Duke Energy®

JAMES R MORRIS
Vice President

Catawba Nuclear Station
4800 Concord Road / CN01VP
York, SC 29745-9635

803 831 4251
803 831 3221 fax

August 8, 2007

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

Subject: Duke Power Company LLC d/b/a Duke Energy Carolinas, LLC (Duke)
Catawba Nuclear Station, Units 1 and 2
Docket Nos. 50-413 and 50-414
Licensee Event Report 413/07-002

Attached is Licensee Event Report 413/07-002 titled "Technical Specification Violations Associated with Divider Barrier Integrity."

There are no regulatory commitments contained in this letter or its attachment.

This event is considered to be of no significance with respect to the health and safety of the public. If there are any questions on this report, please contact L.J. Rudy at (803) 831-3084.

Sincerely,

John Putesa for

James R. Morris

Attachment

xc (with attachment):

W.D. Travers
Regional Administrator, Region II
U.S. Nuclear Regulatory Commission
61 Forsyth Street, S.W., Suite 23T85
Atlanta, GA 30303

J.F. Stang, Jr. (addressee only)
NRC Senior Project Manager
U.S. Nuclear Regulatory Commission
Mail Stop 8-H4A
11555 Rockville Pike
Rockville, MD 20852-2738

A.T. Sabisch
NRC Senior Resident Inspector
Catawba Nuclear Station

INPO Records Center
700 Galleria Place
Atlanta, GA 30339-5957

Marsh & McLennan, Inc.
K.W. Gannaway
100 N. Tryon Street
Charlotte, NC 28202

NRC FORM 366 (6-2004) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

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

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 06/30/2007

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@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. PAGE
Catawba Nuclear Station, Unit 1	05000 413	1 OF 7

4. TITLE

Technical Specification Violations Associated with Divider Barrier Integrity

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
									Catawba Unit 2	05000414
06	09	2007	2007	- 002 -	00	08	08	2007	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE	1
10. POWER LEVEL	100%

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

	20.2201(b)		20.2203(a)(3)(ii)		50.73(a)(2)(ii)(B)		50.73(a)(2)(ix)(A)
	20.2201(d)		20.2203(a)(4)		50.73(a)(2)(iii)		50.73(a)(2)(x)
	20.2203(a)(1)		50.36(c)(1)(i)(A)		50.73(a)(2)(iv)(A)		73.71(a)(4)
	20.2203(a)(2)(i)		50.36(c)(1)(ii)(A)		50.73(a)(2)(v)(A)		73.71(a)(5)
	20.2203(a)(2)(ii)	X	50.36(c)(2)		50.73(a)(2)(v)(B)		OTHER Specify in Abstract below or in NRC Form 366A
	20.2203(a)(2)(iii)		50.46(a)(3)(ii)		50.73(a)(2)(v)(C)		
	20.2203(a)(2)(iv)		50.73(a)(2)(i)(A)		50.73(a)(2)(v)(D)		
	20.2203(a)(2)(v)	X	50.73(a)(2)(i)(B)		50.73(a)(2)(vii)		
	20.2203(a)(2)(vi)		50.73(a)(2)(i)(C)		50.73(a)(2)(viii)(A)		
	20.2203(a)(3)(i)		50.73(a)(2)(ii)(A)		50.73(a)(2)(viii)(B)		

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
L.J. Rudy, Regulatory Compliance	803-831-3084

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				15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
	YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO				

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

On June 9, 2007, at 2155 hours, with Unit 2 in Mode 1 at 73% power, the Unit 2 divider barrier submarine hatch was discovered to be in an unsecured position. The discovery was made by a non-licensed operator while making rounds. Subsequently, on June 10, 2007, at 0125 hours, with Unit 1 in Mode 1 at 100% power, the Unit 1 divider barrier submarine hatch was also discovered to be in an unsecured position. The discovery was made by a non-licensed operator while making rounds. Both submarine hatches were closed at the time of discovery; however, they were not secured. Therefore, the requirements of Technical Specification 3.6.14, Divider Barrier Integrity, were not met for these hatches. The root cause of these Technical Specification violations was determined to be general deficiencies in the hatch design that make them susceptible to inadvertently becoming unsecured. Corrective actions to be taken in response to these events include re-designing the hatches. During the time periods that Technical Specification 3.6.14 was violated for these hatches, both units remained in an analyzed condition; therefore, all required safety systems would have been able to perform their accident mitigation functions had they been called upon to do so. As a result, there was no safety significance to these events.

