

CCN: 22-56

July 15, 2022

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

Peach Bottom Atomic Power Station (PBAPS) Unit 2  
Subsequent Renewed Facility Operating License No. DPR-44  
NRC Docket No. 50-277

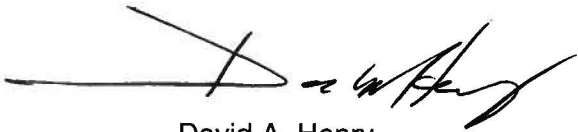
Subject: Licensee Event Report (LER) 2-2022-001-00 Automatic Reactor Scram due to Loss of Power to Both RPS Buses

Reference: ENS 55899

The subject report is being submitted in accordance with 10 CFR 50.73(a)(2)(iv)(A) for actuation of the Reactor Protection System, Containment Isolation Signals affecting multiple Main Steam Isolation Valves, Emergency Core Cooling Systems and Reactor Core Isolation Cooling.

There are no commitments contained in this letter. If you have any questions, please contact the Peach Bottom Regulatory Assurance Manager, Wade Scott at (717) 456-3047.

Respectfully,



David A. Henry  
Site Vice President  
Peach Bottom Atomic Power Station

Enclosure

cc: USNRC, Administrator, Region I  
USNRC, Senior Resident Inspector  
W. DeHaas, Commonwealth of Pennsylvania  
S. Seaman, State of Maryland  
B. Watkins, PSE&G, Financial Controls and Co-Owner Affairs



## LICENSEE EVENT REPORT (LER)

(See Page 3 for required number of digits/characters for each block)  
(See NUREG-1022, R.3 for instruction and guidance for completing this form  
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## 1. Facility Name

Peach Bottom Atomic Power Station, Unit 2

## 2. Docket Number

05000 277

## 3. Page

1 OF 3

## 4. Title

Automatic Reactor Scram due to Loss of Power to Both RPS Buses

## 5. Event Date

Month	Day	Year
05	16	2022

## 6. LER Number

Year	Sequential Number	Revision No.
2022	001 -	00

## 7. Report Date

Month	Day	Year
07	15	2022

## 8. Other Facilities Involved

Facility Name	Docket Number
	05000
Facility Name	Docket Number
	05000

## 9. Operating Mode

1

## 10. Power Level

100

## 11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: (Check all that apply)

<input checked="" type="checkbox"/> 10 CFR Part 20	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.36(c)(2)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input checked="" type="checkbox"/> 10 CFR Part 73
<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.69(g)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(4)
<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.71(a)(5)
<input type="checkbox"/> 20.2203(a)(2)(i)	<input checked="" type="checkbox"/> 10 CFR Part 21	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(1)(i)
<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 21.2(c)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(i)
<input type="checkbox"/> 20.2203(a)(2)(iii)	<input checked="" type="checkbox"/> 10 CFR Part 50	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	<input type="checkbox"/> 73.77(a)(2)(ii)
<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<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)(v)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)	

☐ OTHER (Specify here, in abstract, or NRC 366A).

## 12. Licensee Contact for this LER

## Licensee Contact

Wade Scott, Regulatory Assurance Manager

## Phone Number (Include area code)

7174563047

## 13. Complete One Line for each Component Failure Described in this Report

Cause	System	Component	Manufacturer	Reportable to IRIS	Cause	System	Component	Manufacturer	Reportable to IRIS
A	JC	BKR	W121	Y					

## 14. Supplemental Report Expected

☒ No ☐ Yes (If yes, complete 15. Expected Submission Date)

## 15. Expected Submission Date

Month	Day	Year

## 16. Abstract (Limit to 1560 spaces, i.e., approximately 15 single-spaced typewritten lines)

On 5/16/22 at 1537 hours, the Unit 2A reactor protection system motor generator set (RPS MG set) tripped in response to grid perturbations, causing a half scram condition as expected. At 1552 hours, Unit 2 experienced an automatic scram and Group 1 isolation. The scram was the result of a self-revealing technical human performance event during the execution of a procedure to return 2A RPS to service. The loss of both RPS buses resulted in a reactor scram, Primary Containment Isolation System Group 1 Isolation (main steam isolation valve closure), safety relief valve actuation, and loss of the normal heat sink. Emergency Core Cooling Systems were utilized to maintain reactor pressure vessel level and pressure.

At no time was there a public safety risk and there were no safety consequences as a result of the event. All control rods inserted, and all safety systems performed as expected. Operations safely stabilized Unit 2 and brought it to a cold shutdown condition. The root cause of this event was a breakdown in technical human performance, which led to directing the wrong procedure steps and resulted in a reactor scram. Immediate corrective actions included increased oversight and reinforced stop work criteria. Longer term corrective actions include procedure and training enhancements.

