



**Steven D. Capps**  
Vice President  
McGuire Nuclear Station

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

o: 980.875.4805  
f: 980.875.4809  
Steven.Capps@duke-energy.com

August 12, 2013

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, Unit 1  
Docket No. 50-369  
Licensee Event Report 369/2013-002, Revision 0  
Problem Investigation Process Number M-13-05935

Pursuant to 10 CFR 50.73 Sections (a) (1) and (d), attached is Licensee Event Report (LER) 369/2013-002, Revision 0, describing an operation or condition prohibited by Technical Specifications resulting from an inoperable Unit 1 Auxiliary Feedwater System pressure switch and an inoperable Unit 1 Auxiliary Feedwater System pump.

This report is being submitted per the requirements of 10 CFR 50.73 (a) (2) (i) (B). This event is considered to be of 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, contact Jeffrey N. Robertson at 980-875-4499.

Sincerely,

Steven D. Capps

Attachment

IE22  
NRR

U.S. Nuclear Regulatory Commission  
August 12, 2013  
Page 2

cc: V. M. McCree  
Administrator, Region II  
U.S. Nuclear Regulatory Commission  
Marquis One Tower  
245 Peachtree Center Ave., NE, Suite 1200  
Atlanta, GA 30303-1257

J. C. Paige, Project Manager  
U.S. Nuclear Regulatory Commission  
11555 Rockville Pike  
Mail Stop O-8 G9A  
Rockville, MD 20852-2738

J. Zeiler  
NRC Senior Resident Inspector  
McGuire Nuclear Station

W. L. Cox III, Section Chief  
North Carolina Department of Environment and Natural Resources  
Division of Environmental Health  
Radiation Protection Section  
1645 Mail Service Center  
Raleigh, NC 27699-1645

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/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NE0B-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 reverse for required number of digits/characters for each block)

**1. FACILITY NAME**

McGuire Nuclear Station, Unit 1

**2. DOCKET NUMBER**

05000- 0369

**3. PAGE**

1 OF 4

**4. TITLE**

Inoperable Auxiliary Feedwater components resulting in Technical Specification prohibited operation or condition.

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
06	13	2013	2013	-002-	00	8	12	2013	None	05000
									None	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 type="checkbox"/> 20.2201(b)         | <input type="checkbox"/> 20.2203(a)(3)(i)             | <input type="checkbox"/> 50.73(a)(2)(i)(C)  | <input type="checkbox"/> 50.73(a)(2)(vii)                              |
| <input type="checkbox"/> 20.2201(d)         | <input type="checkbox"/> 20.2203(a)(3)(ii)            | <input type="checkbox"/> 50.73(a)(2)(ii)(A) | <input type="checkbox"/> 50.73(a)(2)(viii)(A)                          |
| <input type="checkbox"/> 20.2203(a)(1)      | <input type="checkbox"/> 20.2203(a)(4)                | <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)(i)   | <input type="checkbox"/> 50.36(c)(1)(i)(A)            | <input type="checkbox"/> 50.73(a)(2)(iii)   | <input type="checkbox"/> 50.73(a)(2)(ix)(A)                            |
| <input type="checkbox"/> 20.2203(a)(2)(ii)  | <input type="checkbox"/> 50.36(c)(1)(ii)(A)           | <input type="checkbox"/> 50.73(a)(2)(iv)(A) | <input type="checkbox"/> 50.73(a)(2)(x)                                |
| <input type="checkbox"/> 20.2203(a)(2)(iii) | <input type="checkbox"/> 50.36(c)(2)                  | <input type="checkbox"/> 50.73(a)(2)(v)(A)  | <input type="checkbox"/> 73.71(a)(4)                                   |
| <input type="checkbox"/> 20.2203(a)(2)(iv)  | <input type="checkbox"/> 50.46(a)(3)(ii)              | <input type="checkbox"/> 50.73(a)(2)(v)(B)  | <input type="checkbox"/> 73.71(a)(5)                                   |
| <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)(C)  | <input type="checkbox"/> OTHER   |
| <input type="checkbox"/> 20.2203(a)(2)(vi)  | <input checked="" type="checkbox"/> 50.73(a)(2)(i)(B) | <input type="checkbox"/> 50.73(a)(2)(v)(D)  | <input type="checkbox"/> Specify in Abstract below or in NRC Form 366A |

