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Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Duke Energy Carolinas, LLC
William States Lee III Nuclear Station - Docket Nos. 52-018 and 52-019
AP1000 Combined License Application for the
William States Lee III Nuclear Station Units 1 and 2
Supplemental Information Regarding Lee Nuclear Station Unit 1
Northwest Corner Foundation Rock
Ltr# WL12009.09-11

References: Bryan J. Dolan to Document Control Desk, U.S. Nuclear Regulatory Commission, Response to Request for Additional Information (RAI No. 2563), Ltr# WLG2009.06-04, dated June 11, 2009 (ML091660230)

Bryan J. Dolan to Document Control Desk, U.S. Nuclear Regulatory Commission, Response to Request for Additional Information (RAI Nos. 1003 and 1004), Ltr# WLG2008.12-25, dated December 17, 2008 (ML083570396)

During a teleconference between Duke Energy and the NRC Staff held on September 1, 2009, the NRC Staff requested clarification on the excavation construction methods to be used in preparing the Lee Nuclear Station (Lee) Unit 1 site surrounding the Unit 1 Nuclear Island (NI), including assessments that confirm the suitability of the foundation rock within the foundation support zone in the Lee Unit 1 northwest corner. The following discussion expands the description of the controls placed on the excavation process and the post-excavation inspections that were previously described in the response to RAI 03.08.05-005 in the first reference submittal.

The NI foundation basemat will be supported by continuous rock or by fill concrete supported on continuous rock. For this purpose, continuous rock is defined as rock that is fresh to moderately weathered as determined by visual inspection, and is expected to have a Rock Quality Designation of at least 65% (RQD \geq 65%) based on the site exploration boring logs. The foundation support zone includes the area directly beneath the NI foundation basemat plus a zone beyond the perimeter of the basemat as described later.

Based on the site exploration boring logs, rock conditions at the northwest corner of the Lee Unit 1 NI require additional excavation to reach continuous rock. Because of the

relatively deeper excavation expected to reach continuous rock in this area, the northwest corner of the Lee Unit 1 NI foundation support zone is also defined by a line sloping at 0.5 (horizontal) to 1 (vertical) downward from a point at the same elevation as the bottom of the NI basemat and located 6 ft outside the northwest edge of the Lee Unit 1 NI basemat. FSAR Figures 2.5.4-245 and 2.5.4-246, as revised in the response to RAI 03.08.05-005 in the first reference submittal, illustrate this expanded foundation support zone.

In these areas within the Lee Unit 1 NI foundation support zone, overlying rock will be removed down to the level of continuous rock, defined as fresh to moderately weathered rock. The continuous rock not covered by the existing Cherokee Nuclear Station (Cherokee) concrete will be cleared of overlying materials within the outline of the Lee Unit 1 NI foundation support zone. In areas that are not compatible with the use of large excavation equipment such as large dozers and trackhoes, rock excavation in the foundation support zone will be performed by excavation techniques such as pre-splitting or line drilling, and by controlled blasting. During excavation, special care is taken so as not to damage or degrade the final foundation rock quality. Poor quality rock will be excavated and removed down to fresh to moderately weathered continuous rock, as determined by intermediate and final visual inspections during the excavation process. Isolated weathered rock or joints in the rock surface that are in-filled with soil-like materials are excavated and treated using the procedures described in FSAR Subsection 2.5.4.12.

As explained in the Duke Energy response to RAI 03.07.01-001 in the second reference submittal, rock with a shear wave velocity of greater than 8000 fps would not be expected until about 90 ft below the yard grade, or about 50 ft below the bottom of the Lee Unit 1 NI northwest corner basemat. This is illustrated in FSAR Figure 2.5.4-249 (Profile B, Northwest Corner), which shows the smoothed rock velocity profile directly below the Lee Unit 1 NI northwest corner. It is anticipated that continuous rock (i.e., rock that is fresh to moderately weathered as determined by visual inspection) will be reached approximately 30 ft above this elevation. Therefore, there will be a limited area where a shear wave velocity less than 8000 fps will exist in the final Lee Unit 1 NI foundation rock. As additionally explained in the Duke Energy response to RAI 03.07.01-001, the remaining zone of rock in this limited area under the Lee Unit 1 NI northwest corner will have an average shear wave velocity of 7300 fps, and the localized difference in shear wave velocity is not significant in the overall seismic response of the Lee Unit 1 NI.

In addition, the Duke Energy response to RAI 3621 will address the possibility of localized differences in seismic response created by the uncertainty of the final foundation rock profile by considering a range of fill concrete layer thicknesses and

foundation rock profiles and material properties in the Lee Unit 1 NI foundation support zone. It is expected that this response will demonstrate that there is not a significant potential for localized, high-frequency amplification of the seismic response created by the final foundation rock profile in the Lee Unit 1 NI northwest corner, and that there is no adverse effect on safety-related components located in the northwest corner of the NI that might be sensitive to high-frequency seismic excitation.

If you have any questions or need any additional information, please contact Peter S. Hastings, Nuclear Plant Development Licensing Manager, at 980-373-7820.




Bryan J. Dolan
Vice President
Nuclear Plant Development

Enclosure:

None


AFFIDAVIT OF BRYAN J. DOLAN

Bryan J. Dolan, being duly sworn, states that he is Vice President, Nuclear Plant Development, Duke Energy Carolinas, LLC, that he is authorized on the part of said Company to sign and file with the U. S. Nuclear Regulatory Commission this supplement to the combined license application for the William States Lee III Nuclear Station and that all the matter and facts set forth herein are true and correct to the best of his knowledge.



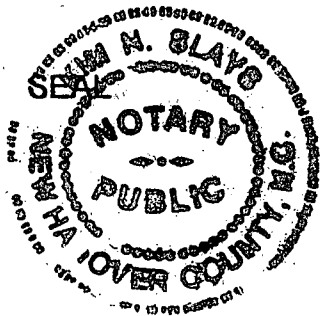
Bryan J. Dolan

Subscribed and sworn to me on September 29, 2009



Notary Public

My commission expires: April 19, 2010



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xc:

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Stephanie Coffin, Branch Chief, DNRL
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