FACILITY NAME (1)	DOCKET (2) NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Catawba Nuclear Station, Unit 1	05000413	2007	- 002 -	00	2 OF 7

NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)* (17)

BACKGROUND

These events are being reported under the following criteria:

10 CFR 50.36(c)(2)(i), Limiting Condition for Operation not met; and

10 CFR 50.73(a)(2)(i)(B), any operation or condition which was prohibited by the plant's Technical Specifications.

Catawba Nuclear Station Units 1 and 2 each is a Westinghouse four-loop Pressurized Water Reactor (PWR) [EIIS: RCT].

The divider barrier consists of the operating deck and associated seals, personnel access doors, and equipment hatches that separate the upper and lower containment [EIIS: NH] compartments. Divider barrier integrity is necessary to minimize bypassing of the ice condenser [EIIS: BC] by the hot steam and air mixture released into the lower compartment during a Design Basis Accident (DBA). This ensures that most of the gases pass through the ice bed, which condenses the steam and limits pressure and temperature during the accident transient. Limiting the pressure and temperature reduces the release of fission product radioactivity from containment to the environment in the event of a DBA.

The emergency personnel hatch, also known as the submarine hatch, is used as an emergency egress for personnel between the lower and upper containment compartments. The submarine hatch functions as part of the divider barrier.

The submarine hatch is operated by a handwheel that activates four latching arms. When the handwheel is aligned with the latching arms disengaged, the hatch cover may be forced open during a DBA due to the pressure increase in lower containment. The submarine hatch is therefore considered inoperable when it is unlatched. A protective cage is installed over the handwheel to prevent personnel from inadvertently bumping it when walking nearby. A wire seal is installed on the handwheel for configuration control. The wire seal consists of a twisted pair of copper wires threaded through one hole drilled into a lug welded to the hatch cover, and through another hole drilled into one of the handwheel spokes. The wire is secured by crimping into a lead disc. This wire seal design is easily broken in order to allow

FACILITY NAME (1)	DOCKET (2) NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Catawba Nuclear Station, Unit 1	05000413	2007	- 002 -	00	3 OF 7

NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)* (17)

personnel egress in an emergency. The wire seal is not required by Technical Specifications.

Technical Specification 3.6.14 governs divider barrier integrity, including the submarine hatch. Limiting Condition for Operation 3.6.14 requires divider barrier integrity to be maintained in Modes 1, 2, 3, and 4. Condition A states that with one or more personnel access doors or equipment hatches other than the pressurizer enclosure hatch open or inoperable, other than for personnel transit entry, the personnel access doors and equipment hatches must be restored to operable status and closed positions within 1 hour. If this is not accomplished, Condition D requires the unit to be in Mode 3 within 6 hours and in Mode 5 within 36 hours. Surveillance Requirement 3.6.14.2 requires a verification, by visual inspection, that the seals and sealing surfaces of each personnel access door and equipment hatch have no detrimental misalignments; no cracks or defects in the sealing surfaces; and no apparent deterioration of the seal material. This surveillance is required to be performed prior to final closure after each opening and every 10 years for seals made of resilient materials. Surveillance Requirement 3.6.14.3 requires a verification, by visual inspection, that each personnel access door or equipment hatch that has been opened for personnel transit entry is closed. This surveillance is required to be performed after each opening.

On June 9, 2007, Unit 2 was in Mode 1 at 73% power at the time of discovery of this event. On June 10, 2007, Unit 1 was in Mode 1 at 100% power at the time of discovery of this event. During this event, no structures, systems, or components were out of service that had any effect on divider barrier integrity.

EVENT DESCRIPTION

(Certain event times are approximate.)

Date/Time	Event Description
June 9, 2007/2155	Two non-licensed operators (NLOs) were making rounds inside the Unit 2 containment. While observing the submarine hatch from upper containment, one of the NLOs noted that the wire seal appeared to be intact. The holes in the lug and in the handwheel spoke were noted

FACILITY NAME (1)	DOCKET (2) NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Catawba Nuclear Station, Unit 1	05000413	2007	- 002 -	00	4 OF 7

NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)* (17)

to be out of alignment. The NLO checked the wire seal again from the other side and noted that the wire was broken. He then attempted to lift the hatch cover and the hatch opened. Technical Specification 3.6.14 Condition A was entered. Maintenance personnel were immediately requested to re-seal the hatch as required by Surveillance Requirement 3.6.14.2 and to install a new wire seal.

June 9, 2007/2250 — The Unit 2 submarine hatch was secured. Technical Specification 3.6.14 Condition A was exited.

