Edward R. Pigott
Site Vice President
McGuire Nuclear Station

Duke Energy
MG01VP | 12700 Hagers Ferry Road
Huntersville, NC 28078

o: 980.875.4805
Edward.Pigott@duke-energy.com

Serial No: RA-22-0246
August 18, 2022

10 CFR 50.73

U.S. Nuclear Regulatory Commission
Washington, D.C. 20555
ATTENTION: Document Control Desk

Subject: Duke Energy Carolinas, LLC
McGuire Nuclear Station, Units 1 and 2
Docket Nos. 50-369 and 50-370
Renewed License No. NPF-9, NPF-17
Licensee Event Report 2022-001, Revision 0
Nuclear Condition Report Number 02432084

Pursuant to 10 CFR 50.73 Section (a)(2)(v)(D), attached is Unit 1 and 2 Licensee Event Report (LER) 2022-001, Revision 0, regarding concurrent inoperability of both trains of Control Room Area Chilled Water System (CRACWS) due to human error.

This event is considered to have no significance with respect to the health and safety of the public. There are no regulatory commitments contained in this LER.

If questions arise regarding this LER, please contact Jeff Sanders at 980-875-4680.

Sincerely,

Edward R. Pigott
Duke Energy
McGuire Nuclear Station
Site Vice President

Attachment

cc: Laura A. Dudes
Administrator Region II
U.S. Nuclear Regulatory Commission
Marquis One Plaza
245 Peachtree Center Avenue
NE Suite 1200, 30303-1257

J. Klos
Project Manager (McGuire)
U.S. Nuclear Regulatory Commission
Mail Stop O-9-E3
11555 Rockville Pike
Rockville, MD 20852

Andy Hutto
NRC Senior Resident Inspector
McGuire Nuclear Station

NRC FORM 366 (08-2020) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 08/31/2023

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, Library, and Information Collections Branch (T-6 A10M), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and the OMB reviewer at: OMB Office of Information and Regulatory Affairs, (3150-0104), Attn: Desk ail: oira_submission@omb.eop.gov. The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the document requesting or requiring the collection displays a currently valid OMB control number.

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

1. Facility Name	2. Docket Number	3. Page
McGuire Nuclear Station, Unit 1	05000369	1 OF 5

4. Title

Both Control Room Area Chilled Water System Trains Inoperable Due to Human Error

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
									McGuire Nuclear Station, Unit 2	05000370
06	21	2022	2022	- 001 -	00	08	18	2022	Facility Name	Docket Number 05000

9. Operating Mode	10. Power Level
1	100%

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 in NRC 366A).

12. Licensee Contact for this LER

Licensee Contact	Phone Number (Include Area Code)
Jeffrey D. Sanders, Senior Engineer	(980) 875-4680

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

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

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

At 2240 [EST] on June 21, 2022, with Unit 1 and Unit 2 operating at approximately 100 percent power and the A train of the Control Room Area Chilled Water System (CRACWS) inoperable for planned maintenance, a loss of safety function occurred when the B train CRACWS chiller tripped. A clearance required for maintenance on the A train was being performed when a non-licensed auxiliary operator (AO) opened the breaker feeding the oil pump associated with the running and operable B train. This resulted in an inadvertent trip of the B Chiller. With both CRACWS trains inoperable, Operations entered Abnormal Procedure AP-39 (Control Room High Temperature) and restored the B train within thirty-five minutes.

The cause of this event is attributed to a human performance error in which the AO did not effectively use human performance tools to ensure the correct component was identified prior to operation. In addition to prompt restoration of the B Train of CRACWS and the system's safety function, corrective actions were initiated to improve accountability of the operator associated with this event, and implementation of additional layers of defense when placing clearances.

This event had no impact on the health and safety of the public.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
McGuire Nuclear Station, Unit 1	05000-369	2022	- 001	- 00

NARRATIVE

BACKGROUND

The following information is provided to assist readers in understanding the event described in this LER. Applicable Energy Industry Identification [EIIS] system and component codes are enclosed within brackets.

Control Room Area Chilled Water System [KM]

The purpose of the Control Room Area Chilled Water System (CRACWS) [KM] is to provide chilled water to the Control Room and Control Room Area Ventilation (CRAVS) [VI] equipment to maintain temperature within Technical Specification limits.

