December 13, 2012

LICENSEE: Carolina Power & Light Company

FACILITY: H.B. Robinson Steam Electric Plant, Unit 2

SUBJECT: SUMMARY OF NOVEMBER 26, 2012, MEETING WITH DUKE ENERGY CONCERNING GENERIC LETTER 2004-02 AND NRC STAFF REVIEW OF DRAFT PROPOSED STRAINER FIBER BYPASS TEST PLAN FOR H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2 (TAC NO. ME9894)

On November 26, 2012, the Nuclear Regulatory Commission (NRC) staff conducted a Category 1 public meeting via a conference call with Duke Energy, Inc., which is representing Carolina Power & Light Company (the licensee), including its contractors Enercon and Alion, at NRC Headquarters, One White Flint North, 11555 Rockville Pike, Rockville, Maryland. The purpose of the meeting was for Duke Energy to present its proposed strainer fiber bypass test plan for H. B. Robinson Steam Electric Plant, Unit No. 2 (HBRSEP) regarding Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation during Design Basis Accidents at Pressurized-Water Reactors." The purpose of the meeting was also for the NRC staff to provide the licensee with questions and comments during the meeting. The meeting notice was publicly available on the NRC's website and is documented in Agencywide Document Access and Management System (ADAMS) Accession No. ML12314A029. The list of participants for this call is provided in the enclosure to the meeting summary.

The licensee's draft bypass fiber quantity test plan that was provided to the NRC staff by an electronic mail (e-mail) is documented in ADAMS Accession No. ML12331A175. Prior to the meeting the licensee provided its presentation slides that are documented in ADAMS Accession No. ML12331A178.

The intent of the strainer bypass test is to measure the amount of fibrous debris that bypasses or passes through an emergency core cooling system sump strainer module. The fibrous material used in the testing is representative of debris that could be generated during a loss-of-coolant accident. The results of the testing will be used to quantify the amount of debris that could bypass a plant strainer to assist in evaluation of the response of equipment downstream of the strainer. During the conference call, the licensee presented information regarding the generic safety issue 191 project status, the bypass test configuration, the procedures used for debris preparation, the bypass test approach velocity, and how the potential for pump stop/restart would be accounted for during the testing HBRSEP. The licensee also presented the HBRSEP bypass test procedure acceptance criteria, and bypass test schedule.

This presentation was followed by discussing the NRC staff's questions and the licensee's responses. During the conference call, the NRC staff discussed its overall expectation of the test results and asked a few clarification questions. The NRC staff specifically noted its concerns with using deionized water, similar to those discussed during a Crystal River Unit 3 public meeting regarding bypass testing. The staff is concerned that water chemistry used

during testing may affect bypass results and recommends that testing either use prototypical reactor coolant or use of an alternate be addressed by the licensee in its evaluation of the testing.

The licensee clarified during the call that HBRSEP has bypass eliminators installed to reduce the amount of debris that can pass through the strainer. The licensee also indicated that testing would model pump stop/restart timing as it is expected to occur in the plant. The licensee stated that there is some limited amounts of mineral wool type fiber left at the plant, but the amount is very small compared to the amount of Nukon fiber. The NRC staff has seen foreign reactor test results that indicate that mineral wool fiber my bypass the strainer more easily than fiberglass. The NRC staff stated that the licensee should ensure that care is taken during critical test steps to ensure that the test is not adversely affected or biased non-conservatively.

The majority of the call focused on the effect of strainer approach velocity on fiber bypass. The staff is aware that approach velocity affects the amount of fiber that passes through a strainer. The HBRSEP strainer has a non-uniform approach velocity such that some areas of the strainer have a significantly higher velocity while others have a very low velocity. Because testing is necessarily conducted using a relatively small section of the strainer the velocity gradient is not modeled during the test and a relatively uniform velocity is used.

The licensee proposed that an RMS (root mean square) average could be used to determine an appropriate test velocity. The NRC staff could not conclude that an RMS average was an appropriate methodology for velocity determination. However, the NRC staff stated that the licensee could reference test results for a similar strainer design that show that the bypass follows a relatively linear relationship over the range of velocities that could be experienced by the HBRSEP strainer. The licensee stated that they had adequate information to show a relatively linear relationship and that they would test with 1.5 times the average maximum velocity to ensure margin. The velocity may be reduced to 1 times the design velocity after a debris bed forms over the entire strainer. The licensee stated that the velocity gradient along sections of the strainer is reduced significantly as debris deposits on the strainer.

The licensee indicated that some of the velocity sensitivity testing that will be used to show the linear relationship may have been conducted with debris additions larger than those recommended by the NRC staff for bypass testing. The NRC staff stated that it would accept the use of these tests to show sensitivity to velocity (not absolute bypass amounts) if the debris additions were not unreasonably large.

The following action items for the licensee were taken at the conclusion of this meeting:
1) update Table 4.1 of the test plan to show the proper destruction pressures for various types of insulation, 2) describe how debris is added during bypass testing, and 3) provide information regarding the relationship between bypass amount and strainer approach velocity.

The NRC staff expects the test to produce results that are realistic or conservative when compared to actual plant strainer bypass. However, the test results are somewhat dependent on human actions and evaluations of the test results after the testing is complete. Therefore,

while the NRC staff does not have any questions or additional comments regarding the draft strainer fiber bypass test plan for HBRSEP, the NRC staff does not endorse this test plan.

The licensee is planning to finalize its draft strainer bypass test plan and submit it to the NRC in December 2012. Also, the bypass test is currently planned for week of January 28, 2013, at Alion's test facility in Warrenville, Illinois. The NRC staff may observe the strainer bypass testing and review its evaluation and application as part of its overall review of Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation during Design Basis Accidents at Pressurized-Water Reactors."

Members of the public were invited and one was on the conference call. Public Meeting Feedback forms were not received.

Please contact me at (301) 415-3302, or by e-mail to Araceli.Billoch@nrc.gov if you have any questions.

Sincerely,

/RA/

Araceli T. Billoch Colón, Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-261

Enclosure: List of Attendees

cc w/encl: Distribution via Listserv

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ADAMS Accession Nos.: Package ML12331A170 Notice ML12314A029
Draft Bypass Testing Plan ML12331A175 Slides ML12331A178 Summary ML12332A193

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LIST OF ATTENDEES

U. S. NUCLEAR REGULATORY COMMISSION

PUBLIC MEETING WITH DUKE ENERGY

REGARDING DRAFT PROPOSED STRAINER FIBER BYPASS TEST PLAN

FOR H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

NOVEMBER 26, 2012

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Enclosure