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October 25, 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 No. 50-413, 414
Licensee Event Report 413/2007-001 Revision 1

Attached is Licensee Event Report 413/2007-001 Revision 1 entitled, "Safe Shutdown Capability Potentially Challenged by Fire Protection Deficiencies Attributed to Design Oversight." The original report indicated that the risk assessment was in progress. This revision includes the results of the risk assessment.

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 on this report, please contact A. Jones-Young at (803) 831-3051.

Sincerely,

James R. Morris

Attachment

JE22

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xc (with attachment):

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| | | | |
|---|---|--|---------------------|
| NRC FORM 366 (9-2007) | U.S. NUCLEAR REGULATORY COMMISSION | APPROVED BY OMB: NO. 3150-0104 | EXPIRES: 08/31/2010 |
| 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. | |

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|--|--------------------------------------|--------------------------|
| 1. FACILITY NAME Catawba Nuclear Station, Unit 1 | 2. DOCKET NUMBER 05000 413 | 3. PAGE 1 OF 7 |
|--|--------------------------------------|--------------------------|

4. TITLE
 Safe Shutdown Capability Potentially Challenged by Fire Protection Deficiencies Attributed to Design Oversight

| 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 | 04 | 2007 | 2007 | - 001 - | 01 | 10 | 25 | 2007 | Catawba Unit 2 | 05000 414 |
| | | | | | | | | | FACILITY NAME | DOCKET NUMBER |
| | | | | | | | | | | 05000 |

| | | | | | | | | | | |
|--------------------------|------------------|--|--------------------|----------------------|-------------------------------------|----------------------|--|---|--|--|
| 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) | <input checked="" type="checkbox"/> | 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) | | 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) | 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 A. Jones-Young, Regulatory Compliance | TELEPHONE NUMBER (Include Area Code) 803-831-3051 |
|---|--|

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 | | |
| YES (If yes, complete EXPECTED SUBMISSION DATE). | <input checked="" type="checkbox"/> | NO | | | | |

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

On May 17, 2007 with Unit 1 and Unit 2 operating in Mode 1 at 100% power, the Catawba Fire Protection Safe Shutdown Reconstitution Project identified a potential Associated Circuits by common power supply concern in Fire Areas, 12, 13, 36, and 37 that could potentially challenge Post Fire Shutdown capability. An evaluation was performed and on June 4, 2007, it was determined that cables associated with certain breakers do not have adequate coordination protection devices or qualified fire barriers in place to ensure the proper performance of safe shutdown equipment. In accordance with 10CFR50.72, a phone notification was made to the NRC.

The identified fire protection deficiencies were attributed to design oversight. The original Associated Circuits Analysis failed to identify circuits whose failure could prevent the proper performance of safe shutdown equipment. Corrective actions included establishing fire watches in the affected fire areas.

The conditions addressed by this report are related to potential failures and had no direct effect on the health and safety of the public. This report does not involve a safety system functional failure.

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| Catawba Nuclear Station, Unit 1 | 05000413 | 2007 | - 001 | - 01 | 2 OF 7 |

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

BACKGROUND

This event is being reported pursuant to 10 CFR 50.73(a)(2)(ii)(B), Degraded or Unanalyzed Condition.

Catawba Nuclear Station (CNS) Units 1 and 2 are Westinghouse four-loop Pressurized Water Reactors (PWR) [EIIS: RCT]. Unit 1 and Unit 2 were operating in Mode 1 (Power Operation) at the time of this event.

Associated Circuits are those circuits (safe shutdown and non-safe shutdown related) whose fire-induced failure could prevent the proper performance of safe shutdown equipment and/or functions. Circuits can be associated by common power supply, common enclosure, or spurious operation. Associated circuits by common power supply [EIIS:JX] are those whose fire-induced failures may cause the loss of a power source (e.g., bus [EIIS:BU], distribution panel [EIIS:PL], motor control center (MCC)) that is necessary to support safe shutdown equipment or functions. The issue of associated circuits of concern by common power supply is resolved by ensuring adequate electrical coordination between the safe shutdown power source supply breaker or fuse [EIIS:FU] and the feeder breakers or fuses at the various safe shutdown power supplies. Busses upstream of breakers which are not properly coordinated may lose their power if another cable [EIIS:CBL] or cables powered from the same supply is damaged (by fire induced faults) and causes a breaker to open upstream of the common power supply. A coordinated protection device is installed so that faults can be cleared downstream of the required power supply in branch circuits fed by safe shutdown power supplies.

The original Associated Circuit Analysis was performed, prior to plant startup in 1985, to identify circuits whose failure could prevent the proper performance of safe shutdown equipment and/or functions. During the original analysis, it was recognized that breaker and/or fuse coordination was to be considered, but it was not reviewed in adequate detail. Breaker and/or fuse coordination studies were more difficult to perform in the early 1980s because the work was performed manually, rather than with the analytical tools now widely available in commercial software packages.

The Catawba Fire Protection Safe Shutdown Reconstitution Project provides for a comprehensive review of the Fire Protection Program.

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

The scope of this project includes identifying and resolving any other circuits that may not be properly coordinated.

