



Nuclear

10CFR50.73

May 9, 2007

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

Limerick Generating Station, Unit 2  
Facility Operating License No. NPF-85  
NRC Docket No. 50-353

Subject: LER 2-07-001, Scram Discharge Volume Vent and Drain  
Valves Failed Open Due To Clearance Planning Error

This Licensee Event Report (LER) addresses a condition that could have prevented fulfillment of the safety function for the primary containment system. This event was caused by a clearance planning error that resulted in removal of fuses to the back-up scram valves which caused the scram discharge volume vent and drain valves to open. This resulted in a breach of primary containment in Operational Condition 3 (Hot Shutdown).

Report Number: 2-07-001  
Revision: 00  
Event Date: March 10, 2007  
Discovered Date: March 10, 2007  
Report Date: May 9, 2007

This LER is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(v)(C) and 10CFR50.73(a)(2)(vii)(C).

There are no commitments contained in this letter.

If you have any questions or require additional information, please do not hesitate to contact us.

Sincerely,

Original signed by

Christopher H. Mudrick  
Vice President - Limerick  
Exelon Generation Company, LLC

cc: S. J. Collins, Administrator Region I, USNRC  
S. L. Hansell, USNRC Senior Resident Inspector, LGS

# 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: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@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.

<b>1. FACILITY NAME</b> Limerick Generating Station, Unit 2	<b>2. DOCKET NUMBER</b> 05000353	<b>3. PAGE</b> 1 OF 4
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**4. TITLE**  
Scram Discharge Volume Vent and Drain Valves Opened Due To Fuse Removal

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
03	10	2007	2007	- 001 -	0	05	09	2007		05000
									FACILITY NAME	DOCKET NUMBER
										05000

<b>9. OPERATING MODE</b>  3	<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§:</b> <i>(Check all that apply)</i>			
<b>10. POWER LEVEL</b>  0	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input checked="" 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)(ix)(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 type="checkbox"/> 50.73(a)(2)(v)(D)	
Specify in Abstract below or in NRC Form 366A				

**12. LICENSEE CONTACT FOR THIS LER**

<b>FACILITY NAME</b> Robert E. Kreider, Manager- Regulatory Assurance	<b>TELEPHONE NUMBER (Include Area Code)</b> 610-718-3400
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**13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT**

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

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

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

The scram discharge volume vent and drain valves opened with a scram signal present during application of a clearance for maintenance on the reactor protection system contactors and scram air header during an outage. The event was caused by a clearance planning error that resulted in removal of fuses to the back-up scram valves without necessary precautions. The back-up scram valves re-positioned resulting in restoration of the scram air supply to the scram discharge volume vent and drain valves causing them to open. This created a breach of primary containment in Operational Condition 3 (Hot Shutdown) and a discharge of reactor coolant into the liquid radwaste system. A System Specific Tagging Guide has been implemented to address backup scram valve fuse removal. The guide requires closing the manual valves in the scram discharge volume vent and drain lines prior to removing the fuses.

**LICENSEE EVENT REPORT (LER)**

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**NARRATIVE** (If more space is required, use additional copies of NRC Form 366A) (17)

## Unit Conditions Prior to the Event

Unit 2 was in Operational Condition (OPCON) 3 (Hot Shutdown). Reactor pressure was approximately 24 psig with noble metal chemical application in progress. There were no structures, systems or components out of service that contributed to this event.

## Description of the Event

On Saturday, March 10, 2007, Unit 2 was in OPCON 3 in day 1 of the 2R09 refueling outage. A clearance was being applied to perform maintenance on the reactor protection system (RPS) [EIIS:JC] scram contactors and the scram air header. The clearance required inserting a full scram signal followed by removal of the RPS logic fuses [EIIS:FU] including the "A" and "B" backup scram valve fuses. When these fuses were removed the backup scram valves were de-energized and re-positioned resulting in re-pressurizing the scram air header. This caused the scram discharge volume (SDV) vent and drain valves to open. Since the full scram was still present, reactor water in the SDV was inputted into the dirty radwaste system (DRW) [EIIS:WD] at a funnel drain on 253' elevation and a hard piped SDV drain to the equipment drain collection tank in the radwaste enclosure.

