



Exelon Generation®

RA-14-077

10 CFR 50.73

September 9, 2014

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

Oyster Creek Nuclear Generating Station  
Renewed Facility Operating License No. DPR-16  
NRC Docket No. 50-219

Subject: Licensee Event Report (LER) 2014-001-00, Manual Scram due to Lowering Vacuum

Enclosed is LER 2014-001-00, Manual Scram due to Lowering Vacuum. This event did not affect the health and safety of the public or plant personnel. This event did not result in a safety system functional failure. There are no regulatory commitments made in this LER submittal.

Should you have any questions concerning this letter, please contact Mike McKenna, Regulatory Assurance Manager, at (609) 971-4389.

Respectfully,

A handwritten signature in black ink, appearing to read "Jeffrey P. Dostal", written in a cursive style.

Jeffrey P. Dostal  
Plant Manager  
Oyster Creek Nuclear Generating Station

Enclosure: NRC Form 366, LER 2014-001-00

cc: Administrator, NRC Region 1  
NRC Senior Resident Inspector - Oyster Creek Nuclear Generating Station  
NRC Project Manager - Oyster Creek Nuclear Generating Station

# 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.

<b>1. FACILITY NAME</b> Oyster Creek, Unit 1	<b>2. DOCKET NUMBER</b> 05000219	<b>3. PAGE</b> 1 OF 3
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**4. TITLE** Manual Scram Due to Lowering Vacuum

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
07	11	2014	2014	- 001 -	00	09	08	2014	N/A	N/A
									N/A	N/A

<b>9. OPERATING MODE</b>	<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §:</b> <i>(Check all that apply)</i>									
N	<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)						
<b>10. POWER LEVEL</b>	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)						
56	<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 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**

FACILITY NAME Michael McKenna, Regulatory Assurance Manager	TELEPHONE NUMBER <i>(Include Area Code)</i> (609) 971-4389
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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	SM	EXJ	S240	Y	N/A	N/A	N/A	N/A	N/A

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

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

On July 11, 2014 at approximately 0312 EDT, during planned reactor power ascension with reactor power at approximately 56% of rated thermal power, main condenser vacuum began to degrade. In accordance with the abnormal operating procedure for degrading vacuum, Operators inserted a manual scram of the reactor at 0314 EDT.

Following the reactor scram, operations and maintenance personnel identified an approximate 2"x6" hole and an approximate 2"x3" hole on the last convolute of the downstream side of Y-1-26 ('B' Condenser Steam Inlet Expansion Joint). It was confirmed to be an active leak and subsequently the source of condenser vacuum degradation. As a corrective action to this event, the expansion joint was replaced.

All control rods fully inserted and plant response was as expected. This event is being reported pursuant to 10CFR50.73(a)(2)(iv)(A) due to an actuation of the Reactor Protection System (RPS).

**LICENSEE EVENT REPORT (LER)  
CONTINUATION SHEET**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE		
Oyster Creek, Unit 1	05000219	YEAR	SEQUENTIAL NUMBER	REV NO.	2	OF	3
		2014	- 001	- 00			

**NARRATIVE****Plant Conditions Prior To Event**

Event Date: July 11, 2014  
Unit 1 Mode: Run

Event Time: 0314 EDT  
Power Level: 56%

**Description of Event**

Reactor Startup from the 1F34 Forced Outage began at 2026 hours on 07/09/14 with criticality achieved at 0125 hours on 07/10/14. At 1830 on 7/10/14, with Reactor Power at approximately 10% of rated thermal power (RTP), condenser vacuum was fully established and stabilized at approximately 28.7" H<sub>2</sub>O. On July 11, 2014 at approximately 0312 EDT, during reactor power ascension, with reactor power at approximately 56% RTP, main condenser vacuum began to degrade. ABN 14, Loss of Condenser Vacuum, was entered due to the degrading condenser vacuum. Reactor power was lowered to approximately 44% in an attempt to stabilize plant conditions. Vacuum continued to degrade and at 0314, a manual reactor SCRAM was inserted when condenser vacuum degraded below 23.5" H<sub>2</sub>O.

Following the reactor scram, operations and maintenance personnel identified two holes, one approximate 2"x6" and the other approximate 2"x3", on the last convolute of the downstream side of Y-1-26 ('B' Condenser Steam Inlet Expansion Joint).

**Analysis of Event**

The basic function of the expansion joint, Y-1-26 (Sola Basic Industries, model 97-5516) is to provide a flexible pressure retaining connection to absorb motion in the system caused by thermal expansion and low levels of vibration. The need to be flexible requires the expansion joint to be fabricated from 1/32" (wall thickness) commercial grade stainless steel A240 type 304. The design of the expansion joint is such that an upstream and a downstream bellows in series work together to account for the required lateral movements.

On October 6, 2013, the upstream bellows was repaired due to a circumferential fracture. Between October 7, 2013 and July 09, 2014 the upstream fracture in the bellows was repaired with standard fiberglass wraps, high temperature carbon fiber wraps, and the application of Belzona. Repeated wrapping of the upstream side of the bellows most likely restricted the allowable movements of that bellows, requiring the downstream bellows to account for the additional movement.

Additionally, in July 2014, a reheater relief valve (V-1-132) upstream of the bellows (Y-1-26) was confirmed to be leaking past its seat. The combination of the leak-by of the relief valve with the restricted movement of the bellows created increased fatigue on the downstream bellows.

Inspection of the 2"x6" hole showed a circumferential fracture from end to end of one of the three bellow convolutions. There was also a tangential fracture at the 2"x3" hole on the same bellow convolution. A review of photos of the failure along with discussions with Subject Matter Experts (SMEs) from Exelon Corporate engineering determined the likely cause of the failure to be from fatigue cracking.

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**NARRATIVE**

**Cause of Event**

Upon completion of an Equipment Apparent Cause Analysis (EACE) it was determined that the apparent cause of the bellows failure was fatigue failure due to additional loading of the downstream bellows caused by the repeated leak repairs and a leaking relief valve causing induced vibration which accelerated the bellows fatigue process leading to the failure of the unwrapped downstream portion of the bellows in Y-1-26.

**Corrective Actions**

The expansion joint (Y-1-26) and the relief valve (V-1-132) were replaced.

**Previous Occurrences**

Licensee Event Report, LER-2013-002, was submitted in the last two years.

**Component Data**

Component	IEEE 805 System ID	IEEE 803A Component
Expansion Joint	SM	EXJ