Constellation.

LaSalle County Station
2601 North 21st Road
Marseilles, IL 61341
815-415-2000 Telephone

10 CFR 50.73

RA22-055

February 9, 2022

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

LaSalle County Station, Unit 2
Renewed Facility Operating License No. NPF-18
NRC Docket No 50-374

Subject: Licensee Event Report 2022-003-01, Supplement to Manual Scram due to Isophase Bus Duct Fire and 2A RPS Normal Power Supply Trip.

In accordance with 10 CFR 50.73(a)(2)(iv)(A), Constellation Energy Generation, LLEC (CEG) is submitting Licensee Event Report (LER) Number 2022-003-01 for LaSalle County Station, Unit 2.

There are no regulatory commitments in this letter. Should you have any questions concerning this report, please contact Mr. Dan Mearhoff, Regulatory Assurance Manager, at (815) 415-2800.

Respectfully,

John Van Fleet Jr
Plant Manager
LaSalle County Station

Enclosure: Licensee Event Report

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – LaSalle County Station

NRC FORM 366 (08-2020) | U.S. NUCLEAR REGULATORY COMMISSION | APPROVED BY OMB: NO. 3150-0104 | EXPIRES: 08/31/2023

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 http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/)

1. Facility Name	2. Docket Number	3. Page
LaSalle County Station, Unit 2	05000 - 374	1 OF 3

4. Title

Manual Scram due to Isophase Bus Duct Fire followed by 2A RPS Normal Power Supply Trip

5. Event Date			6. LER Number			7. Report Date			8. Other Facilities Involved	
Month	Day	Year	Year	Sequential Number	Revision No.	Month	Day	Year	Facility Name	Docket Number
09	26	2022	2022	003	01	02	03	2023	NA	NA
									Facility Name: NA	Docket Number: NA

9. Operating Mode	10. Power Level
1	100 percent

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

10 CFR Part 20	☐ 20.2203(a)(2)(vi)	☐ 50.36(c)(2)	☒ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(A)	**10 CFR Part 73**
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.69(g)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(4)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(i)	**10 CFR Part 21**	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	☐ 73.77(a)(1)(i)
☐ 20.2203(a)(2)(ii)	☐ 21.2(c)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(i)
☐ 20.2203(a)(2)(iii)	**10 CFR Part 50**	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)	☐ 73.77(a)(2)(ii)
☐ 20.2203(a)(2)(iv)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)	
☐ 20.2203(a)(2)(v)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)	

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

12. Licensee Contact for this LER

Licensee Contact	Phone Number (Include area code)
CJ Smith, Operations Director	(815) 415-2200

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
X	EF	RHE	O026	Y		D	MP	GBU	X100	Y

14. Supplemental Report Expected		15. Expected Submission Date	Month	Day	Year
☐ No	☒ Yes (If yes, complete 15. Expected Submission Date)		04	03	2023

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

At 0238 CDT on September 26, 2022 with Unit 2 in Mode 1 at 100 percent power, a manual scram was initiated due to a reported fire on the isophase bus duct. The scram was uncomplicated with all systems responding normally with the exception of a loss of 2A reactor protection system (RPS) normal power supply. The 2A RPS normal power supply output breaker tripped on over voltage. Operations successfully transferred 2A RPS power to the alternate power supply. The fire was reported extinguished at 0240 CDT on September 26, 2022.

The cause of the 2A RPS loss of normal power was a degraded voltage adjust potentiometer (POT) on the output breaker. The most likely cause of the isophase bus duct fire is written guidance that governs the work did not provide the detailed instructions needed to perform disassembly and reassembly of the Unit 2 Isophase Bus Duct (IPBD) bolted connections with high precision.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
LaSalle County Station, Unit 2	05000- 374	2022	- 003	- 01

NARRATIVE

Plant and System Identification

LaSalle County Station Unit 2 is a General Electric Boiling Water Reactor with 3546 Megawatts Thermal Rated Core Power. The affected systems were the Main Power system (MP) and the Reactor Protection System (RPS).

The MP system provides safe and reliable distribution of electrical power from the Main Generator to the off-site transmission network.

RPS initiates a rapid insertion of all the control rods (scram) when monitored variables exceed their pre-established limits, neutron flux instrumentation becomes inoperable, or a manual scram signal is inserted by the operator. In addition, the setpoints, power sources, and controls and instrumentation are arranged in such a manner as to preclude spurious scrams.

