must contain the following information: Action to Correct the Finding and Prevent Recurrence, Expected Completion Date of C/A, and Statement as to Why this Deficiency was not Identified by Station Personnel.

Assigned To: R Dammann Due Date: 12-31-96
Response/Commitment Description (Attach additional pages, as necessary) Review mod process to ensure that all recommendations/requirements in the mod approval letter are dispositioned prior to OPS authorization of mod.

3. TRANSFER SECTION: Current Due Date: _____

Old Owner: _____ New Owner: _____
REASON: _____

4. EXTENSION REQUEST SECTION:

Original Due Date: _____ Requested Due Date: _____
REASON: _____

5. SEVERITY LEVEL CHANGE:

Old Severity Level: _____ Requested Severity Level: _____
REASON: _____

6. CLOSEOUT SECTION: (Attach all closeout documents) _____

7. ACCEPTANCE/REVIEW AND APPROVAL SIGNATURE SECTION:

R. DAMMANN Date 6/19/96
Implementor (Receiving for Transfers)

John R Garrity Date 6/19/96
Supervisor (Receiving for Transfers)

Review Only: _____ Date _____
Reg. Assurance Supervisor (NRC Commitments Only)

Review Only: _____ Date _____
Rad Chem Supt. (Radiological/Hazmat/Environmental Issues)

** _____ Date 6/19/96
Department Manager (Receiving for Transfers)

_____ Date _____
SQV Director (required for SQV Responses, Severity Level Changes or Extension of SQV Items only)

** _____ Date _____
Station Manager (Required for all NRC Commitments, SQV Responses and Commitments, all Due Date Extensions, and all Closeout items.)

**Not required for transfers within the same Department

ATTACHMENT H (Page 1 of 1)

CORRECTIVE ACTION FORM

Sections 1, 7 and at least one other section (2, 3, 4, 5 or 6) must be completed on each Corrective Action form.

1. NTS# 265180960104 Source Document LER 2-96-001

2. INITIATION SECTION:

☐ *SQV Response ☐ Corrective Action Commitment

*Response must contain the following information: Action to Correct the Finding and Prevent Recurrence, Expected Completion Date of C/A, and Statement as to Why this Deficiency was not Identified by Station Personnel.

Assigned To: R Dammann Due Date: 12-31-96

Response/Commitment Description (Attach additional pages as necessary) Change mod process if necessary to ensure mod approval letter recommendations/requirements are dispositioned.

3. TRANSFER SECTION: Current Due Date: _____

Old Owner: _____ New Owner: _____

REASON: _____

4. EXTENSION REQUEST SECTION:

Original Due Date: _____ Requested Due Date: _____

REASON: _____

5. SEVERITY LEVEL CHANGE:

Old Severity Level: _____ Requested Severity Level: _____

REASON: _____

6. CLOSEOUT SECTION: (Attach all closeout documents) _____

7. ACCEPTANCE/REVIEW AND APPROVAL SIGNATURE SECTION:

R. DAMMANN Date 6/19/96
Implementor (Receiving for Transfers)

John K Gaunty Date 6/19/96
Supervisor (Receiving for Transfers)

Review Only: _____ Date _____
Reg. Assurance Supervisor (NRC Commitments Only)

Review Only: _____ Date _____
Rad Chem Supt. (Radiological/Hazmat/Environmental Issues)

** _____ Date 6/19/96
Department Manager (Receiving for Transfers)

_____ Date _____
SQV Director (required for SQV Responses, Severity Level Changes or Extension of SQV Items only)

** _____ Date _____
Station Manager (Required for all NRC Commitments, SQV Responses and Commitments, all Due Date Extensions, and all Closeout items.)

**Not required for transfers within the same Department

ATTACHMENT H (Page 1 of 1)

CORRECTIVE ACTION FORM

Sections 1, 7 and at least one other section (2, 3, 4, 5 or 6) must be completed on each Corrective Action form.

1. NTS# 265180960010 5 Source Document LER 2-96-001

2. INITIATION SECTION:
☐ *SQV Response ☐ Corrective Action Commitment

*Response must contain the following information: Action to Correct the Finding and Prevent Recurrence, Expected Completion Date of C/A, and Statement as to Why this Deficiency was not Identified by Station Personnel.

Assigned To: J Garrity Due Date: 12/31/96

Response/Commitment Description (Attach additional pages, as necessary): Sample installed modifications. to ensure that no important mod approval letter recommendations have not been dispositioned.

3. TRANSFER SECTION: Current Due Date: _____

Old Owner: _____ New Owner: _____

REASON: _____

4. EXTENSION REQUEST SECTION:

Original Due Date: _____ Requested Due Date: _____

REASON: _____

5. SEVERITY LEVEL CHANGE:

Old Severity Level: _____ Requested Severity Level: _____

REASON: _____

6. CLOSEOUT SECTION: (Attach all closeout documents) _____

7. ACCEPTANCE/REVIEW AND APPROVAL SIGNATURE SECTION:

J. GARRITY Date 6/19/96
Implementor (Receiving for Transfers)

John R Stanley Date 6/19/96
Supervisor (Receiving for Transfers)

Review Only: _____ Date _____
Reg. Assurance Supervisor (NRC Commitments Only)

Review Only: _____ Date _____
Rad Chem Supt. (Radiological/Hazmat/Environmental Issues)

** _____ Date 6/19/96
Department Manager (Receiving for Transfers)

_____ Date _____
SQV Director (required for SQV Responses, Severity Level Changes or Extension of SQV Items only)

** _____ Date _____
Station Manager (Required for all NRC Commitments, SQV Responses and Commitments, all Due Date Extensions, and all Closeout items.)

**Not required for transfers within the same Department