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SOUTHERN COMPANY
*Energy to Serve Your World*℠

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

Southern Nuclear Operating Company
Vogtle Early Site Permit Application
Revised Response to Draft Safety Evaluation Report Open Item Involving Hydrology

Ladies and Gentlemen:

By letter dated August 30, 2007, the U.S. Nuclear Regulatory Commission (NRC) provided Southern Nuclear Operating Company (SNC) with the Safety Evaluation Report (SER) for the Vogtle Early Site Permit (ESP) Application. The SER included 41 open items (OIs). SNC responded to the NRC SER OIs in letter AR-07-1773, dated October 15, 2007. Subsequent discussions were conducted with the NRC regarding SNC responses to SER OIs involving hydrology information including OI 2.4.-1. Based on these discussions, SNC is providing supplemental information for the response to SER OI 2.4-1. The enclosure to this letter provides the supplemented SNC response to SER OI 2.4-1.

If you have any questions regarding this letter, please contact J. T. Davis at (205) 992-7692.

D078
NRO

Mr. D. H. Jones states that he is Engineering Vice President of Southern Nuclear Operating Company, is authorized to execute this oath on behalf of Southern Nuclear Operating Company and to the best of his knowledge and belief, the facts set forth in this letter are true.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY

D. H. Jones

David H. Jones

*Sworn to and subscribed before me this* 19th *day of* June, *2008*

*Notary Public:* Gail A. Hicks

*My commission expires:* July 5, 2010

DHJ/BJS/dmw

Enclosure: Vogtle Early Site Permit Application Supplemented Response to Draft Safety Evaluation Report Open Item 2.4-1

cc: Southern Nuclear Operating Company
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**Southern Nuclear Operating Company**

**AR-08-0939**

**Enclosure**

**Vogtle Early Site Permit Application**

**Supplemented Response to**

**Draft Safety Evaluation Report Open Item 2.4-1**

**NOTE**: This enclosure consists of a 2-page document.

## SER Section 2.4.8 – Cooling Water Canals and Reservoirs

**2.4-1 The NRC staff reviewed the information provided by the applicant in the SSAR. The NRC staff concluded that as proposed in the application, the new VEGP Units 3 and 4 will not rely on any external water source for safety-related cooling water. The applicant did not propose any safety-related canals or reservoirs as a source for cooling water. However, there will be the need for safety-related water for initial filling and occasional makeup purposes. Therefore, the applicant should provide design parameters for these values.**

Supplemental Response:

As described in the Westinghouse DCD, Tier 1 Section 2.2.2 and Tier 2 Section 6.2.2, the AP1000 design utilizes a Passive Containment Cooling System (PCS).

The PCS performs safety-related functions related to delivering water from the passive containment cooling water storage tank (PCCWST) to the outside surface of the containment vessel to the seismically qualified portion of the fire protection system and to the spent fuel pool. The PCCWST is incorporated into the safety-related shield building structure and nominally contains 800,000 gallons of water. A minimum storage volume of 756,700 gallons is verified by Technical Specifications every seven days. This stored volume provides water for short-term cooling for at least 72 hours following system actuation.

Prior to 72 hours after an event, operator actions are taken to align the passive containment ancillary water storage tank (PCCAWST), which is located outside the auxiliary building at ground level, to perform the non-safety-related function of delivering cooling water to the PCCWST from hour 72 through day 7. Alternate water sources can also provide water directly to the containment shell through an installed safety-related seismic piping connection. Water sources used for normal filling operations can be used to replenish the water supply. (Tier 1 Figure 2.2.2-1 and Tier 2 Figure 6.2.2-2 show the relationship of the tanks and water makeup connection to the containment vessel.)

It is clear from the descriptions in the DCD that the safety-related function of the external water supply is fulfilled by the PCCWST during the initial 72-hour stage of a containment cooling event. Technical Specifications ensure the availability of safety-related water. After 72 hours, operator actions are required to realign and re-supply the PCCWST from the non-safety-related PCCAWST or the external water makeup connection. There are no DCD-imposed limitations on the source of the makeup water.

As provided by Westinghouse, the post-accident 7-day makeup requirement for the PCS is approximately 80 gpm for the containment cooling function and 35 gpm for the spent fuel cooling/makeup function. This makeup water does not need to be from a safety-related makeup source as discussed in NUREG-1793 and SECY-96-128. Although PCS water can be supplied indefinitely until normal plant operation is returned or until air only cooling (for containment cooling only) becomes sufficient to remove decay heat, the 80 gpm containment cooling demand will actually decrease as the amount of decay heat decreases, thus making the 80 gpm value a conservative maximum for the duration of the containment cooling evolution.

At Vogtle Units 3 and 4, normal plant makeup water will be supplied by the well-water system from an essentially infinite-supply, deep aquifer, delivered to the plants' shared 300,000 gallon

well water tank by two 1500 gpm pumps (1 pump for each unit). This potential makeup capacity to the PCS is well in excess of the design cooling requirements specified by Westinghouse.

Furthermore, there is significant potential PCS make-up water available from other sources within the VEGP Unit 3 and 4 site area: the two 100,000 gallon demineralized water storage tanks, the six 300,000 gallon fire water tanks, or the two 6,000,000 gallon (minimum) main cooling tower basins. Water could also be obtained from Unit 1 or Unit 2 or trucked from the Savannah River or from offsite.

In summary, since the DCD's inherent passive safety design and Technical Specifications govern the safety-related cooling function, there is no requirement for any fill or makeup water to be classified as safety-related. Thus no design parameters are necessary, and there is not an identified need for any permit condition to restrict the use of any water supply that is otherwise of suitable quality to provide the non-safety-related makeup function either prior to or after a design basis cooling event for the AP1000. The only site parameter that should be entertained is a general requirement that there be sufficient makeup water (non-safety related) available from the combination of all onsite and offsite sources to supply the Westinghouse-identified cooling water needs beyond the first 7 days of accident recovery until normal plant system operation is returned.