The CRACWS system has two redundant trains (A and B) serving the CRAVS air handling units providing cooling of recirculated control room air. The CRACWS operates in conjunction with the CRAVS and are shared between both McGuire units. These trains are normally not cross-connected. Each CRACWS train consists of a compression tank to provide water surge protection, a chilled water pump and a control area chiller. Chilled water circulates in a closed loop. Each chiller has its own separate refrigeration system. The CRACWS water exchanges heat with the refrigerant in the evaporator to be chilled to a desired temperature.

The CRACWS is an emergency system which also operates during normal unit operations. A single train will provide the required temperature control to maintain the control room at approximately 75°F. The control room is shared between units.

EVENT DESCRIPTION

At 2240 on June 21, 2022, a loss of safety function occurred due to concurrent inoperability of both required CRACWS trains for 35 minutes. A clearance required for planned maintenance on the A CRACWS chiller was being performed when a non-licensed operator incorrectly opened the breaker supplying the oil pump associated with the running and operable B CRACWS Chiller. Prior to opening the incorrect breaker, the A CRACWS train was declared inoperable due to disconnecting the A CRACWS chiller compressor supply breaker per the approved clearance. Opening the B CRACWS chiller oil pump breaker resulted in a B CRACWS chiller trip which was supplying cooling to its required loads.

As a result of the loss of cooling, the control room staff entered Abnormal Procedure AP-39, the incorrectly opened breaker was reclosed, and the B CRACWS chiller was restarted. The chiller started as expected, and control room temperatures returned to normal. Engineering data was collected on the B CRACWS chiller, and all parameters indicated the chiller was functioning properly. The AP was exited after normal operation of the B CRACWS was confirmed.

Sequence of Events (times are approximate):

- 06/21 20:39, Clearance for the A CRACWS chiller was approved to hang in support of maintenance.
- 06/21 21:24, A CRACWS declared inoperable due to the associated clearance.
- 06/21 22:40, Abnormal Procedure AP-39 was entered due to elevated control room temperature. Unit 1 and Unit 2 entered the appropriate Technical Specifications.
- 06/21 22:52, The B CRACWS chiller oil pump breaker was reclosed.
- 06/21 23:13, B CRACWS Chiller re-started per the Abnormal Procedure AP-39.
- 06/21 23:15, Unit 1 and Unit 2 exited the Technical Specifications required for two inoperable CRACWS.
- 06/21 23:38, Control room temperatures returned to pre-event conditions and Abnormal Procedure AP-39 was exited.
- 06/22 02:26, 8 Hour Notification made to NRC per 10CFR50.72(b)(3)(v)(D).

REPORTABILITY DETERMINATION

The concurrent inoperability of both trains of CRACWS was initially reported, as required, under 10 CFR 50.72(b)(3)(v)(D), "Any event or condition that at the time of discovery could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident."

This LER satisfies the corresponding written reporting criteria in 10 CFR 50.73(a)(2)(v)(D), "Any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequence of an accident."

CAUSAL FACTORS

A cause investigation was completed for this event. The cause was found to be a non-licensed auxiliary operator did not use human performance tools effectively to ensure the correct component was identified prior to operation. A contributing cause was identified as a lack of adequate risk plan development and implementation by supervisors.

CORRECTIVE ACTIONS

Immediate Actions:

1. Restored power to the B CRACWS Chiller oil pump and restarted the chiller.

Interim and Subsequent Actions:

1. Appropriate accountability and remediation actions performed.
2. Department focus on activities involving clearances that require plant manipulations and associated procedures including additional layers of defense when placing clearances.
3. Develop and implement training solutions focused on risk recognition and risk plan implementation.

SAFETY ANALYSIS

The safety significance of the CRACWS is low because of the opportunity to mitigate the consequences of its loss with preplanned measures as described in plant Abnormal Procedures. As a result, the loss of the CRACWS system, including the chillers, has been screened out of the McGuire PRA as either an initiating event or as a support system failure. Therefore, the CRACWS has no impact on the calculated Core Damage Frequency (CDF) or Large Early Release Frequency (LERF) at McGuire. Additionally, during this event, maximum recorded control room temperature reached 81.4F prior to the restart of the B CRACWS chiller which is below the Technical Specification required maximum temperature of 90F. There were no adverse effects on control room instrumentation, controls, or habitability during this event.

Given the above, this event was determined to be of no significance to the health and safety of the public.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
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ADDITIONAL INFORMATION

A review of the McGuire corrective action program was conducted to determine if this was a recurring event (i.e., similar event with the same cause or same failure mode). No previous similar events were identified within the past three years associated with a loss of safety function due to human error. Therefore, this is not considered a recurring event.

A review of previous reportable events for the past three years did not identify any additional similar LER events.