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February 22, 2011

10 CFR 21.21

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

Subject: Duke Energy Carolinas, LLC (Duke Energy)
Catawba Nuclear Station, Units 1 and 2
Docket Nos. 50-413 and 50-414
McGuire Nuclear Station, Units 1 and 2
Docket Nos. 50-369 and 50-370
10 CFR 21 Notification - Identification of Defect

Pursuant to 10 CFR 21.21(d)(3)(ii), Duke Energy is providing the required written notification of the identification of a defect. This information was initially reported to the NRC Operations Center on January 24, 2011 (Event Number 46568).

The attachment to this letter provides the information required by 10 CFR 21.21. In addition, the attachment discusses the relevance of this issue to Duke Energy's Catawba and McGuire Nuclear Stations. There are no commitments contained in this letter or its attachment.

Should you have any questions or require additional information, please contact L.J. Rudy at (803) 701-3084.

Very truly yours,

James R. Morris

LJR/s

Attachment

JE19
NRR

Document Control Desk
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xc (with attachment):

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McGuire Nuclear Station

ATTACHMENT

10 CFR 21.21 NOTIFICATION

**600 VOLT ESSENTIAL AUXILIARY POWER SYSTEM MOTOR CONTROL CENTER STAB
ASSEMBLIES**

This notification follows the format of and addresses the considerations contained in 10 CFR 21.21(d)(4)(i)-(viii).

- (i) Name and address of the individual or individuals informing the Commission:

**James R. Morris, Vice President
Catawba Nuclear Station
4800 Concord Road
York, SC 29745**

(This individual is informing the Commission for both Catawba and McGuire.)

- (ii) Identification of the facility, the activity, or the basic component supplied for such facility or such activity within the United States which fails to comply or contains a defect:

The basic component which is the subject of this notification is a stab assembly (sometimes known as a disconnect), purchased commercial grade and dedicated by Duke Energy for use in nuclear safety related applications. Specific stab assembly information is as follows:

The specific part is a stab assembly for connecting motor control center feeder circuits to the motor control center main bus.

- (iii) Identification of the firm constructing the facility or supplying the basic component which fails to comply or contains a defect:

The affected stab assemblies were supplied by Electrical Power Systems, Inc. (EPSI).

- (iv) Nature of the defect or failure to comply and the safety hazard which is created or could be created by such defect or failure to comply:

Background

The Catawba and McGuire 600 volt Essential Auxiliary Power System motor control centers were originally supplied by Nelson Electric under a 10 CFR 50 Appendix B quality assurance program. The motor control centers were custom engineered for Duke Energy. The Nelson Electric design document describing the stab assemblies is drawing BA-2335, "Stab Assembly For W Moulding" (Nelson Electric Drawing). During the 1990s, EPSI began to supply parts for these motor control centers. However, EPSI did not maintain a 10 CFR 50 Appendix B quality assurance program. Subsequently, Duke Energy decided to procure the stab assemblies from EPSI as commercial grade equipment and dedicate them for use in nuclear safety related applications. In 1998, Duke Energy established commercial grade document number CGD-3014.04-05-0002, "Motor Control Center Plug In Unit Stab Assemblies" for these stab assemblies. This document includes a sketch of the stab assemblies which contains the same detail as found on the Nelson Electric Drawing.

Event Description

In 2006, Catawba ordered stab assemblies under Duke Energy catalog ID 456194. One of the affected stab assemblies was installed at Catawba on June 3, 2010 in the circuit for the Diesel Generator (DG) 1B jacket water keep warm pump motor. The stab assembly failed on June 5, 2010. Following the failure, DG 1B jacket water temperature began to decrease. The DG was started and run for a period of time to maintain temperature in the required range.

It was subsequently discovered that the Z-phase wiring between the breaker and the bus stab was not connected (i.e., the Z-phase bus stab was totally disconnected from the Z-phase wiring to the breaker) in the associated motor control center compartment. The X-phase and Y-phase bus stabs and wiring remained connected to the breaker as designed. The failure of this stab assembly resulted in the loss of the Z-phase feed to the motor, electrical arcing inside the motor control center compartment, and a failed pump motor due to single-phasing the motor.