**12. LICENSEE CONTACT FOR THIS LER**

NAME  
Jeffrey N. Robertson, Regulatory Compliance

TELEPHONE NUMBER (Include Area Code)  
980-875-4499

**13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT**

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

**14. SUPPLEMENTAL REPORT EXPECTED**

YES (If yes, complete EXPECTED SUBMISSION DATE) X NO

**15. EXPECTED SUBMISSION DATE**

MONTH DAY YEAR

**16. ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)**

During a review of pressure switch (PS) setpoints, it was determined the calibration procedure for Unit 1 Auxiliary Feedwater System PS 1CAPS5390 utilized a water leg value that did not reflect the actual water leg value in the field. This water leg error resulted in a non-conservative 1CAPS5390 actuation setpoint outside the limits required by Technical Specification (TS) 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation", which rendered this PS inoperable. 1CAPS5390 actuates on a Unit 1 Turbine Driven Auxiliary Feedwater Pump (TDCAP) suction pressure - low condition to align the safety related assured water source to this pump. With 1CAPS5390 inoperable, TS 3.3.2 requires the PS be returned to an OPERABLE status within 48 hours or the Unit 1 TDCAP be declared inoperable. Since the inoperable condition with 1CAPS5390 was unknown, the applicable TS Required Actions were not completed within the specified Completion Times.

With this condition, 1CAPS5390 would still have actuated and aligned the safety related assured water source to the Unit 1 TDCAP in time to support the pump's safety function. Therefore, this event was not safety significant.

The cause of this event is weaknesses in the McGuire Nuclear Station (MNS) program for measuring and calculating water leg setpoint corrections. This resulted in the use of an incorrect water leg value for 1CAPS5390.

MNS implemented a modification to correct the 1CAPS5390 setpoint based on actual waterleg value for this PS. The MNS program for determining water legs will be revised to address identified weaknesses. Applicable procedures will be revised.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE	
McGuire Nuclear Station, Unit 1	05000 369	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2	OF 4
		2013	- 002	- 00		

17. NARRATIVE

BACKGROUND

The following information is provided to assist readers in understanding the event described in this LER. Applicable Energy Industry Identification [EII] system and component codes are enclosed within brackets. McGuire Nuclear Station (MNS) unique system and component identifiers are contained within parentheses.

Auxiliary Feedwater System [BA](CA):

The purpose of the CA system is to provide an emergency feedwater supply to the Steam Generators [SG](SG) if the respective Unit's Condensate and Feedwater System [SJ](CF) is not available. The CA system is capable of transferring fission product decay heat and other residual heat loads from the Reactor Coolant System [AB] (NC) to a heat sink during both normal operation and accident conditions. Each Unit's CA system contains two Motor Driven pumps [P] (MDCAP) and one Turbine Driven Pump [P](TDCAP). The normal suction source of water for the MDCAPs and TDCAP is the CA Storage Tank [TK](CAST). The Nuclear Service Water System [BI](RN) provides the safety related assured suction source of water for the CA pumps when the normal suction supply from the CAST is not available. Pressure switch [PS] (PS) 1CAPS5390 actuates on a Unit 1 TDCAP suction pressure - low condition to align the safety related assured RN water source to this pump. When calibrating the actuation setpoint for this PS, compensation is made for differences between the reference elevation and the PS's mounting elevation and sensing line tap elevation. The applicable Technical Specification (TS) requirements are specified in TS 3.7.5, "Auxiliary Feedwater (AFW) System".

Engineered Safety Feature Actuation System Instrumentation [JE] (ESFAS):

The ESFAS system senses selected Unit parameters, determines whether or not predetermined safety limits are being exceeded and, if they are, sends actuation signals to the appropriate engineered safety features components whose aggregate function best serves the requirements of the accident. The applicable TS requirements are specified in TS 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation". TS Table 3.3.2-1, Function 6f, specifies the Nominal Trip Setpoint (3.5 psig) and Allowable Value ( $\geq 3$  psig) for the CA pumps suction transfer to the safety related assured RN water source on suction pressure - low. Function 6f also indicates, for the TDCAP, four instrumentation channels are required to ensure suction transfer to the safety related assured water source. 1CAPS5390 is one of these required instrumentation channels.

