



Tom Simril
Vice President
Catawba Nuclear Station

Duke Energy
CN01VP | 4800 Concord Road
York, SC 29745

o: 803.701.3340
f: 803.701.3221

RA-19-0441

10 CFR 50.73

November 26, 2019

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

Subject: Duke Energy Carolinas, LLC
Catawba Nuclear Station, Unit 2
Docket No. 50-414
Licensee Event Report (LER) 414/2019-005-00

Pursuant to 10 CFR 50.73(a)(1) and (d), attached is LER 414/2019-005-00, entitled "Containment Spray System Actuation due to Interaction of Procedure Enclosures Performed Concurrently."

This report is being submitted in accordance with 10 CFR 50.73(a)(2)(iv)(A).

There are no regulatory commitments contained in this letter or its attachment. There are no outstanding corrective actions required to restore compliance with NRC requirements associated with LER 414/2019-005-00.

This event is considered to be of no significance with respect to the health and safety of the public.

If questions arise regarding this LER, please contact Mandy Hare, Manager Nuclear Support Services, Regulatory Affairs at (803) 701-2218.

Sincerely,

A handwritten signature in black ink that reads "Tom Simril".

Tom Simril
Vice President, Catawba Nuclear Station

Attachment

United States Nuclear Regulatory Commission
RA-19-0441
November 26, 2019
Page 2

xc (with attachment):

L. Dudes
Regional Administrator
U.S. Nuclear Regulatory Commission - Region II
Marquis One Tower
245 Peachtree Center Ave., NE Suite 1200
Atlanta, GA 30303

M. Mahoney
NRC Project Manager (CNS)
U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Mailstop O-8G9A
Rockville, MD 20852

J. Austin
NRC Senior Resident Inspector

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, 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.

**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/>)

1. Facility Name Catawba Nuclear Station, Unit 2	2. Docket Number 05000 414	3. Page 1 OF 4
--	--------------------------------------	--------------------------

4. Title Containment Spray System Actuation due to Interaction of Procedure Enclosures Performed Concurrently.
--

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
10	02	2019	2019	005	00	11	26	2019	None	05000
									Facility Name	Docket Number
									None	05000

9. Operating Mode		11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: (Check all that apply)			
5	<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 checked="" 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 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 Mandy Hare, Manager Nuclear Support Services, Regulatory Affairs	Telephone Number (Include Area Code) (803) 701-2218
---	---

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
-------	--------	-----------	--------------	--------------------	-------	--------	-----------	--------------	--------------------

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

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

On October 2, 2019, at 0415, with Unit 2 in Mode 5 at 0% power, an actuation of the containment spray system [BE] (NS) occurred during valve strokes of the 2A train containment spray header isolations while the 2B train containment spray pump was in recirculation. The NS system actuation occurred due to a conflict in procedure sections that were performed in parallel. The conflict resulted in a containment spray flow path via the 2B NS pump, which was running in recirculation to/from the Refueling Water Storage Tank [RWST] (FWST), through the flow test cross-tie line and out the 2A spray header. The Unit 2 containment spray actuation was secured at 0416.

The Unit 2 containment spray actuation was not part of a pre-planned evolution and is considered a valid system actuation.

The causes of this event are as follows:

- Operations failure to mark up flow diagrams for the evolution led to the failure to understand and evaluate interactions between procedure enclosures and the resulting impacts to the plant while performing enclosures concurrently, and
- On-shift Operations Crew willingness to proceed with less than 100% certainty.

The health and safety of the public was not affected by this event.

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

(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, 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.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Catawba Nuclear Station, Unit 2	05000- 414	2019	- 005	- 00

NARRATIVE**BACKGROUND**

The following information is provided to assist readers in understanding the event described in this LER. Applicable Energy Industry Identification System [EIIIS] and component codes are enclosed within brackets. Catawba's unique system and component identifiers are contained within parentheses.

This event is being reported under 10 CFR 50.73(a)(2)(iv)(A) for System Actuation due to the actuation of the Unit 2 containment spray [BE] (NS) that occurred during valve strokes of the 2A train containment spray header isolations while the 2B train containment spray pump was in recirculation. The NS system actuation occurred due to a conflict in procedure sections that were performed in parallel. The conflict resulted in a containment spray flow path via the 2B NS pump, which was running in recirculation to/from the Refueling Water Storage Tank [RWST] (FWST), through the flow test cross-tie line and out the 2A spray header.