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

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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Peach Bottom Atomic Power Station, Unit 2	05000- 277	2022	- 001	- 00

**NARRATIVE****Plant Operating Conditions Before the Event**

Prior to the event Peach Bottom Atomic Power Station Unit 2 was operating at approximately 100% power in MODE 1. All 4kV (EIS: EB) buses were aligned to one source due to a planned offsite source outage window. Because of this alignment, the Unit 2 B bus of the Reactor Protection System (RPS)(EIS: JC) was being powered by an alternate feed. The 4kV and RPS power supply alignment had been in this configuration for four weeks prior to the event. There were no other structures, systems or components (SSC) that were inoperable at the start of the event that contributed to the event.

**Event Description**

At 1532 hours on 5/16/22, an offsite electrical transient(s) occurred which caused a main generator perturbation and multiple control room alarms for both units. The 2A Recirculation (EIS: AD) pump speed lowered slightly (10 RPM). The operations crew entered the procedure for unexpected change in core flow. The Unit 2 Reactor Water Cleanup (EIS: CE) system also tripped as a result of the event.

At 1537 hours on 5/16/22, another offsite electrical transient occurred with a large main generator perturbation, and the 2A RPS motor generator set output breaker tripped which caused a loss of power to the 2A RPS bus, a half scram, and Unit 2 Primary Containment Isolation System Group II/III inboard isolations (EIS: JM). Loss of RPS power also caused a trip of Unit 2 Reactor Building Ventilation (EIS: VA). One of two main generator output breaker (EIS: EL) for each unit opened and there was a <1K Ohm ground indicated on the 2A/C and 2B/D batteries (EIS: EJ). In response to the 2A RPS trip, operations supervision directed performance of procedures to restore the tripped 2A RPS motor generator set to service. During this evolution, a self-revealing technical human performance event occurred when an operator was directed by shift management to utilize a version of the procedure that was not annotated to account for the abnormal electrical alignment. The operator opened the breakers from the alternate electrical feed to the 2B RPS bus which was powering the B RPS at the time.

At 1552 hours on 5/16/22, the loss of power to the second RPS bus resulted in a Reactor scram and Primary Containment Isolation System (EIS:JM) Group I isolation which closed all main steam isolation valves (MSIVs). All safety systems performed as expected in response to the scram. Reactor pressure increased as a result of MSIV closure. Safety relief valves (EIS: SB) initially lifted within their setpoints to control pressure, then the valves were utilized manually for pressure control. Closure of the MSIVs isolated the normal heat sink (condenser, EIS: SG) and the steam supply to the feedwater (EIS: SJ) pumps, so emergency systems were utilized for injection. High Pressure Coolant Injection (EIS: BJ) was manually used for injection into the reactor pressure vessel and was used for pressure control. Reactor Core Isolation Cooling (RCIC)(EIS:BN) was manually utilized for reactor pressure vessel level control. Operations safely stabilized Unit 2 and brought it to a cold shutdown condition.

Unit 3 was affected by the grid transient, with both Unit 3 Recirculation pump speeds lowering and entering speed hold, but was unaffected by the Unit 2 scram.

This event is reportable under 10CFR50.73(a)(2)(iv)(A) due to manual or automatic actuation of systems listed in 10CFR50.73(a)(2)(iv)(B) including RPS, containment isolation signals, actuation of an emergency core cooling system and RCIC. An ENS notification was made within 4 hours of the event, reference ENS 55899.

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Peach Bottom Atomic Power Station, Unit 2	05000- 277	2022	- 001	- 00

**NARRATIVE****Safety Consequences**

The scram and response was completed without complication and resulted in no safety consequences. At no time was there a public safety risk. The operations crew responded correctly and plant SSC responded as designed in response to the event. Although the primary heat sink was lost due to closure of the MSIVs, decay heat was adequately managed with the use of other safety systems as described above. The event was within the analysis of UFSAR Chapter 14, "Plant Safety Analysis". There was not a release of radioactivity as a result of this event.

**Corrective Actions**

The root cause of this event was determined to be a technical human performance event. While operating in knowledge-based thinking, licensed operators had breakdowns in technical human performance. This led to directing the wrong procedure steps and caused a reactor scram. Contributing causes identified included not establishing a deliberate and focused pace once plant conditions stabilized due to an elevated sense of urgency and inconsistent use of human performance tools. Immediate corrective actions included increased supervisory oversight and peer checks and reinforcement of stop work criteria. Corrective actions also include procedure enhancements and ensuring reviews of contingency plans for longer system outage windows. Additionally, training will be used to reinforce the transition from transient to normal operations as well as appropriate pace control, teamwork and technical human performance standards.

**Previous Similar Events**

Peach Bottom has not experienced a scram due to a human performance or technical human performance event in at least 10 years.