EVENT DESCRIPTION

In August 1993, MNS implemented a modification which physically relocated Unit 1 PS 1CAPS5390. Prior to this relocation, the water leg applied in the calibration procedure for this PS was consistent with the actual water leg value in the field.

Following relocation, 1CAPS5390 was calibrated on September 2, 1993. The water leg applied in the calibration procedure was the value used prior to relocation of the PS. This value did not reflect the actual water leg value in the field.

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**17. NARRATIVE**

On May 29, 2013, during a review of CA system PS setpoints, it was identified that the calibration procedure for 1CAPS5390 utilized an incorrect water leg value. Subsequent to this, 1CAPS5390 was declared inoperable pending further evaluation and the applicable Required Actions of TS 3.3.2 were implemented.

On May 30, 2013, 1CAPS5390 was calibrated using a water leg value consistent with the actual water leg value in the field.

On May 30, 2013, 1CAPS5390 was returned to an OPERABLE status.

REPORTABILITY DETERMINATION

On June 13, 2013, an evaluation concluded that the water leg error identified on May 29, 2013 effectively resulted in a 1CAPS5390 Nominal Trip Setpoint of 2.36 psig. This is a non-conservative trip setting with respect to the Nominal Trip Setpoint (3.5 psig) and Allowable Value Limit ( $\geq 3$  psig) specified in TS Table 3.3.2-1, Function 6f. Therefore, 1CAPS5390 was inoperable from September 2, 1993 until it was returned to an OPERABLE status on May 30, 2013 following calibration using the correct water leg value.

TS Table 3.2.2-1, function 6f, indicates, for the TDCAP, four instrumentation channels are required to ensure suction transfer to the safety related assured water source. 1CAPS5390 is one of these required instrumentation channels. With one or more channels of Auxiliary Feedwater Suction Pressure-Low inoperable in a Mode of Applicability, the applicable Required Actions of TS 3.3.2 require that the channel(s) be returned to an operable status or the associated CA pumps be declared inoperable within the specified Completion Times. While in a Mode of Applicability, TS 3.7.5 provides the Required Actions and specified Completion Times for an inoperable CA pump(s). If these TS actions and completion times are not met, additional Required Actions are specified by TSs. Since the inoperable condition with 1CAPS5390 was unknown, the applicable TS Required Actions were not completed within the specified Completion Times during the period of time this PS was inoperable while in a Mode of Applicability. This represented an operation or condition prohibited by TSs which is reportable to the NRC as per the requirements of 10 CFR 50.73(a)(2)(i)(B).

CAUSAL FACTORS

- Investigation determined that program weaknesses exist for measuring and calculating water leg setpoint corrections.

MNS Water Leg Data Program procedural controls are not in place to ensure guidance is provided to individuals concerning calculation of water legs.

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17. NARRATIVE

CORRECTIVE ACTIONS

Immediate:

1. Implemented a modification to correct the 1CAPS5390 setpoint based on actual waterleg reference values for this PS.

Completed:

1. Performed an extent of condition review with respect to operability of other TS related instruments. Within the scope of this review, no additional items were found that resulted in inoperability of TS related instruments.

Planned:

1. Revise and formalize the MNS program for measuring and calculating water leg setpoint corrections and, after revision, revise applicable procedures as needed.

SAFETY ANALYSIS

Past as-found/as-left 1CAPS5390 calibration data was reviewed in conjunction with a review of analytical limits, TS values, and uncertainties associated with the 1CAPS5390 loop. This analysis determined that, worse case, the applicable analytical limits were not exceeded and therefore, with the subject condition, 1CAPS5390 would still have actuated and aligned the safety related assured water source to the Unit 1 TDCAP in time to support the pump's safety function. Therefore, this event was not safety significant.

ADDITIONAL INFORMATION

To determine if this event was recurring, a search of the McGuire Problem Identification Process (PIP) database was conducted for a time period covering five years prior to the date of this event. For those applicable events with a corresponding cause code, a thorough review concluded this was not a recurring event.