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March 31, 2008
U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Subject: Duke Power Company LLC d/b/a/ Duke Energy Carolinas, LLC (Duke)
Catawba Nuclear Station, Units 1
Docket Nos. 50-413
Licensee Event Report 413/08-001

Attached is Licensee Event Report 413/08-001 entitled "Auxiliary Feedwater Pumps Declared Inoperable Due to Inadequate Design and Configuration of Floor Drain Floor Restrictor Cover Plates."

There are no regulatory commitments contained in this letter.

This event is considered to be of no significance with respect to the health and safety of the public. If there are any questions about this report, please contact A. Driver at 803.701.3445.

Sincerely,

John W. Pitesa

Attachment

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Xc (with attachment):

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U.S. Nuclear Regulatory Commission - Region II
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61 Forsyth St., SW, Suite 23T85
Atlanta, Georgia 30303

Mr. J.F. Stang, Jr., NRC Project Manager
U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Mail Stop O-H4A
Washington, D.C. 20555

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

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Division of Waste Management
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LICENSEE EVENT REPORT (LER)

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

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 Catawba Nuclear Station, Unit 1	2. DOCKET NUMBER 05000 413	3. PAGE 1 OF 7
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4. TITLE
Auxiliary Feedwater Pumps Declared Inoperable Due to Inadequate Design and Configuration of Floor Drain Flow Restrictor Cover Plates

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
01	30	2008	2008	- 001 -	00	03	31	2008	Catawba 2	05000414
									FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)									
10. POWER LEVEL 100%	20.2201(b)		20.2203(a)(3)(ii)	X	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)		50.36(c)(2)	X	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)	X	50.73(a)(2)(v)(D)					
	20.2203(a)(2)(v)		50.73(a)(2)(i)(B)	X	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 A. Faye Driver, Regulatory Compliance	TELEPHONE NUMBER (Include Area Code) 803-701-3445
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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
				N/A					

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

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

On January 30, 2008, at 12:20 hours, with Unit 1 and Unit 2 operating at 100 percent power, the Auxiliary Feedwater (AFW) pumps were declared inoperable upon discovery of missing flow restrictor plates in the floor drains of the Unit 1 and Unit 2 interior doghouses. The identified internal flood protection deficiencies were caused by inadequate design and configuration control during original plant design. The flood barriers were corrected by installation of flow restrictor cover plates for the floor drains in the interior doghouses. The health and safety of the public were not affected by this event. This event does involve a safety system functional failure.

LICENSEE EVENT REPORT (LER)

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		2008	- 001 -	00	

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

I. BACKGROUND

This event is reportable pursuant to 10 CFR 50.73(a)(2)(ii)(B), the nuclear power plant being in an unanalyzed condition that significantly degraded plant safety; 10 CFR 50.73(a)(2)(v)(B)&(D), any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to remove residual heat and mitigate the consequences of an accident; and 10 CFR 50.73(a)(2)(vii), any event where a single cause or condition caused two independent trains or channels to become inoperable in a single system designed to mitigate the consequences of an accident.

Catawba Unit 1 and Unit 2 are Westinghouse Pressurized Water Reactors [EIIS: RCT].

There are two Main Steam Doghouses, an interior and exterior for each unit that encloses the high pressure steam and feedwater piping that penetrate the Reactor Building containment structures. These doghouses are located on opposite sides of their respective Reactor Building. The doghouses are subcompartments of the Auxiliary Building that house and protect the Auxiliary Feedwater (AFW) System [EIIS: BA]. Floor drains in the interior doghouses route water to floor drain sumps located in the Auxiliary Feedwater Pump room.

The AFW System is the source of feedwater to the steam generators during accident conditions upon loss of the normal Main Feedwater (MFW) [EIIS: SJ] supply. The loss of normal feedwater flow accident is evaluated in Section 15.2.7 "Loss of Normal Feedwater Flow" in the Catawba Updated Final Safety Analysis Report (UFSAR). A loss of normal feedwater could occur as a result of either pump failures, valve malfunctions, piping breaks or a loss of normal AC power. In response to a loss of normal feedwater flow event, the AFW system provides a source of safety related feedwater flow to the steam generators. The AFW System contains two motor driven pumps and one turbine driven pump, each housed in a separate pit below the floor elevation of 543' with respect to sea level in the Auxiliary Building. A single sump pump is contained in each motor driven pump pit and two sump pumps are contained in the turbine driven pump pit. The AFW pump pit sump pumps receive emergency power in the event that normal power is lost. The design basis for the interior doghouse floor drains is to limit the flow into the

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AFW pump rooms to protect the pumps in the event of a feedwater line break in the doghouse. There are floor drain sump pumps that can be utilized to mitigate an internal flooding event; however, they do not receive emergency power and therefore cannot be credited in the accident analysis.

Technical Specification 3.7.5 governs the AFW system. Limiting Condition for Operation (LCO) 3.7.5 requires three AFW trains to be operable in MODE 1, 2, and 3; only one AFW train which includes a motor driven pump, is required to be operable in MODE 4, when steam generators are relied upon for heat removal. Condition D states that when three AFW trains are inoperable in MODE 1, 2, or 3, LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to operable status and action shall be immediately initiated to restore one AFW train to operable status.

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

II. EVENT DESCRIPTION

On January 30, 2008, Catawba Unit 1 and Unit 2 were in MODE 1 at approximately 100 percent power when this event was determined to be reportable.

