



Steven D. Capps  
Vice President  
McGuire Nuclear Station

**Duke Energy**  
MG01VP | 12700 Hagers Ferry Road  
Huntersville, NC 27078  
o: 980.875.4805  
f: 980.875.4809  
Steven.Capps@duke-energy.com

Serial No: MNS-16-040

May 23, 2016

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

10 CFR 50.73

Subject: Duke Energy Carolinas, LLC  
McGuire Nuclear Station (MNS), Unit 1  
Docket No. 50-369, Renewed License No. NPF-9  
Licensee Event Report 369/2016-01, Revision 0  
Nuclear Condition Report (NCR) 2013556

Pursuant to 10 CFR 50.73 Sections (a)(1) and (d), attached is Licensee Event Report (LER) 369/2016-01, Revision 0, regarding an American Society of Mechanical Engineers (ASME) Section XI rejectable flaw discovered on the MNS Unit 1 Chemical and Volume Control System (NV) charging piping.

This report is being submitted in accordance with 10 CFR 50.73(a)(2)(ii)(A), a degradation of a principal safety barrier. This event is considered to be of no significance with respect to the health and safety of the public.

This LER is preliminary and will be supplemented upon completion of the cause analysis.

Duke Energy will provide a supplement to this LER within 60 days. There are no regulatory commitments contained in this LER.

If questions arise regarding this LER, please contact George Murphy of Regulatory Affairs at 980-875-5715.

Sincerely,

Steven D. Capps

Attachment

IE22  
AD47  
NRR

U.S. Nuclear Regulatory Commission

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cc: Catherine Haney  
Administrator, Region II  
U.S. Nuclear Regulatory Commission  
Marquis One Tower  
245 Peachtree Center Ave.  
NE Suite 1200, 30303-1257

G. E. Miller  
Project Manager (McGuire)  
U.S. Nuclear Regulatory Commission  
11555 Rockville Pike  
Rockville, MD 20852-2738  
Mail Stop O-8 G9A

V. Sreenivas  
Project Manager (McGuire)  
U.S. Nuclear Regulatory Commission  
11555 Rockville Pike  
Rockville, MD 20852-2738  
Mail Stop O-8 G9A

J. Zeiler  
NRC Senior Resident Inspector  
McGuire Nuclear Station

W. L. Cox, III, Section Chief  
North Carolina Department of Health and Human Services  
Radiation Protection Section  
1645 Mail Service Center  
Raleigh, NC 27699-1645



**LICENSEE EVENT REPORT (LER)**

(See page 2 for required number of digits/characters for each block)

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 and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollections.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**

McGuire Nuclear Station, Unit 1

**2. DOCKET NUMBER**

05000- 369

**3. PAGE**

1 OF 4

**4. TITLE**

Degraded Condition due to Rejectable Flaw on U1 Charging Line

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
03	22	2016		2016-01	0	05	20	2016	None	
									None	

**9. OPERATING MODE**

Mode 5

**10. POWER LEVEL**

000

**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 checked="" 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 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**

LICENSEE CONTACT

George M. Murphy, Nuclear Operations Specialist

TELEPHONE NUMBER (Include Area Code)

980-875-5715

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
X	CB	PSP	X000	Y					

**14. SUPPLEMENTAL REPORT EXPECTED**

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

**15. EXPECTED SUBMISSION DATE**

MONTH: 07 DAY: 19 YEAR: 2016

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

While Unit 1 was in a refueling outage on March 22, 2016, a manual ultrasonic (UT) examination determined that a circumferential indication on Chemical and Volume Control System (NV) Charging piping was rejectable under American Society of Mechanical Engineers (ASME) Section XI Code. Because the indication was classified as rejectable, this event is reportable as a degraded condition in accordance with 10CFR50.73(a)(2)(ii)(A). A stress analysis showed that the identified flaw would not have prevented the associated piping from performing its safety function, so this event did not impact public health and safety.

This circumferential indication was identified during the previous U1 refueling outage, and at that time it was determined that the indication was code allowable based on ASME Section XI Table IWB 3514. The planned follow-up examination performed in the recent refueling outage found this indication to have changed such that it was rejectable per ASME Section XI Table IWB 3514.

