

**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION**

**BEFORE THE ATOMIC SAFETY AND LICENSING BOARD**

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<b>In the Matter of</b>	)	<b>Docket No. 52-011-ESP</b>
	)	
<b>Southern Nuclear Operating Company</b>	)	<b>ASLBP No. 07-850-01-</b>
	)	<b>ESP-BD01</b>
	)	
<b>(Early Site Permit for Vogtle ESP Site)</b>	)	<b>February 6, 2009</b>

**SOUTHERN NUCLEAR OPERATING COMPANY’S REBUTTAL TESTIMONY  
OF TONY DODD AND MATT MONTZ CONCERNING EC 1.2**

**Q1: Please state your name(s), address(es), and current occupation.**

A1: My name is Anthony Ray Dodd. My business address is: 5131 Maner Road, Smyrna, GA 30080. I am employed by Georgia Power Company as an Environmental Specialist.

My name is Matthew Thomas Montz. My business address is: 42 Inverness Center Parkway, Birmingham, AL 35242. I am employed by Southern Nuclear Operating Company as an Environmental Specialist.

**Q2: Have you previously provided written testimony in this proceeding?**

A2: Yes. We submitted pre-filed written testimony on environmental contention (“EC”) 1.2.

**Q3: What is the purpose of your testimony?**

A3: The purpose of this testimony is to respond, on behalf of Southern Nuclear Operating Company (“SNC”), to the testimony of Shawn P. Young regarding EC 1.2 that was submitted by Joint Intervenors on January 9, 2009 and revised on February 2, 2009 (“Young Direct Testimony”).

**Q4: In A.19 of his pre-filed direct testimony, Dr. Young states that “[t]he most effective method to determine current ichthyoplankton species composition, distribution, and**

**vulnerability to entrainment in the vicinity of the VEGP site is an ichthyoplankton-net collection.” Was the 2008 SNC study conducted in accordance with Dr. Young’s recommendations?**

A4: Yes. The methods employed in the SNC study were substantially consistent with those described by Dr. Young. Dr. Young states that “[i]chthyoplankton collections should be conducted at equal intervals from riverbank to riverbank, surface to bottom.” *See* Young Direct Testimony at A.19. SNC did this. SNC conducted surface to bottom collections in the Savannah River at one meter depth intervals, based on available depth, along a cross-sectional transect with sampling locations established approximately 30 feet from the left (Georgia) bank, at mid-channel, and 30 feet from the right (South Carolina) bank. *See* Exhibit SNC000005. Dr. Young states that ichthyoplankton collections should be conducted “during a stratified sampling period occurring day and night.” *See* Young Direct Testimony at A.19. SNC did this. The SNC study collected samples during 12-hour day and 12-hour night sample periods in order to assess the diel attributes of ichthyoplankton drift at Plant Vogtle. SNC specifically designed the entrainment study to be consistent with similar studies performed at other facilities and collected data sufficient to complete the analysis of impacts required under NEPA.

The primary differences between those sampling methods Dr. Young suggested and the SNC survey are the frequency of sampling and the use of submersible pumps to collect samples in the intake canal. Dr. Young suggests that ichthyoplankton studies be conducted several times per week during each month of the year. SNC conducted its sampling twice per month (bi-weekly), which provided for a detailed assessment of the entrainment rate at Plant Vogtle, based on a level of effort consistent with many other

studies of this type. The bi-weekly sampling provided a clear trend of ichthyoplankton (drift) abundance including times of peak abundance and attenuation consistent with literature-based expectations of spawning season timing for species of the area. More frequent sampling is neither standard nor necessary.

Also, the method of sampling intake canal water with a submersible pump system and plankton nets was necessary due to actual site conditions. The prevailing, sluggish hydraulic conditions that exist in the canal, as well as the physical constraints of sampling the canal by boat, made the pump system the appropriate collection choice. The use of the pump system is a scientifically accepted collection technique. *See Exhibit SNC000052 (Fisheries Techniques, Second Edition. 1996. Eds. B. Murphy and D. Willis. Fisheries Techniques. American Fisheries Society, Bethesda, MD).*

Dr. Young's testimony regarding appropriate impingement and entrainment sample methodologies and the need for site specific field studies and quantitative analysis was provided prior to his knowledge of SNC's 2008 impingement and entrainment study. The study performed at Plant Vogtle in 2008 should adequately address Dr. Young's concerns.

