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November 5, 2012

10 CFR 50.73

SVP-12-109

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Quad Cities Nuclear Power Station, Unit 1
Renewed Facility Operating License No. DPR-29
NRC Docket No. 50-254

Subject: Licensee Event Report 254/2012-004-00, "Breach in Secondary Containment"

Enclosed is Licensee Event Report (LER) 254/2012-004-00, "Breach in Secondary Containment," for Quad Cities Nuclear Power Station, Unit 1.

This report is submitted in accordance with 10 CFR 50.73 (a)(2)(v)(C), and (a)(2)(v)(D), which requires the reporting of any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to: control the release of radioactive material, and mitigate the consequences of an accident.

There are no regulatory commitments contained in this letter.

Should you have any questions concerning this report, please contact Mr. W. J. Beck at (309) 227-2800.

Respectfully,



Tim Hanley
Site Vice President
Quad Cities Nuclear Power Station

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Quad Cities Nuclear Power Station

IE22
NRC

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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4. TITLE
Breach in Secondary Containment

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
09	06	2012	2012	004	00	11	05	2012	Quad Cities Nuclear Power Station Unit 2	05000265
									FACILITY NAME	DOCKET NUMBER
									N/A	N/A

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
10. POWER LEVEL 100	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(D)	
	Specify in Abstract below or in NRC Form 366A			

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME Tom Petersen – Regulatory Assurance	TELEPHONE NUMBER (Include Area Code) (309) 227-2825
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13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
X	NG	DR	N/A	Y					

14. SUPPLEMENTAL REPORT EXPECTED <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
		N/A	N/A	N/A

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On September 6, 2012, at 1314 hours, the reactor building ventilation system was being restored to service following planned maintenance and surveillance activities. During the reactor building pressure transition when restoring reactor building ventilation (from the Standby Gas Treatment System), a worker entered the Unit 2 Reactor Building (RB) 595 Interlock door (a secondary containment interlock) and found the Unit 2 RB Interlock (RBI) HRSS-Side door (which leads to the environment) had opened at the same time. The worker immediately secured the door and notified Operations personnel. A review of the door alarm history determined the door had been opened for approximately eight seconds, therefore secondary containment had been breached for a short duration.

Since both Units 1 and 2 share a common reactor building, a breach occurred for eight seconds that impacted both Units 1 and 2 secondary containments when the Unit 2 RB 595 Interlock door and the Unit 2 RBI HRSS-Side door were opened at the same time.

The cause of the secondary containment breach event was that the Unit 2 RBI HRSS-side door latching mechanism was not fully engaged at the time that the Unit 2 RB 595 Interlock door opened.

Corrective actions included immediate closure of the Unit 2 RBI HRSS-side door (2-0020-153), confirmation of being fully latched, and removal of the Unit 1 and 2 RBI HRSS-side doors from service. Door latch repairs will be made, and the Unit 1 and 2 RBI HRSS-side doors will be removed by permanently enclosing the door openings.

The safety significance of this event was minimal. Given the impact on the secondary containment, this report is submitted (for Units 1 and 2) in accordance with the requirements of 10 CFR 50.73 (a)(2)(v)(C), and (a)(2)(v)(D), which requires the reporting of any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to: control the release of radioactive material, and mitigate the consequences of an accident.

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NARRATIVE

PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor, 2957 Megawatts Thermal Rated Core Power

Energy Industry Identification System (EII) codes are identified in the text as [XX].

EVENT IDENTIFICATION

A Secondary Containment Breach Occurred When Unit 2 Reactor Building 595 Interlock Door and the Unit 2 Reactor Building Interlock HRSS-Side Door Opened at the Same Time

A. CONDITION PRIOR TO EVENT

Unit: 2	Event Date: September 6, 2012	Event Time: 1314 hours
Reactor Mode: 1	Mode Name: Power Operation	Power Level: 100%

B. DESCRIPTION OF EVENT

On September 6, 2012, at approximately 0100 hours, the Reactor Building [NH] Ventilation system was secured for planned maintenance and surveillance activities. At approximately 1314 hours, the Reactor Building Ventilation system was being restored to service (from the Standby Gas Treatment System [BH]), following planned maintenance and surveillance activities. Operations restarted the Unit 1 Reactor Building Vent Fans [FAN] and Unit 2 Reactor Building Exhaust Fans in accordance with procedures. The Reactor Building to atmosphere differential pressure (d/p) rose above zero due to the slow response of the Reactor Building Ventilation (RBV) discharge modulating dampers [CDMP].