The affected NV piping on Unit 1 was replaced during the refueling outage. This LER will be supplemented upon finalization of the cause analysis.



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

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1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
McGuire Nuclear Station, Unit 1	05000369	2016	- 01 -	- 00	2 OF 4

17. NARRATIVE

BACKGROUND:

Applicable Energy Industry Identification [EIS] system and component codes are enclosed within brackets. McGuire-specific system and component identifiers are contained within parentheses.

Chemical and Volume Control System [CB] (NV):

The NV system is designed to maintain required water inventory in the Reactor Coolant [AB] (NC) system; maintain seal-water injection flow to the reactor coolant pumps; control water chemistry conditions; and provide emergency core cooling (part of the system shares piping with the Safety Injection [BQ] (NI) system).

The 1NC1F-1374 rejectable indication was reported per 10 CFR 50.72 (b)(3)(ii)(A), "Any event or condition that results in the condition of the nuclear power plant, including its principal safety barriers, being seriously degraded." An Emergency Notification System report was made to the Nuclear Regulatory Commission (NRC) on March 22, 2016, at 2333 hours. A 10 CFR 50.73 (a)(2)(ii)(A) licensee event report is also required due to this degraded condition.

The 1NC1F-1374 piping indication is located on the 3 inch nominal diameter NV line near where it is connected to the 27.5 inch inside diameter 1A NC cold leg piping.

The 1NC1F-1374 piping indication addressed by this LER was originally detected during the previous Unit 1 refueling outage. When originally identified, the 1NC1F-1374 piping indication was code allowable based on ASME Section XI Table IWB 3514.

This weld was not originally scoped into the MRP-146, "Thermal Fatigue in Normally Stagnant Non-Isolable Reactor Coolant System Branch Lines," program due to piping orientation. It was identified to be included in extent of condition examinations based on similarities in application to a previously identified MRP-146 flaw on Unit 2 piping. The Unit 2 condition is documented in LER 370/2014-01, Revision 1, and all extent of condition examinations have been completed.

No significant structures, systems, or components were out of service at the time of discovery such that they contributed to the event.



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**17. NARRATIVE**

**EVENT DESCRIPTION:**

On March 22, 2016, while Unit 1 was in a refueling outage (Mode 5), a manual ultrasonic (UT) examination of the [CB] NV branch line connected to the [AB] NC system cold leg piping confirmed a previously identified circumferential indication for 1NC1F-1374.

The circumferential indication was previously identified and evaluated as acceptable under ASME Section XI code requirements.

The UT techniques used on March 22, 2016, determined that this circumferential indication on the 3 inch nominal diameter NV line connected to the 1A NC cold leg was now rejectable under American Society of Mechanical Engineers (ASME) Section XI rules.

The relevant sequence of events pertaining to the piping flaws is as follows:

- 09/28/2014 A circumferential indication identified at 1NC1F-1374 during MRP extent of condition UT examination. Evaluated acceptable per ASME Section XI code requirements
- 03/22/2016 Subsequent examination of 1NC1F-1374 during most recent refueling outage determined that the circumferential indication was now rejectable per ASME Section XI code requirements
- 04/04/2016 The affected piping associated with 1NC1F-1374 was replaced

**CAUSAL FACTORS:**

A cause evaluation is currently in progress. The cause evaluation will include a metallurgy lab report detailing an analysis of the flaw. The results of the analysis will be used to further characterize the flaw and provide the cause in a supplement to this LER.



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CONTINUATION SHEET**

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**17. NARRATIVE**

**CORRECTIVE ACTIONS:**

**Immediate:**

The affected 1A [CB] NV piping associated with the circumferential indication was replaced.

**Planned:**

Complete the cause evaluation.

**SAFETY ANALYSIS:**

The NV piping indication found on Unit 1 had no impact on public health and safety. A stress analysis concluded that despite the presence of the piping flaw, the 3 inch nominal diameter NV piping nozzle would not catastrophically fail when exposed to design basis loadings. The analysis further concluded that the piping would not leak under design basis loadings prior to replacement.

**ADDITIONAL INFORMATION:**

A cause evaluation is currently in progress and the results will be used to identify similar events and if this is a recurring event in a supplement to this LER.