The following cables and power sources were impacted by the identified condition:

| <u>CABLE NO.</u> | <u>FIRE AREA</u> | <u>AFFECTED PANEL</u> |
|------------------|---|-----------------------|
| 1*CA581 | Unit 1 Auxiliary Feedwater [EIIS:BA] Pump Turbine Control Panel (AFWPTCP) Room | 1EDF |
| 2*CA581 | Unit 2 Auxiliary Feedwater Pump Turbine Control Panel Room | 2EDF |
| 1*IRE761 | Unit 1 577 elevation Electrical Penetration Room | 1EPD |
| 2*IRE761 | Unit 2 577 elevation Electrical Penetration Room | 2EPD |

Panels 1EDF and 2EDF are 125 VDC Vital Instrumentation and Control [EIIS:EPL] Auctioneered Distribution Centers. The 125 VDC Vital Instrumentation and Control Power System is designed to provide a reliable and continuous source of power to a select group of Class 1E instrumentation and control equipment required to have an uninterrupted source of power. Should a loss of offsite power or blackout occur, this equipment is required to safely shut down the plant. Loads fed from these distribution centers include Train B circuits associated with the following: 4KV Essential Switchgear Control Power, Diesel Generator Load Sequencer [EIIS:EQB] Control Power, and Auxiliary Feedwater System Control Power.

Panels 1EPD and 2EPD are 125 VDC Vital Instrumentation and Control Panelboards [EIIS:BD]. These panelboards supply a variety of Train B safety related control power [EIIS:JC] loads.

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EVENT DESCRIPTION

On May 17, 2007, as part of the CNS Fire Protection Safe Shutdown Reconstitution Project, Engineering was reviewing cable protection to ensure that fire induced cable faults would not cause loss of upstream breakers that are potentially needed to mitigate a fire. In the course of preparing a revision to calculations CNC-1112.11-00-0031 and CNC-1112.11-00-0032 (Units 1 and 2 Associated Circuit Analysis For Post Fire Safe Shutdown) some cables were identified that required additional protection. There were Train B cables located in Train B Fire Areas 12, 13, 36 and 37 with associated breakers that were not coordinated from a selective tripping standpoint. This means that a fire in one of the noted fire areas can cause tripping of an upstream breaker and loss of a Train B power supply needed for shutdown from the fire event. There is a requirement associated with these fire areas for Train B to be free of fire damage. Due to the lack of coordination between the protective devices, Train B was not kept free of fire damage. The failure mode is that a fire in the area of concern, where the cable is located, causes a short circuit between the cable conductors. The fault current through the faulted cable could reach the magnitude of current necessary to trip the upstream breaker.

The following cables and power panels were impacted by this review.

| <u>Cable Number</u> | <u>Fire Area of Concern</u> | <u>Panel Affected</u> |
|---------------------|------------------------------|-----------------------|
| 1*CA 581 | 1AFWPTCP Room (FA 37) | 1EDF |
| 2*CA 581 | 2AFWPTCP Room (FA 36) | 2EDF |
| 1*IRE 761 | U1 577 Elec Pen Room (FA 13) | 1EPD |
| 2*IRE 761 | U2 577 Elec Pen Room (FA 12) | 2EPD |

On May 17, 2007, fire watches were established in the affected fire areas.

On June 4, 2007, as a result of additional evaluation and discussion, management determined that the identified condition was a programmatic breakdown in the Fire Protection and Appendix R programs and therefore met the threshold for reportability. In accordance with 10 CFR 50.72, a phone notification was made to the NRC.

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CAUSAL FACTORS

This condition is attributed to an historical oversight by Engineering during the original evaluation/development of the Unit 1 and 2 Catawba Fire Protection Plan Associated Circuit Analysis For Post Fire Safe Shutdown. The original Associated Circuits Analysis evaluated the impact of loss of the Train B cables in Train B Fire Areas and determined that those cables were not required for the specific scenario. The circuits associated with those cables were not analyzed adequately to determine whether the cables had breaker and/or fuse coordination to prevent loss of a needed power source, located outside the fire area.

Consequently, a root cause evaluation was not performed due to the historical nature of this condition.

CORRECTIVE ACTIONS

Immediate:

1. Hourly fire watches were implemented on May 17, 2007 in the identified fire areas.

Subsequent:

1. N/A

Planned:

1. Implement on Units 1 and 2 Design Change modifications to install adequate coordination protection devices in the affected circuits.
2. Implement procedure changes to address mitigation and restoration of the affected electrical panels should a fire occur.

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

The planned corrective actions are being addressed within the Catawba Corrective Action Program. There are no NRC commitments contained in this LER.

SAFETY ANALYSIS

There were no fire events that challenged the loads fed from the affected Panels (1,2 EDF and 1,2 EPD). The conditions addressed by this report are related to potential failures and had no direct effect on the health and safety of the public.

The affected fire areas have minimal combustible materials and are maintained free of significant transient combustible materials by administrative controls. The affected fire areas are equipped with fire detectors to alarm the operators of fire events. The fire brigade members are trained to immediately respond to any plant fire.

A risk assessment of this event has been evaluated quantitatively and the results indicated that the Conditional Core Damage Probability (CCDP) and the Conditional Large Early Release Probability (CLERP) associated with this event is evaluated to be less than 1E-4/year. Based on these results, this event is of low risk significance.

ADDITIONAL INFORMATION

Within the last three years, there was one other event, LER 413/2004-003 which identified an unanalyzed condition that was attributed to inadequate evaluation of fire interactions. This condition was also considered historical and dated back to the original development of the assumptions used to support the Safe Shutdown Analysis. Cable separation criteria requirements were not met in LER 413/2004-003 and the corrective actions provided no opportunity to identify the condition identified in this LER. Therefore, this event was determined to be non-recurring.

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

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This event is not considered to be a Safety System Functional Failure.

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