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February 13, 2017

Docket Nos.: 52-025  
52-026

ND-17-0210  
10 CFR 50.90

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

Southern Nuclear Operating Company  
Vogtle Electric Generating Plant Units 3 and 4  
Supplement to Request for License Amendment:  
Nondestructive Examination for Welds of Couplers to  
Stainless Steel Embedment Plates (LAR-16-016S1)

Ladies and Gentlemen:

Pursuant to 10 CFR 52.98(c) and in accordance with 10 CFR 50.90, by letter ND-16-1287, dated August 29, 2016 [ADAMS Accession Number ML16242A399], Southern Nuclear Operating Company (SNC), the licensee for Vogtle Electric Generating Plant (VEGP) Units 3 and 4, requested an amendment to Combined License (COL) Numbers NPF-91 and NPF-92, for VEGP Units 3 and 4, respectively. This license amendment request (LAR), LAR-16-016, proposed changes to Tier 2\* information in the UFSAR (which includes the plant-specific DCD information) to clarify how the quality and strength of a specific set of couplers welded to stainless steel embedment plates, already installed and embedded in concrete, is demonstrated through visual examination and static tension testing, in lieu of the nondestructive examination requirements of American Institute of Steel Construction (AISC) N690.

This letter supplements LAR-16-016 in Enclosure 6 to address a Request for Additional Information (RAI) from the NRC Staff, which was transmitted by electronic mail (email) to SNC on January 13, 2017 [ADAMS Accession Number ML17017A161], to support review of LAR-16-016.

The supplemental information provided in Enclosure 6 does not impact the scope or conclusions of the Technical Evaluation, Regulatory Evaluation (including the Significant Hazards Consideration Determination), or Environmental Considerations of the LAR.

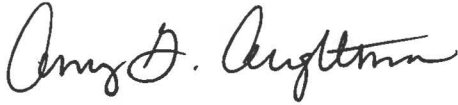
This letter contains no regulatory commitments. This letter has been reviewed and confirmed to not contain security-related information.

In accordance with 10 CFR 50.91, SNC is notifying the State of Georgia of this LAR supplement by transmitting a copy of this letter and enclosure to the designated State Official.

Should you have any questions, please contact Ms. Paige Ridgway at (205) 992-7516.

Ms. Amy G. Aughtman states that: she is the Nuclear Development Licensing Director, of Southern Nuclear Operating Company; she is authorized to execute this oath on behalf of Southern Nuclear Operating Company; and to the best of her knowledge and belief, the facts set forth in this letter are true  
Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY



Amy G. Aughtman



AGA/NH/ljs

Sworn to and subscribed before me this 13<sup>th</sup> day of February, 2017  
Notary Public Lisa Myrick Spears  
My commission expires: June 18, 2019

- Enclosures: 1) - 5) (previously submitted with the original LAR, LAR-16-016, in SNC letter ND-16-1287)
- 6) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Response to NRC Request for Additional Information Regarding the LAR-16-016 Review (LAR-16-016S1)

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**Southern Nuclear Operating Company**

**ND-17-0210**

**Enclosure 6**

**Vogtle Electric Generating Plant (VEGP) Units 3 and 4**

**Response to NRC Request for Additional Information  
Regarding the LAR-16-016 Review**

**(LAR-16-016S1)**

(Enclosure 6 consists of four pages, including this cover page.)

The following are questions provided by the NRC Staff regarding the review of Southern Nuclear Operating Company (SNC) License Amendment Request (LAR) 16-016, which was submitted by SNC letter ND-16-1287 on August 29, 2016.

**RAI Question 1:**

The proposed Tier 2\* wording describes the testing methodology and results used to justify that the specific population of inaccessible welds that did not receive the appropriate nondestructive examination (NDE) can meet their design requirements. Currently, the proposed Tier 2\* wording describes the impacted welds as:

*The non-conforming partial penetration welds associated with reinforcement bar sizes #6 and #9 C3J couplers installed on ASTM A240 stainless steel embedment plates under CA01 that did not undergo nondestructive examination at the time of fabrication...*

While the proposed Tier 2\* wording describes the impacted welds, it does not clearly state that the testing is only representative of the couplers that are referenced in the LAR. The test results represent only this specific population that have been installed under CA01; therefore the test results and conclusions in the LAR are not applicable to other populations of couplers.