The Control Room [NA] panel alarm [PA] 912-5 C-1, Rx Bldg 1 Low DP, initiated with the associated Reactor Building to atmosphere d/p indicator, rising above zero (went positive). Technical Specification (TS) 3.6.4.1, Action A.1, was entered for the Reactor Building to atmosphere d/p rising above -0.1 inch water. The TS was exited when it was determined that the indication was anticipated due to the slow response of the RBV discharge modulating dampers, and that no emergency existed.

During the time that Operations was restoring the RBV system, also at approximately 1314 hours, a worker simultaneously entered the Unit 2 Reactor Building (to Turbine Building [NM]) 595 elevation Interlock [IEL] door [DR] from the Reactor Building. The Unit 2 RB Interlock High Radiation Sample Station [IK] (HRSS)-side door opened when Reactor Building d/p went positive. Prior to entry into the Unit 2 RB 595 Interlock area, no other interlock door was indicated as open, since there was no light indication [IL] present at the door that would indicate another interlock door was open. As the worker entered the interlock, the Unit 2 RBI HRSS-side door (2-0020-153), a secondary containment interlock door, was found open to the outside environment, and air was flowing from the Unit 2 RB.

The Unit 2 RBI HRSS-side door was immediately secured by the worker by pulling on the crash bar until the door was shut without the door re-opening; and air flow had stopped. The worker verified the Unit 2 RB 595 level interlocks were functional by checking that all the interlock lights would light when required, and the other two interlock doors functioned properly. The worker notified Operations of the event. The Field Supervisor was dispatched to verify that the Unit 1 and Unit 2 RB to Turbine Building 595 interlocks were functioning properly. A review of the door alarm history determined the door had been opened for approximately eight (8) seconds.

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Since both Units 1 and 2 share a common reactor building, a breach occurred for eight seconds that impacted both Units 1 and 2 secondary containments when the Unit 2 RB 595 Interlock door and the Unit 2 RBI HRSS-Side door were opened at the same time. Given the impact on the secondary containment, this report is submitted (for Units 1 and 2) in accordance with the requirements of 10 CFR 50.73 (a)(2)(v)(C), and (a)(2)(v)(D), which requires the reporting of any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to: control the release of radioactive material, and mitigate the consequences of an accident.

C. CAUSE OF EVENT

The apparent cause of the secondary containment breach event was that the Unit 2 RBI HRSS-side door latching mechanism was not fully engaged at the time that the Unit 2 RB 595 Interlock door opened. It is probable that the crash bar was bumped some time after the Security door test and before occurrence of this event.

Troubleshooting performed on September 7, 2012 revealed that the fingers on the Unit 2 RBI HRSS-side door crash bar were not re-engaging consistently after the crash bar was released. It was determined that use of the crash bar on the door will override the secondary containment interlock logic. The Unit 2 RBI HRSS-side door was inspected for any equipment reliability issues with the latching mechanism on the door. No damage to the door or the latching mechanism was found.

Due to the relative position of the strike plate on the door jam to the latching mechanism on the door upon closure, the door could only be latched completely if the door was closed with the aid of the closure device from approximately full open, or if extra pulling force was applied to the crash bar to extend the latch completely outward.

A contributing cause to this event was that the RBV discharge modulating dampers have been "tuned" to slow their response to d/p changes caused by atmospheric conditions outside of the RB. The RB to atmosphere d/p rose above zero (went positive) due to the slow response of the RBV discharge modulating dampers. During normal operations, the pressure that the RBI HRSS-side door in the RB to Turbine Building 595 interlock is exposed to is negative (pulling inward). Regardless of the status of the door latching mechanism, the normal pressure direction and magnitude would be enough to keep the RBI HRSS-side door closed if not acted upon by another force physically pushing it open.

A prior Engineering Change had installed a new control system to reduce or eliminate re-occurring failures of the old d/p control system. During the setup of the new control system, the new controller was tuned to react slower to minimize excessive swinging when the external pressure changes. If the Standby Gas Treatment System is operating, the amount of negative building pressure seen by the controller will cause the RBV discharge modulating dampers to go closed. When the RBV is started, the RBV discharge modulating dampers consistently react too slowly to prevent the RB d/p from going positive.