An investigation determined that the SDV vent and drain valves opened at approximately 19:42 hours when the backup scram valve fuses were removed. The SDV vent and drain valves were closed at approximately 21:48 hours by isolating and venting the air supply at the valves. The valves were open for a period of approximately 2 hours and 6 minutes. The event was identified at 21:03 hours when Radiation Protection (RP) personnel notified Operations of a spill on reactor enclosure 253' elevation. The Reactor Operator identified that the SDV vent and drain valves were open.

The clearance also included a step to close the scram air header manual valve at the inlet to the backup scram valves. Closure of this valve would have caused the SDV vent and drain valves to close when the scram air header depressurized, but this step was later in the clearance sequence.

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**NARRATIVE** (If more space is required, use additional copies of NRC Form 366A) (17)

This event involved a condition that could have prevented fulfillment of the safety function for the primary containment system, which is reportable per the requirements of 10CFR50.72(b)(3)(v)(C). An 8-hour NRC ENS notification was not performed since the event was not determined to be reportable within the 8-hour reporting period. This event also involved a single cause (i.e., clearance application) that caused two independent primary containment isolation valve (PCIV) trains to become inoperable in a single failure proof system designed to control the release of radioactive material. Therefore, this LER is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(v)(C) and 10CFR50.73(a)(2)(vii)(C).

**Analysis of the Event**

There were no actual safety consequences associated with this event. The potential safety consequences of this event were minimal. There was no release of radioactive material to the environment. The coolant discharged from the SDV was collected in the equipment drain collection tank and the reactor enclosure floor drain system. Reactor coolant activity was within the limits imposed by Technical Specifications (TS) at the time of the event.

The SDV design includes a 2-inch drain line to the equipment drain collection tank and a 1-inch vent line to the reactor enclosure dirty radwaste system. Each line has two in-series air-operated valves designed to automatically close during a scram. The SDV vent and drain valves are designated as primary containment isolation valves (PCIVs) [EIIS:ISV] in the Technical Requirements Manual (TRM) and Updated Final Safety Analysis Report (UFSAR). Therefore, TS 3.6.1.1 Primary Containment, TS 3.6.3 Primary Containment Isolation Valves and TS 3.1.3.1 Control Rod Operability actions are applicable in OPGONs 1, 2 and 3. The TS action in OPGON 3 is to be in OPGON 4 (Cold Shutdown) within 24 hours. The TS actions were exited when the valves were closed.

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**NARRATIVE** (If more space is required, use additional copies of NRC Form 366A) (17)

The RPS logic for the backup scram valves energizes the 125 VDC solenoids on the backup scram valves during a scram to block and vent the scram air header. The same circuit energizes a relay that is used to de-energize the SDV vent and drain valve pilot valves during a scram. The RPS logic is otherwise designed to de-energize the scram valve pilot valve solenoids on each hydraulic control unit (HCU) during a scram.

The safety function of the SDV vent and drain valves is to close on a scram to limit the amount of reactor coolant discharged so that adequate core cooling is maintained and offsite doses remain within the limits of 10CFR100. The valves open on scram reset to maintain the SDV vent and drain path open so that there is sufficient volume to accept the reactor coolant discharged during a scram. The discharge of reactor coolant to the SDV can be terminated by scram reset. For a bounding leakage case, the offsite doses are well within the limits of 10CFR100 and adequate core cooling is maintained.

**Cause of the Event**

The event was caused by a failure to anticipate the system response that occurs when the backup scram valve fuses are removed.

**Corrective Action Completed**

A System Specific Tagging Guide was implemented for backup scram valve fuse removal. The guide requires closing the manual valves in the SDV vent and drain lines prior to removing the fuses.

**Previous Similar Occurrences**

There were no previous similar occurrences of the SDV vent and drain valves causing a primary containment breach when primary containment was required to be operable.