



Exelon Generation Company, LLC  
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Braidwood Station  
35100 South Route 53, Suite 84  
Braceville, IL 60407-9619

10 CFR 50.73

June 18, 2018  
BW180065

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

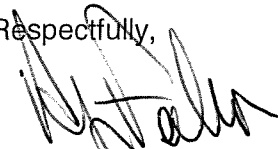
Braidwood Station, Unit 1  
Renewed Facility Operating License No. NPF-72  
NRC Docket No. STN 50-456

Subject: Licensee Event Report 2018-002-00 – 1B Emergency Diesel Generator Tripped on Overspeed During Testing Due to Broken Close-Assist Springs on the Turbocharger Inlet Butterfly Valve while the 1A Emergency Diesel Generator was Inoperable

The enclosed Licensee Event Report (LER) is being submitted in accordance with 10 CFR 50.73, "Licensee Event Report System."

There are no regulatory commitments contained in this letter. Should you have any questions concerning this submittal, please contact Mr. Francis Jordan, Regulatory Assurance Manager, at (815) 417-2800.

Respectfully,

  
Marri Marchionda-Palmer  
Site Vice President  
Braidwood Station

Enclosure: LER 2018-002-00

cc: NRR Project Manager – Braidwood Station  
Illinois Emergency Management Agency – Division of Nuclear Safety  
US NRC Regional Administrator, Region III  
US NRC Senior Resident Inspector (Braidwood Station)  
Illinois Emergency Management Agency – Braidwood Representative



**LICENSEE EVENT REPORT (LER)**

(See Page 2 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form  
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

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 Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to [Infocollects.Resource@nrc.gov](mailto: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> <b>Braidwood Station, Unit 1</b>	<b>2. Docket Number</b> <b>05000456</b>	<b>3. Page</b> <b>1 OF 3</b>
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**4. Title**  
1B Emergency Diesel Generator Tripped on Overspeed During Testing Due to Broken Close-Assist Springs on the Turbocharger Inlet Butterfly Valve while the 1A Emergency Diesel Generator was Inoperable

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
04	20	2018	2018	- 002 -	00	06	18	2018	N/A	N/A
									Facility Name	Docket Number
									N/A	N/A

9. Operating Mode	11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: (Check all that apply)			
6	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
10. Power Level	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
000	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.77(a)(1)
	<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)(D)	<input type="checkbox"/> 73.77(a)(2)(i)
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(ii)
		<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> Other (Specify in Abstract below or in NRC Form 366A)	

**12. Licensee Contact for this LER**

Licensee Contact Francis Jordan	Telephone Number (Include Area Code) 815-417-2800
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**13. Complete One Line for each Component Failure Described in this Report**

Cause	System	Component	Manufacturer	Reportable to ICES	Cause	System	Component	Manufacturer	Reportable to ICES
X	EK	KSV-72-10B	C634	Yes	N/A	N/A	N/A	N/A	N/A

14. Supplemental Report Expected	15. Expected Submission Date		
<input type="checkbox"/> Yes (If yes, complete 15. Expected Submission Date) <input checked="" type="checkbox"/> No	Month	Day	Year
	N/A	N/A	N/A

**Abstract** (Limit to 1400 spaces, i.e., approximately 14 single-spaced typewritten lines)

On April 20, 2018 at 1042 hours, the 1B diesel generator (DG) was being run for a normal monthly run and subsequently tripped. Operations entered Technical Specification (TS) 3.8.2, "AC Sources - Shutdown," Condition B for the required 1B DG inoperable. The cause of this event were two broken close-assist springs on the turbocharger inlet butterfly valve. The butterfly springs were replaced, and on April 20, 2018 at 1249 hours, Operations exited LCO 3.8.2, Condition B.

Actions taken include: The butterfly valve springs were replaced on the 1B and 1A DGs, and inspections verified the 2A and 2B DG butterfly valve springs were intact. Additional corrective actions include revising applicable DG operating procedures to visually inspect the butterfly valve springs prior to each DG run.

This event is reportable in accordance with 10 CFR 50.73(a)(2)(v)(B) for "any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to remove residual heat."