Condition Prior to Event

Unit(s): 2 Date: September 26, 2022 Time: 0238 CDT
Reactor Mode(s): 1 Mode(s) Name: Power Operation Power Level: 100%

Description

Fire and manual scram

Electrical Maintenance personnel identified smoke coming from the general area in the Unit 2 Turbine Building that contains the Unit 2 isolated phase bus duct and notified the Main Control Room (MCR). The Field Supervisor was dispatched and at 0230 CDT they notified the MCR that there was visible sparks, smoke and indications of a fire from the bus duct enclosure. Operations dispatched the fire brigade and entered abnormal operations procedures for a fire. The unit was manually scrammed at 0238 CDT. The brigade was able to successfully gain control of the fire using dry chem and the fire was reported extinguished at 0240 CDT.

2A RPS Breaker trip

Following the Manual Scram, the 2A RPS Breaker normal feed tripped on overvoltage. All Primary Containment isolations occurred as expected following the loss of A RPS power. Operations entered abnormal operating procedures, swapped 2A RPS power to the alternate feed and restored containment isolations.

Cause

The most likely cause of the isophase bus duct fire is written guidance that governs the work did not provide the detailed instructions needed to perform disassembly and reassembly of the Unit 2 Isophase Bus Duct (IPDB) bolted connections with high precision. This resulted in degraded shunt bolted connection resistance causing overheating in the bolted connections. The overheating resulted in a failure of the IPBD support structure hardware and ignition of the retractable cover neoprene gasket.

The cause of the 2A RPS Breaker trip was a degraded voltage adjust potentiometer.

Reportability and Safety Analysis

Fire and manual scram

The fire was extinguished in less than 15 minutes of identification and the reactor was safely shutdown. Offsite power sources and station emergency power sources were available at all times throughout the event. Emergency response personnel acted promptly to extinguish the fire and there was no personnel injury during this event or damage to plant property from the fire other than the bus duct itself.

NARRATIVE

RPS actuation is reportable under 10 CFR 50.72(b)(2)(iv)(B) as an event or condition that results in the actuation of the RPS when the reactor is critical. An ENS report was made to the NRC at 0639 on September 26, 2022 (EN# 56120).

2A RPS Breaker trip

The RPS is divided into two trip systems that are physically and electrically independent. The design of this system is such that the loss of power to one of these trip systems neither prevents nor causes a reactor scram. Normal power to RPS buses A and B is supplied by two motor-generator (MG) sets. Alternate power for either RPS bus is from the Alternate Instrument and RPS Bus Transformer. The loss of an RPS bus and associated RPS actuation was considered an invalid actuation because it was not the result of a valid signal and not an intentional manual action. The RPS bus loss condition resulted in general containment isolation signals that affected containment isolation valves in more than one system or multiple main steam isolation valves while the unit was critical. Therefore, the RPS bus loss condition is reportable in accordance with 10 CFR 50.73(a)(2)(iv)(A).

Safety System Functional Failure Review

The system equipment responses did not result in a safety system functional failure (SSFF) as defined in accordance with NEI 99-02, "Regulatory Assessment Performance Indicator Guideline." The RPS logic safety function was satisfied by its actuation for designed inputs.

Corrective Actions

Corrective actions taken in response to the conditions were:

- Unit 2 Manually scrammed.
- Fire brigade dispatched and fire promptly extinguished.
- Swap 2A RPS to alternate power supply and restored containment isolations
- Degraded 2A RPS voltage potentiometer replaced and normal power to 2A RPS restored.
- Damaged connections in the isophase bus duct restored and Unit 2 restarted.
- Actions created to track the replacement of Unit 1 and Unit 2 IPBD bolted enclosure shuts and flexible links with welded flexible connections.
- Actions created to improve thermographic monitoring of the IPBD.

Previous Occurrences

LER 374-2021-002-01, Reactor Protection System Half Scram due to Motor Generator Set Output Breaker Trip. On May 31, 2021, the 2A RPS normal power supply output breaker tripped on overvoltage. The cause of this event was a degraded POT.

Component Failure Data

Device: 2A RPS Logic MG Set Output Breaker – Voltage Adjustment Potentiometer
Component Type: Rheostat / Potentiometer [RHE]
Manufacturer: Ohmite [O026]
Part: RHS500

Device: Bus, Iso Phase, Main Power Transformer
Component Type: Bus, isolated phase [GBU]
Manufacturer: Commonwealth Edison [X000]
Part: 706232