June 10, 2007/0125 — Two NLOs were making rounds inside the Unit 1 containment. While observing the submarine hatch from upper containment, one of the NLOs noted that the holes in the lug and in the handwheel spoke were also out of alignment. The wire seal was observed to be intact all the way around; however, it was observed to be loose. The NLO pulled up on the hatch cover and the hatch opened. Technical Specification 3.6.14 Condition A was entered.

June 10, 2007/0130 — The Unit 1 submarine hatch was secured. Technical Specification 3.6.14 Condition A was exited. However, it was subsequently determined that Technical Specification 3.6.14 Condition A was prematurely exited before Maintenance personnel re-sealed the hatch as required by Surveillance Requirement 3.6.14.2 and installed a new wire seal.

June 10, 2007/
0326-0336 — Maintenance personnel re-sealed the Unit 1 hatch as required by Surveillance Requirement 3.6.14.2 and installed a new wire seal. Unit 1 was now in full compliance with Technical Specification 3.6.14.

June 10-15, 2007 — Catawba site management evaluated these events from a sabotage perspective. Conference calls

FACILITY NAME (1)	DOCKET (2) NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Catawba Nuclear Station, Unit 1	05000413	2007	- 002 -	00	5 OF 7

NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)* (17)

were held with NRC management on June 10 and on June 13 to provide information. On June 15, site management determined that heightened security was no longer required.

CAUSAL FACTORS

The root cause of the submarine hatches becoming unsecured was determined to be a deficient design. The specific events and dates/times associated with the hatches becoming unsecured could not be established. The Unit 1 hatch was last opened and re-sealed on December 25, 2006. The Unit 2 hatch was last opened and re-sealed on March 24, 2003. It was determined that general design deficiencies make these hatches susceptible to inadvertent opening. When the hatches are fully secured, there is 5/8 inch to 3/4 inch of engagement of the hatch latching arms with the underside of the opening. This results in a condition where only 30 degrees of handwheel rotation is required in order to move the latching arms from maximum to zero engagement. Also, the hatches are difficult to close and there are no travel stops present to indicate when the hatch latching arms are fully engaged. These deficiencies result in the hatches being susceptible to inadvertent opening by personnel coming into contact with the handwheels. They also introduce uncertainties in the determination of whether the hatches are actually fully secured.

CORRECTIVE ACTIONS

Immediate:

1. The NLOs secured the submarine hatch on each unit.

Subsequent:

1. Maintenance personnel re-sealed the submarine hatch on each unit as required by Surveillance Requirement 3.6.14.2 and installed a new wire seal.

2. NLO rounds were revised to require a physical pull on the submarine hatch in addition to a visual verification of the wire seal in order to verify that the hatch is closed and secured.

FACILITY NAME (1)	DOCKET (2) NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Catawba Nuclear Station, Unit 1	05000413	2007	- 002 -	00	6 OF 7

NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)* (17)

Planned:

1. At the next available outage opportunity of sufficient duration, the Unit 1 and Unit 2 submarine hatches will be re-configured or re-designed to ensure a more reliable means of hatch closure.

There are no NRC commitments contained in this LER.

SAFETY ANALYSIS

Divider barrier integrity ensures the functioning of the ice condenser to the limiting containment pressure and temperature that could be experienced following a DBA. The limiting DBAs considered relative to containment temperature and pressure are the loss of coolant accident (LOCA) and the steam line break (SLB). The LOCA and the SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. DBAs are assumed not to occur simultaneously or consecutively.

The primary safety concern with having the submarine hatch open during plant operations is the additional open area presented for steam bypass flow. Should a LOCA or a SLB occur, some volume of steam which would normally pass through the ice condenser would proceed through the submarine hatch area and increase pressure in upper containment. Calculations exist to demonstrate that the increased peak containment pressure would still remain well below the containment design pressure and that the divider barrier would still perform its intended safety function. Therefore, there would be no effect on either core damage frequency or large early release frequency. Divider barrier bypass leakage has no effect on other DBAs.

The health and safety of the public were not adversely affected by these events.

ADDITIONAL INFORMATION

Within the previous three years, there were no LER events of a similar nature. Therefore, these events are considered to be non-recurring.

Energy Industry Identification System (EIIS) codes are identified in the text as [EIIS: XX]. These events are not considered reportable to

FACILITY NAME (1)	DOCKET (2) NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Catawba Nuclear Station, Unit 1	05000413	2007	- 002 -	00	7 OF 7

NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)* (17)

the Equipment Performance and Information Exchange (EPIX) program.

These events are not considered to constitute Safety System Functional Failures. There were no releases of radioactive materials, radiation overexposures, or personnel injuries associated with the events described in this LER.