**Q5: Do you agree with Dr. Young's statement that the Hydraulic Zone of Influence ("HZI") study conducted by SNC in support of this proceeding does not provide sufficient data and fails to consider the sufficient range of flows necessary to adequately assess the impact? (See Young Direct Testimony at A.23.)**

**A5:** No. When the HZI determination was conducted at Plant Vogtle on May 7, 2008, Unit 1 was operating at 100% of its generating capacity, Unit 2 was operating at 98.1% of its generating capacity, and the cooling water intake structure was operating in its normal

pumping configuration. During normal (i.e., plant at full load) operation of the intake structure, one pump operates for each unit (two pumps total); a third pump operates intermittently as needed to adjust cooling tower basin water levels and for waste dilution; and a fourth pump is kept in standby should one of the other three pumps require maintenance. The 56% capacity to which Dr. Young refers in his pre-filed direct testimony is simply the ratio of the daily withdrawal rate reported by Plant Vogtle for Units 1 and 2 (71.24 MGD) for May 7, 2008, to the theoretical limit of all four pumps operating at full design capacity (127 MGD). On the day the HZI determination was conducted, the plant operated three of the four cooling water intake pumps, which is the normal mode of operation at full power generation.

Regarding Dr. Young's assertion that an insufficient range of flows were analyzed, the HZI was characterized during a period of prolonged drought that was, at a minimum, representative of average river flows during 2008 under normal cooling water withdrawal rates. Savannah River flows averaged 4,482 cfs on the day the HZI determination was conducted. For 2008, the average daily flow in the Savannah River at Plant Vogtle was approximately 4,950 cfs (USGS, <http://waterdata.usgs.gov/nwis/>). See Exhibit SNC000053 (average calculated from daily numbers in tables). From January 22, 2005 to December 31, 2008, the average daily flow in the Savannah River was 7,173 cfs, or about 44.7 percent greater than the 2008 average flow. See Exhibit SNC000053 (average calculated from daily numbers in tables).

**Q6: Dr. Young discusses the temperatures at which several species of larvae and eggs suffer mortality and asserts that the water temperatures near Plant Vogtle would lead to an increase in their mortality. Is that correct?**

A6: No. Dr. Young is quick to point out that sturgeon and striped bass eggs and larvae suffer mortality when water temperatures reach or exceed 75°F (eggs) and 85°F (larvae). Dr. Young fails, however, to discuss the water temperatures at which spawning occur. He also fails to take into consideration Plant Vogtle's discharge permit limit requiring that cooling water discharge temperatures be no greater than 5°F over ambient (as discussed in FEIS Section 5.3.3.1). For example, sturgeon spawning takes place when water temperatures are between 48°F and 57°F. *See* Exhibit JTI000013. Similarly, striped bass spawn when water temperatures are between 63°F and 66°F. *See* Exhibit JTI000014. However, during this time, the Plant Vogtle discharge can be no greater than 5°F over ambient, which is well below the temperatures that would impact the eggs and larvae of these species.

Additionally, Dr. Young fails to mention the importance of exposure time when discussing egg and larvae mortality due to increases in water temperature. For example, in his testimony, Dr. Young quotes Fay et al., 1983 (JTI000015), which says, "Most early striped bass life stages show significant elevated mortality when exposed to rapid changes in water temperature (such as that in a thermal discharge plume)." On page 25 of that document, the next sentence states, "Eggs were able to sustain 15°C (27°F) temperature elevation for 4-60 min, but an elevation of 20°C (36°F) above acclimation temperature killed all eggs in 2 min." These temperatures and exposure times are well beyond any of those conservatively predicted in the FEIS. Based on the velocity of the Savannah River, the small size of the thermal plume, and the small increase in temperature (<5°F over ambient), the time of exposure to fish larvae and eggs traveling through the discharge plume is measured in seconds, not minutes.