- a. Please clarify the proposed Tier 2\* wording so that it is clear that it is only applicable to this specific population of couplers, and that it is not applicable for future welds that may not receive the appropriate NDE.

**SNC Response to RAI Question 1a:**

In order to clarify that the proposed Tier 2\* wording is only applicable to this specific population of couplers included as part of LAR-16-016, and that it is not applicable for future welds that may not receive the appropriate non-destructive examination (NDE), the following update to the supplemental UFSAR Section 3.8.4.5.2 language is proposed (provided in **bold, italic** text, below):

*“...the non-conforming partial penetration welds associated with reinforcement bar sizes #6 and #9 C3J couplers installed on ASTM A240 stainless steel embedment plates under CA01 that did not undergo nondestructive examination at the time of fabrication, as **identified in Amendment Nos. [XXX and YYY] for VEGP Units 3 and 4, respectively,** the quality and strength of the welds...”*

where “XXX” and “YYY” are placeholders for the COL Amendment numbers assigned by the NRC for approval of LAR-16-016, and will be inserted in this text when this amendment is approved and implemented.

**RAI Question 2:**

The design of the Phase II test assembly was to aid in the fit-up for the tensile testing machine, and to attempt to isolate the failure point at the test weld. The test assembly design ground out the threads of the test coupler, filled in the test coupler with weld material, and welded an oversized coupler to the test coupler with a fixture weld. The staff previously requested justification to show that this design would not have any impact on the mechanical properties of the test weld. The LAR states that hardness testing was performed. From the description in the LAR, the hardness testing only shows the potential changes to the mechanical properties at the fillet weld surface. Based on the test assembly design, it is likely that the majority of the heat input would impact the partial joint penetration (PJP) weld and the heat affected zone (HAZ).

- a. Please provide additional detail related to the hardness testing that demonstrates the test assembly design had no impact on the test weld mechanical properties (particularly at the PJP and HAZ).

The LAR states that several Phase II test welds were “influenced by the fixture weld” during tensile testing and therefore they were not considered as part of the test results.

- b. Please explain what “influenced by the fixture weld” means. The LAR states that there was no impact to the hardness, but some of the test samples’ failures were “influenced by the fixture weld.”

**SNC Response to RAI Question 2a:**

Hardness testing, as referenced in the statistical analysis developed in support of LAR-16-016, demonstrates that the test assembly had no influence upon the coupler test weld mechanical properties. This confirmation is based on the test process, which included the examination of two specimens; one for which no modifications were made to the production coupler assembly (Specimen A) and one that had been modified for the test assembly design (Specimen B). A water-cooled abrasive cut-off saw was used to extract one cross-sectional specimen from each assembly. Each specimen was metallographically mounted and polished. In the as-polished state, a Vickers microhardness traverse was completed on each specimen using an Instron Model T2100B tester. Following hardness testing, each specimen was etched with 10% Nital. The results of the testing indicate that neither specimen showed any hardened heat affected zone (HAZ) and both specimens had similar resulting hardness traverses. Therefore, it was concluded that the test assembly welding had no impact on the test weld mechanical properties.

**SNC Response to RAI Question 2b:**

It was concluded through investigation of the failure plane of each test specimen that the “fill-in” fixture weld quality contributed to the break load in some specimens. As such, an additional variable was introduced into the sample set. Two populations were pooled for calculation of the 90/95% confidence interval evaluation, in order to have normal distribution. One population includes the samples that demonstrate evidence that the “fill-in” weld quality contributed to the break. This would include instances of voids or incomplete bond to the coupler body. The other population includes samples that demonstrate no evidence that the “fill-in” weld quality directly contributed to the break. This approach was necessary to achieve data sets with normal distributions. This ultimately resulted in a lower margin than if the “fill-in” weld quality had no

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Enclosure 6

Response to NRC Request for Additional Information Regarding the LAR-16-016 Review  
(LAR-16-016S1)

influence, as it lowered the failure load and reduced the number of samples considered for determination of the k-value.

Note that the NDE condition of the production weld did not have any influence on the break strength of the coupler system, as all samples failed through the coupler body.