The containment spray system is an engineered safeguard feature which serves to remove thermal energy from the containment atmosphere in the event of a Loss Of Coolant Accident (LOCA). NS performs this function in conjunction with the Emergency Core Cooling System (ECCS), which cools the reactor during injection and recirculation modes of operation. However, the NS System is not part of the ECCS. The heat removal capability of the containment spray system maintains containment pressure below the design pressure value after the ice in the ice condenser [BC] (NF) has been depleted, and steam generated in the core continues to enter containment. The NS System also serves to remove fission product iodine from the post-accident containment atmosphere. In addition, the NS System is designed for the suppression of steam partial pressure in the upper containment volume due to operating deck leakage from a LOCA.

During normal unit operation, the containment spray system is in a standby ready mode and does not perform any specific function.

The Design Basis Events which impose requirements on the design of the containment spray system are:

- Loss of Coolant Accident - Small Break (includes spurious pressurizer valve openings)
- Loss of Coolant Accident - Large Break

Whenever the Containment Pressure Control System (CPCS) permissive is met, the Containment Spray (NS) System can be started manually by the control room operator to provide Containment Cooling, taking suction from the Containment Sump.

Technical Specification 3.6.6, "Containment Spray System." LCO 3.6.6, "Two containment spray trains shall be OPERABLE." APPLICABILITY: MODES 1, 2, 3, and 4.

No other INOPERABLE structures, systems, or components contributed to the event.

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

(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, 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.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Catawba Nuclear Station, Unit 2	05000-414	2019	005	00

NARRATIVE**EVENT DESCRIPTION**

On October 2, 2019, at 0415, with Unit 2 in Mode 5 at 0% power, an actuation of the containment spray system occurred during valve strokes of the 2A train containment spray header isolations while the 2B train containment spray pump was in recirculation. This occurred due to a conflict in procedure sections that were performed in parallel. The conflict resulted in a containment spray flow path via the 2B NS pump, which was running in recirculation to/from the Refueling Water Storage Tank, through the flow test cross-tie line and out the 2A spray header. The Unit 2 containment spray actuation was secured at 0416.

Timeline of Events:

October 2, 2019, 03:41 – 2B NS placed in recirculation.

October 2, 2019, 03:56 – 2A NS placed in recirculation.

October 2, 2019, 03:59 – 2A NS Pump secured.

October 2, 2019, 04:15:45 – 04:16:45 – 2NS-29A (NS Spray Hdr 2A Cont Isol) and 2NS-32A (NS Spray Hdr 2A Cont Isol) are cycled to ensure valves are not pressure locked. While the valves were open during cycling, water was flowing through the 2A NS Header in Unit 2 Upper Containment.

October 2, 2019, 04:16:45 – Unit 2 containment spray actuation was secured.

CAUSAL FACTORS

Both a Human Performance and an Organizational and Programmatic causal investigation checklist were completed. The following two causes were identified:

- Operations failure to mark up flow diagrams for the evolution led to the failure to understand and evaluate interactions between procedure enclosures and resulting impacts to the plant while performing enclosures concurrently.
- On-shift Operations Crew willingness to proceed with less than 100% certainty after failing to fully evaluate the potential consequences of the activity.

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

(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, 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.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Catawba Nuclear Station, Unit 2	05000- 414	2019	- 005	- 00

NARRATIVE**CORRECTIVE ACTIONS:**

Secured Unit 2 Containment Spray Actuation and placed system in standby alignment. – Complete

Performed inspection of identified impacted equipment. – Complete

Issued a crew learning to Operations to communicate lessons learned from this event. – Complete

Issued Standing Instruction for all Operations evolutions involving the movement of fluid (water/oil/steam/gas) shall include a mark-up of the appropriate flow diagrams as a tool to ensure the impact of the evolution to current plant status is known. The marked-up flow diagrams shall be presented as part of the Certification of Readiness. – Complete

Implemented continuous oversight in the Control Room for the remainder of Unit 2 Outage 23, in addition to the on-duty Shift Manager, by personnel at the Shift Manager level or higher. This oversight function was implemented to ensure compliance with standards and to reinforce behaviors. – Complete

Planned

Operations will conduct a benchmark on task preparation with a focus on risk recognition and contingency actions.

Operations Training to implement training, as identified in Needs Analysis, for evaluating worst case consequences of an activity.

SAFETY ANALYSIS:

The valid actuation of Unit 2 containment spray did not prevent a fulfillment of a Safety Function. Unit 2 was in Mode 5 at the time of the event. Containment spray system is required in Modes 1, 2, 3 and 4 per Technical Specification 3.6.6.

There was no impact to the health and safety of the public.

ADDITIONAL INFORMATION:

Previous Similar Occurrences:

A review of License Event Reports from the past 3 years did not identify any similar occurrences.