July 1, 2008

LICENSEE: DUKE ENERGY CAROLINAS, LLC (DUKE)

FACILITY: OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3 (OCONEE)

SUBJECT: SUMMARY OF JUNE 4, 2008, MEETING TO DISCUSS THE TESTING PROGRAM FOR FIBER-REINFORCED POLYMER (FRP) (TAC NOS. MD8571, MD8572, AND MD8573)

On June 4, 2008, the U.S. Nuclear Regulatory Commission (NRC) met with Duke (the licensee) and its contractor, North Carolina State University (NC State University), to discuss the testing program that will be used to justify the use of FRP at Oconee to strengthen certain brick walls to withstand the pressure loads resulting from a tornado. Enclosed is a list of the attendees. The handouts provided by the licensee during the meeting are available in the Agencywide Documents Access and Management System (ADAMS) under accession numbers ML081370211 and ML081580034.

By letter dated February 21, 2008 (ADAMS accession number ML080320062), and correction letter dated March 26, 2008 (ADAMS accession number ML080720409), the NRC staff issued amendments that authorized a revision to the Oconee Updated Final Safety Analysis Report to accommodate the use of FRP to strengthen certain masonry block walls to withstand the pressure loads resulting from a tornado event. However, the NRC staff did not approve the use of FRP on brick walls due to the lack of test data. Therefore, the licensee has embarked on a program with NC State University to test the FRP on brick walls.

The following topics were discussed during the meeting:

1) The brick walls are constructed in contact with the concrete columns and beam. Considering the interaction of the infill brick walls with the surrounding frame members, the NRC staff requested the applicant to address the following within the current licensing basis of the plant:

   a) The effects of additional in-plane forces on the FRP system during a tornado event. These forces are in addition to the out-of-plane pressure loading effect.

   b) The effects of FRP modification on the in-plane stiffness of the brick walls and on the overall stiffness of the Auxiliary building.

2) Based on the information presented, the FRP will only be applied to the exterior face of the brick wall to resist the atmospheric differential pressure during a tornado event. The NRC staff requested the applicant to address the condition when the inside face of the brick wall is in tension.

3) The as-built information of the existing brick walls indicates that the two wythes are connected by joint reinforcing and the mortar between the wythes cannot be accounted for full composite action. Considering this as-built condition, the NRC staff emphasized that the test setup should be adequately instrumented to capture the behavior of each wythe and the joint reinforcing.

4) The NRC staff emphasized that the construction of test specimens should simulate the as-built condition as closely as possible. This includes, but is not limited to thickness of the wall, single or double wythe construction, material properties of brick, mortar and joint reinforcing, boundary conditions, and geometry of the wall (height, width, aspect ratio).

5) Relative to the test setup, the NRC staff emphasized that the test specimen should be adequately instrumented to monitor (1) debonding of the FRP, and (2) tie rod reaction points to confirm air pressure readings and to ensure that the specimen was loaded uniformly.

The licensee expects that the test program will be completed by the end of August 2008 and expects to submit a license amendment request by the end of 2008 that will request approval of the use of FRP on certain brick walls at Oconee. Phase II of the test program is scheduled to begin July 7, 2008, and last about 2 weeks. The NRC staff stated that it might be interested in witnessing a portion of the testing.

/RA/

Leonard N. Olshan, Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-269, 50-270, and
50-287

Enclosure:
List of Attendees

cc w/encl: See next page

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/RA/

Leonard N. Olshan, Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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Enclosure:
List of Attendees

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C. Tucci, NRR
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K. Manoly, NRR
B. Titus, NRR

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OFFICE	NRR/LPL-2-1/PM	NRR/LPL-2-1/LA	NRR/LPL2-1/BC
NAME	LOlshan	MO'Brien	MWong
DATE	06/24/08	06/23/08	07/01/08

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MEETING ATTENDEES
FROM JUNE 8, 2008, MEETING
WITH DUKE ENERGY CAROLINA, LLC (DUKE)
TO DISCUSS THE TESTING PROGRAM FOR FIBER-REINFORCED POLYMER

NRC
K. Manoly
F. Farzam
B. Titus
G. Thomas
L. Olshan

DUKE
L. Llibre
C. Davis
S. Newman

OTHER
S. Rizkalla, North Carolina State University

Enclosure

Oconee Nuclear Station, Units 1, 2, and 3

cc:

Mr. Dave Baxter
Vice President, Oconee Site
Duke Power Company LLC
7800 Rochester Highway
Seneca, SC 29672

Ms. Lisa F. Vaughn
Associate General Counsel and Managing Attorney
Duke Energy Carolinas, LLC
526 South Church Street - EC07H
Charlotte, North Carolina 28202

Manager, LIS
NUS Corporation
2650 McCormick Dr., 3rd Floor
Clearwater, FL 34619-1035

Senior Resident Inspector
U.S. Nuclear Regulatory Commission
7812B Rochester Highway
Seneca, SC 29672

Mr. Henry Porter, Director
Division of Radioactive Waste Management
Bureau of Land and Waste Management
Dept. of Health and Env. Control
2600 Bull St.
Columbia, SC 29201-1708

Mr. B. G. Davenport
Regulatory Compliance Manager
Oconee Nuclear Site
Duke Energy Corporation
ON03RC
7800 Rochester Highway
Seneca, SC 29672

Ronnie L. Gardner, PMP
Manager, Site Operations and Corporate Regulatory Affairs
AREVA NP Inc.
An AREVA AND Siemens Company
3315 Old Forest Road OF -16
Lynchburg, VA 24501

Mr. Leonard G. Green
Assistant Attorney General
NC Department of Justice
P.O. Box 629
Raleigh, NC 27602

Mr. R. L. Gill, Jr.
Manager - Nuclear Regulatory Issues and Industry Affairs
Duke Power Company LLC
526 S. Church St.
Mail Stop EC05P
Charlotte, NC 28202

Division of Radiation Protection
NC Dept of Environment, Health, & Natural Resources
3825 Barrett Dr.
Raleigh, NC 27609-7721

Mr. Peter R. Harden, IV
VP-Customer Relations and Sales
Westinghouse Electric Company
6000 Fairview Road
12th Floor
Charlotte, NC 28210

Mr. Henry Barron
Group Vice President, Nuclear Generation and Chief Nuclear Officer
P.O. Box 1006-EC07H
Charlotte, NC 28201-1006

Mr. Charles Brinkman
Director, Washington Operations
Westinghouse Electric Company
12300 Twinbrook Parkway, Suite 330
Rockville, MD 20852

Ms. Kathryn B. Nolan
Senior Counsel
Duke Energy Carolinas, LLC
526 South Church Street - EC07H
Charlotte, NC 28202