D. SAFETY ANALYSIS

System Design

The function of the secondary containment is to contain, dilute, and hold up fission products that may leak from primary containment following a Design Basis Accident (DBA). In conjunction with operation of the Standby Gas Treatment System (SBGTS) and closure of certain valves [V] whose lines penetrate the secondary containment, the secondary containment is designed to reduce the activity level of the fission products prior to release to the

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environment, and to isolate and contain fission products that are released during certain operations that take place inside primary containment, when primary containment is not required to be operable, or that take place outside primary containment.

The SBGTS is designed to maintain the reactor building (reactor building is common to both Units 1 and 2) at a negative pressure and to filter the exhaust of radioactive matter from reactor building spaces to the environment (by particulate filtration and halogen adsorption) in the unlikely event of a DBA, including the Loss of Coolant Accident (LOCA) and the refueling accident. It is also instrumental in maintaining the integrity of secondary containment during a primary to secondary containment instrument line break. Two parallel trains are provided, each of which is capable of producing greater than 0.25 inches water negative pressure required in the reactor building while processing 4000 cubic ft /min of exhaust air.

Safety Impact

Since both Units 1 and 2 share a common reactor building, a breach occurred for eight seconds that impacted both Units 1 and 2 secondary containments when the Unit 2 RB 595 Interlock door and the Unit 2 RBI HRSS-side door were opened at the same time.

TS 3.6.4.1, Action A.1, requires restoration of secondary containment to operable status within four hours. This four hour Completion Time provides a period of time to correct the problem that is commensurate with the importance of maintaining secondary containment during Modes 1, 2, and 3, since the probability of an accident occurring during this short period where secondary containment is inoperable is minimal.

Risk Insights

The plant Probabilistic Risk Assessment (PRA) model gives no credit to the secondary containment and does not include it in the model, hence the as-found conditions did not contribute to an increase in risk.

Although a secondary containment loss of function occurred momentarily when the Unit 2 RBI HRSS-side door was found open concurrently with the opening of the Unit 2 RB 595 Interlock door, there was no DBA condition in progress, and secondary containment was restored within eight (8) seconds when the Unit 2 RBI HRSS-side door was immediately reclosed.

In conclusion, the overall safety significance and impact on risk of this event were minimal.

E. CORRECTIVE ACTIONS

Immediate:

1. An initial inspection was performed on the latching mechanism for the Unit 2 RBI HRSS-side door.
2. The Unit 2 RBI HRSS-side door (2-0020-153) was closed and confirmed fully latched, which eliminated the immediate secondary containment integrity concerns.
3. The RBV was recovered and established to maintain the Reactor Building at a negative d/p compared to the outside atmosphere.
4. A solid robust barrier (block) was placed between the crash bar on the Unit 2 RBI HRSS-side door and the door itself to prevent inadvertent depressing of the crash bar.

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5. Operations barricaded and removed the Unit 1 and Unit 2 RBI HRSS-side doors (1-0020-147 and 2-0020-153) from service.

Follow-up:

1. Unit 1 and Unit 2 RBI HRSS-side doors will be inspected and repairs will be made to return the crash bar and door latch assemblies to approved vendor specifications.
2. A determination will be made of the feasibility of installing a secondary latching device on the inside of the Unit 1 and Unit 2 RBI HRSS-side doors, capable of preventing the doors from inadvertent opening in the event the primary latch fails.
3. The Unit 1 and Unit 2 RBI HRSS-side doors will be removed by permanently enclosing the door opening.
4. The issue of re-occurring low d/p conditions during Reactor Building ventilation changes will be resolved.

F. PREVIOUS OCCURRENCES

The station events database, LERs, EPIX, and NPRDS were reviewed for similar events at Quad Cities Nuclear Power Station. This event was a secondary containment loss of function when a latch assembly failed to hold a door closed during a loss of d/p condition in the Reactor Building. No similar events were found.

G. COMPONENT FAILURE DATA

Door catch - Component Manufacturer: Folger Adam Co., Component Model Number: 310 - 2 3/4.

This event has been reported to ICES as Failure Report No. 300532.