During a pre-inspection walkdown for a planned modification, an Engineer discovered that flow restrictor cover plates were not installed as documented on the applicable drawings for Unit 1 interior doghouse floor drains. Further investigation determined there were multiple affected floor drains on each unit located in the interior doghouses. Upon discovery of the missing flow restrictor cover plates, it was determined that all three AFW pumps for each unit were inoperable.

(Dates and times are approximate)

01/28/08/1543

On January 28, 2008 during a walkdown for a planned modification, an Engineer discovered missing flow restrictor plates in the Unit 1 interior doghouse. This condition was entered into the Catawba corrective action program.

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01/29/08/ Plant Engineering investigated the missing flow restrictor plates.

01/30/08/1220 An evaluation by Plant Engineering concluded that the condition documented affected both units. All three AFW pumps on Unit 1 and Unit 2 were declared inoperable.

01/30/08/1752 An eight hour telephone notification was made to the NRC per 10 CFR 50.72(b)(3)(ii)(B), any event or condition that results in the nuclear power plant being in an unanalyzed condition that significantly degrades plant safety; and 10 CFR 50.72(b)(3)(v)(D), any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident.

1/30/2008/2225 Unit 1 and Unit 2 interior doghouse flow restrictor plate installation was completed and all three AFW pumps were declared operable for each unit.

III. CAUSAL FACTORS

This event was caused by the interior doghouse floor drain configuration not matching the design basis due to the application of non-conservative assumptions and inaccurate information in the original design basis calculation for sizing the floor drain flow restrictor plates.

The investigation revealed that the actual number of floor drains in the interior doghouse is three on Unit 1 and six on Unit 2, as verified by current drawings and field inspections. The historical calculation assumed a non-conservative doghouse flood level, only two drains in each doghouse, and non-conservatively credited availability of the floor drain sump pumps (which do not receive emergency power) to mitigate the event. Based on these incorrect assumptions, had an actual MFW rupture occurred inside the interior

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doghouse, the capacity of the AFW pump pit sump pumps would have been insufficient to mitigate the flooding.

A lack of design basis knowledge during initial design and the change process in place during initial design contributed to a breakdown in configuration management. As a result, the floor drain configuration did not match the design basis.

IV. CORRECTIVE ACTIONS

Immediate:

1. The AFW pumps on both units were declared inoperable.
2. A review of the configuration of the exterior doghouse drains was completed to ensure no similar issues were present. No similar issues were discovered.

Subsequent:

1. The configuration was restored to match the design basis per the design change process.
2. A root cause determination was performed in response to this event.

Planned:

1. Catawba will create an internal flood design basis document to provide a ready reference for system interdependencies and design basis information.

There are no NRC commitments contained in this LER.

SAFETY ANALYSIS

Three separate scenarios were analyzed for this event. All scenarios utilized the largest possible break in MFW (18" pipe) that can flood the interior doghouse. This break is located between the isolation valve in the interior doghouse and the steam generator. This is the most limiting break, as the faulted steam generator can continue to

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contribute to the AFW pump room flood even after MFW has been isolated. Once the water has accumulated in the interior doghouse, it will reach the AFW pump room.

- A break in the MFW line will flood the interior doghouse until it is automatically isolated by the doghouse hi-hi water level isolation function. Effluent from the faulted steam generator will blow down into the interior doghouse through the break. The AFW pumps will become inoperable when they are flooded. In this scenario, the auxiliary feedwater pumps will fail, but the auxiliary shutdown panels will remain operable.
- A break in the MFW line will flood the interior doghouse until it is automatically isolated by the doghouse hi-hi water level isolation function. Effluent from the faulted steam generator will blow down into the interior doghouse through the break. Initially, the AFW pumps will function when they are flooded and continue to feed the faulted steam generator. Credit is taken for eventual operator action to isolate the feedwater to the steam generator. In this scenario, both the AFW pumps and the auxiliary shutdown panels will become inoperable.
- A break in the MFW line will flood the interior doghouse and the automatic isolation fails. Effluent from the faulted steam generator will blow down into the interior doghouse through the break. Credit is not taken for operator action to manually isolate MFW. In this scenario, both the AFW pumps and the auxiliary shutdown panels will become inoperable.

Core Damage Frequency Impact

The Conditional Core Damage Probability (CCDP) for this event was below the NRC limit for precursors. Therefore this analysis finds that this event has an insignificant impact on core damage risk.

Large Early Release Factor Impact

The Conditional Large Early Release Probability (CLERP) for this event was below the NRC limit for precursors. Therefore this analysis finds that this event has an insignificant impact on large early release risk.

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During the time period in question, there were no flooding events in the interior doghouses, thus the AFW pumps for each unit were available.

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

ADDITIONAL INFORMATION

In review of the Duke Energy Problem Investigation Process (PIP) database and LER events for the previous three years, the LER 413/06-002-00 "Safe Shutdown Potentially Challenged by an External Flooding Event and Inadequate Design and Configuration Control" was reviewed for similar cause codes to determine if this was a recurring event. Upon the final root cause investigation of LER 413/08-001-00 and the causal factors associated with LER 413/06-002-00 it was found that the two events shared the same cause factor. Although the two events share the same cause factor, the 2006 LER involved exterior flooding concerns while this LER involves interior flooding concerns. The corrective actions taken in response to LER 413/06-002-00 would not have prevented this most recent event from occurring. Therefore, this event was determined to be non-recurring in nature.

Energy Industry Identification System [EIIS] codes are identified in the text as [EISS: XX]. This event is not considered reportable to the Equipment Performance and Information Exchange (EPIX) program.

This event is considered to be a Safety System Functional Failure.

There were no releases of radioactive materials, radiation exposures, or personnel injuries associated with this event.