**Q7: Does Dr. Young consider all factors relevant to the impact of the thermal plume?**

A7: No. Dr. Young fails to recognize the limited potential for impacts from the plume due to its buoyant nature and its overall, limited spatial aspect. Because the plume is warmer than ambient waters, it is also more buoyant than the surrounding water. Additionally, based on both the CORMIX model discussed in the FEIS and the thermal study conducted by SNC (*See* Exhibit SNC000011), the plume is limited in areal size relative to the channel width overall. The buoyant nature of the plume restricts it to the upper portions of the water column over a relatively short distance – a distance where the warmest portion of the plume occurs as it initially dissipates heat. Consequently, the majority of the water column in the overall footprint of the plume, and thus the majority of larval drift, is influenced less by plume temperature. Early information provided in the FEIS further supports this limiting effect, in that at least one important species of consideration, American shad egg distribution, is expected to be concentrated along the bottom of the water column. FEIS at 2-81. Thus, it would drift under the largest, warmest portion of the plume characterized by temperatures consistent with the <5°F over ambient temperature stipulated in Plant Vogtle’s discharge permit.

**Q8: Are each of the exhibits referenced in this rebuttal testimony true, accurate and correct copies, and do they accurately portray the facts they purport to portray?**

A8: Yes.

**Q9: Does this conclude your testimony?**

A9: Yes.

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(Early Site Permit for Vogtle ESP Site)	)	February 6, 2009

AFFIDAVIT OF ANTHONY R. DODD CONCERNING SOUTHERN NUCLEAR'S  
REBUTTAL TESTIMONY ON ENVIRONMENTAL CONTENTION 1.2

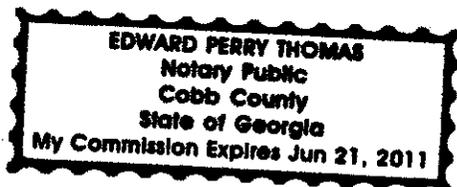
I, Anthony R. Dodd, do hereby state as follows:

1. I have read the foregoing prepared rebuttal testimony regarding environmental matters at the Plant Vogtle Site.
2. I attest to the accuracy of those statements, support them as my own, and endorse their introduction into the record of this proceeding. I declare under penalty of perjury that those statements, and my statements in this affidavit, are true and correct to the best of my knowledge, information and belief.

  
Anthony R. Dodd

EA  
Subscribed and sworn to before me  
this 4<sup>th</sup> day of February, 2009.

  
Notary Public



UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

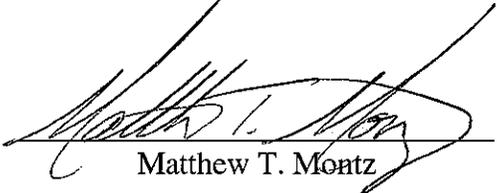
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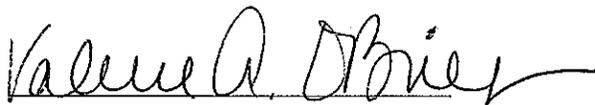
AFFIDAVIT OF MATTHEW T. MONTZ CONCERNING SOUTHERN NUCLEAR'S  
REBUTTAL TESTIMONY ON ENVIRONMENTAL CONTENTION 1.2

I, Matthew T. Montz, do hereby state as follows:

1. I have read the foregoing prepared rebuttal testimony regarding environmental matters at the Plant Vogtle Site.
2. I attest to the accuracy of those statements, support them as my own, and endorse their introduction into the record of this proceeding. I declare under penalty of perjury that those statements, and my statements in this affidavit, are true and correct to the best of my knowledge, information and belief.

  
Matthew T. Montz

Subscribed and sworn to before me  
this 3<sup>rd</sup> day of February, 2009.

  
Valerie A. O'Brien  
Notary Public

NOTARY PUBLIC STATE OF ALABAMA AT LARGE  
MY COMMISSION EXPIRES: Apr 28, 2011  
BONDED THRU NOTARY PUBLIC UNDERWRITERS