<b>NRC FORM 366A</b> (04-2018)	<b>U.S. NUCLEAR REGULATORY COMMISSION</b>  <b>LICENSEE EVENT REPORT (LER)</b> <b>CONTINUATION SHEET</b>	<b>APPROVED BY OMB: NO. 3150-0104</b>  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 Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to <a href="mailto:Infocollects.Resource@nrc.gov">Infocollects.Resource@nrc.gov</a> , 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>EXPIRES: 03/31/2020</b>
(See NUREG-1022, R.3 for instruction and guidance for completing this form <a href="http://www.nrc.gov/reading-rm/doc-collections/nureqs/staff/sr1022/r3/">http://www.nrc.gov/reading-rm/doc-collections/nureqs/staff/sr1022/r3/</a> )			

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
<b>Braidwood</b>	<b>05000456</b>	YEAR	SEQUENTIAL NUMBER	REV NO.
		2018	- 002	- 00

**NARRATIVE**

**A. Plant Operating Conditions Before the Event:**

Event Date: April 20, 2018

Unit: 1      Mode: 6      Reactor Power: 000 percent

Unit 1 Reactor Coolant System [AB]:      Shutdown for refueling outage      Temperature: 92 F

The 1A diesel generator (DG) [EK] was inoperable for troubleshooting.

**B. Description of Event:**

On April 20, 2018 at 1042 hours, the 1B DG was being run for a normal monthly run and subsequently tripped. Local panel indication was an Engine Overspeed trip had been received. Upon receipt of the overspeed trip alarm, control room operators directed the field operators to depress the emergency stop pushbutton as required by the alarm response procedure. Operations entered Technical Specification (TS) 3.8.2, "AC Sources - Shutdown," Condition B for the required 1B DG inoperable. All TS 3.8.2 Condition B required actions were met at the time of the required 1B DG inoperability. The offsite power source remained available. At no time was shutdown cooling lost.

Field investigation determined that the turbocharger inlet butterfly valve handle springs broke, which allowed the valve to shift and allowed two limit switches to open, which brought in a test-mode only electrical overspeed trip signal, although the engine had not physically reached an overspeed condition. If the engine had been in emergency mode when the springs broke, this overspeed trip would have been bypassed.

The butterfly springs were replaced, the emergency stop pushbutton was reset, and on April 20, 2018 at 1249 hours, Operations exited LCO 3.8.2, Condition B.

It was determined that the broken butterfly springs did not make the 1B DG inoperable. However, the 1B DG was inoperable from the time the emergency stop pushbutton was depressed until it was subsequently reset after field investigation of the condition was completed. During that time the 1A DG was also inoperable for troubleshooting activities. Therefore, this event is reportable in accordance with 10 CFR 50.73(a)(2)(v)(B) for "any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to remove residual heat." This LER is being submitted in follow-up to ENS 53353 made on April 20, 2018.

**C. Cause of Event**

The cause of this event were two broken close-assist springs on the turbocharger inlet butterfly valve. These springs assist in closing the turbocharger inlet butterfly valve upon an overspeed condition. The butterfly valve remained open since the locking pawl was still in place due to no actual overspeed condition; however, the broken springs allowed the valve to shift slightly and come off limit switches, which brought in a test-mode only electrical overspeed trip signal, tripping the engine. The cause of the spring failures is most likely due to age, heat, and periodic cycling during events where the butterfly valve is manipulated.



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

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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Braidwood	05000456	2018	- 002	- 00

**NARRATIVE**

**D. Safety Consequences:**

This condition had no actual safety consequences impacting plant or public safety.

The safety-related function of the emergency diesel generators is to provide an emergency source of power in the event offsite power is not available to supply all the electric loads required for safety shutdown of the reactor. If there had been an actual event requiring the 1B DG, the failure of the springs would not have prevented the 1B DG from performing its design function. The broken springs affected a test-mode only electrical overspeed trip signal. In an actual event, this overspeed trip would have been bypassed, and the 1B DG would have remained running. The operator was briefed to reset the emergency pushbutton in an emergency to restart the 1B DG if required. Therefore, there would have been no safety consequences during a design basis event.

There was a loss of safety function for the period when the 1B DG was inoperable (from the time the emergency stop pushbutton was depressed until it was subsequently reset) while the 1A DG was inoperable for troubleshooting activities.

**E. Corrective Actions:**

Completed Corrective Actions: The butterfly valve springs were replaced on the 1B and 1A DGs. Inspections verified the 2A and 2B DG butterfly valve springs were intact.

Planned Corrective Actions: Revise applicable DG operating procedures to visually inspect the butterfly valve springs prior to each DG run.

**F. Previous Occurrences:**

No previous, similar Licensee Event Reports were identified at the Braidwood Station.

**G. Component Failure Data:**

<u>Manufacturer</u>	<u>Nomenclature</u>	<u>Model</u>	<u>Mfg. Part Number</u>
Cooper Industries	Butterfly Valve	KSV-72-10B	1DG5254B