After the failure, Duke Energy received information showing that EPSI had revised the drawing referenced in CGD-3014.04-05-0002 and changed the method of connecting the wires to the stabs. The original Nelson Electric Drawing specified a welded connection, with many details. The EPSI amended drawing specified a soldered butt connection. The Duke Energy Metallurgical Laboratory evaluated the failed stab assembly. This evaluation showed that in addition to a less substantial method of attachment, there were disconnected wire strands, signs of overheating, and excess solder flux leading to oxidation and corrosion. It was concluded that the DG 1B jacket water keep warm pump motor failed due to inadequate connection of the wires to the stab assembly. During parts dedication, the new stab assemblies passed basic electrical checks, but there was no visual inspection of the soldering because the connections had been inserted into the stab assembly molding.

The affected stab assemblies were not utilized in any other nuclear safety related application at Catawba and they were not utilized in any nuclear safety related application at McGuire. However, they could have been; therefore, the safety hazard which could have been created would have depended upon the exact application in which they could have been utilized. Catawba and McGuire determined that the theoretical worst case nuclear safety impact would have been a failure of valve NV252A (Catawba) and NV221A (McGuire) (Centrifugal Charging Pump Suction from Refueling Water Storage Tank) to open following a design basis accident requiring Emergency Core Cooling System (ECCS) actuation. Failure of this valve to open would have rendered Train A of the ECCS inoperable.

(v) The date on which the information of such defect or failure to comply was obtained:

Following internal technical evaluation and discussion with EPSI, Duke Energy performed the evaluations required by 10 CFR 21 and Duke Energy procedures and determined that this issue is 10 CFR 21 reportable on January 20, 2011. The responsible company officers were formally notified on January 24, 2011.

- (vi) In the case of a basic component which contains a defect or fails to comply, the number and location of these components in use at, supplied for, being supplied for, or may be supplied for, manufactured, or being manufactured for one or more facilities or activities subject to the regulations in this part:

Duke Energy had purchased 21 stab assemblies for use in nuclear safety related applications at Catawba and McGuire. Six of these stab assemblies were determined to have been manufactured prior to the vendor drawing change and therefore were not subject to the same defect. Twelve of the defective stab assemblies were stopped in Quality Assurance (QA) Receiving following the failure at Catawba and were never actually available for use in nuclear safety related applications at either site. The remaining three defective stab assemblies had been made available for use in nuclear safety related applications at Catawba. Of these three, one had actually been placed in service (this was the one that failed on June 5, 2010); one had been utilized to replace a missing part in spare equipment and was subsequently tagged for non-use; one had never been installed and was sent to the Duke Energy Metallurgical Laboratory for destructive examination. No additional defective stab assemblies are in the process of being manufactured for Duke Energy at this time.

- (vii) The corrective action which has been, is being, or will be taken; the name of the individual or organization responsible for the action; and the length of time that has been or will be taken to complete the action:

Following the stab assembly failure described above, the remaining suspect stab assemblies at Catawba and McGuire were placed on hold. (Six stab assemblies received at McGuire were manufactured prior to the vendor drawing change and were not subject to the same defect.) None of the defective stab assemblies were sold or transferred to another nuclear utility. Following the failure of the Catawba stab assembly, additional stab assemblies were tested, a failure investigation was performed, design information was requested from EPSI, and the commercial grade program implications were investigated. Organizations participating in these corrective actions included site Engineering and Nuclear Supply Chain and the Duke Energy Metallurgical Laboratory.

- (viii) Any advice related to the defect or failure to comply about the facility, activity, or basic component that has been, is being, or will be given to purchasers or licensees:

In October 2010, Duke Energy sent an information release concerning the stab assemblies for posting on the Institute for Nuclear Power Operations' Nuclear Network (OE32086). Following the determination that this issue is 10 CFR 21 reportable, Duke Energy made an initial notification concerning this subject to the NRC Operations Center on January 24, 2011 (Event Number 46568).