

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD PANEL

Before the Licensing Board:

G. Paul Bollwerk, III, Chairman
Nicholas G. Trikouros
Dr. James Jackson

In the Matter of

SOUTHERN NUCLEAR OPERATING CO.

(Early Site Permit for Vogtle ESP Site)

Docket No. 52-011-ESP

ASLBP No. 07-850-01-ESP-BD01

Originally Filed: January 9, 2009

Refiled: February 2, 2009

REVISED PRE-FILED DIRECT TESTIMONY OF SHAWN P. YOUNG
IN SUPPORT OF EC 6.0

Q1: Please state your name and current business address.

A1: My name is Shawn Paul Young, and my current business address is 103A Natural Resources Building, University of Idaho, Moscow, ID 83844.

Q2: What is your educational background?

A2: I received a B.S. degree in Environmental Studies from Northland College (Ashland, WI) in 1996. I received a M.S. degree in Aquaculture, Fisheries, and Wildlife Biology (Fisheries emphasis) from Clemson University (Clemson, SC) in 2001. I received a Ph.D. in Fisheries and Wildlife Biology (Fisheries emphasis) from Clemson University (Clemson, SC) in 2005.

Q3: For whom do you work and in what capacity?

A3: I am currently Research Faculty of Fisheries Biology at the University of Idaho (Moscow, ID). I also currently hold Adjunct Faculty status at Clemson University (Clemson, SC).

Q4: What is your professional background?

A4: A copy of my curriculum vitae has been provided to the Board and other parties previously and is attached to this testimony as JTI000042. Briefly, I have eleven years of experience researching the effects of human activities on fisheries and aquatic ecosystems, including six years of experience studying fisheries in the Savannah River Basin. In addition to the faculty positions I currently hold, I was previously a visiting Assistant Professor of Fisheries Biology at Purdue University.

Q5: Have you published or presented in the fields of fisheries and aquatic ecology?

A5: Yes; I have in publication, in press, and in review twenty-seven peer-reviewed articles relevant to fisheries and aquatic ecology. I have presented scientific presentations at numerous professional meetings, academic seminars, and citizen fishing association functions.

Q6: Have you testified as an expert previously in any jurisdiction or proceeding?

A6: Yes; I have been recognized as an expert in fisheries and aquatic ecology. I provided scientific review and affidavit opinion on the potential environmental impacts of nuclear expansion on the North Anna/Pamunkey River (VA) and Tennessee River (AL). I am currently involved in fisheries issues pertaining to the Federal Energy Regulatory Commission (“FERC”) re-licensing of Tillery Dam on the Yadkin-Pee Dee River (NC). Also, I provided review on a draft petition to designate critical habitat for the endangered Goldline Darter and Blue Shiner.

Q7: Do you have a written summary of your education, employment, experience and background, and papers and presentations you have made over your career?

A7: The copy of my curriculum vitae attached as JTI000042. to this testimony supplies such a summary.

Q8: What materials have you reviewed and actions have you taken in preparation for your testimony?

A8: I am familiar with the application of Southern Nuclear Operating Company (“SNC”) for an Early Site Permit (“ESP”) at the Vogtle Electric Generating Plant (“VEGP”) site. I have reviewed excerpts of the Final Environmental Impact Statement (“FEIS”) prepared by the staff of the Nuclear Regulatory Commission (“NRC”), including those sections describing water intake, water consumption, and thermal discharge into the Savannah River associated with the proposed additional nuclear power generating units (“Units 3 and 4”), the cumulative impacts of Units 3 and 4 operation, and the subsequent potential impacts of Units 3 and 4 on the fish assemblage of the Savannah River, together with related documents submitted in this matter.

Q9: Have you given affidavits or declarations in support of or in connection with any of Joint Intervenors’ contentions in this ESP proceeding?

A9: Yes, I submitted a declaration in support of the petition to intervene in December 11, 2006. (JTI0000023). I submitted an affidavit in opposition to SNC’s motion for summary disposition of EC 1.2 on November 13, 2007. (JTI0000003). Also I submitted a declaration in support of admission of contention EC6.0 on September 22, 2008. (JTI0000005)

Q10: What are the topics of your testimony?

A10: I will testify on one topic to a reasonable degree of scientific certainty. I will testify on the deficiencies, in data, quantitative analysis, field studies, and logic, of the FEIS conclusions regarding the impacts of the proposed dredging required for construction of Units 3 and 4 on the aquatic species located in the Middle, Lower, and estuarine Savannah River. My testimony will support Environmental Contention 6.0, which provides that the FEIS fails to adequately analyze

the cumulative impacts of dredging the Savannah River federal navigation channel and water flow regulation from upstream reservoirs.

Dredging

Q.11: Is it likely that the proposed dredging of the federal navigation channel required for construction of the New Units may impact the aquatic species located in the Middle, Lower, and estuarine Savannah River?

A.11: Yes. It is likely that the proposed dredging may impact the aquatic species located in the Middle, Lower, and estuarine Savannah River.

Q.12: What are the potential impacts of the proposed dredging of the federal navigation channel required for construction of the New Units on the aquatic species located in the Middle, Lower, and estuarine Savannah River?

A.12: Such dredging may (i) disrupt food web dynamics, affecting the aquatic species located in the Middle, Lower, and estuarine Savannah River, including the endangered shortnose sturgeon (JTI000026 (Shortnose Sturgeon Recovery Team 1998)) and rare robust redhorse (which are benthic feeders), and (ii) affect spawning success of some of the aquatic species located in the Middle, Lower, and estuarine Savannah River, including the striped bass. In fact, previous dredging activities have been cited as a cause for the decline of numerous Savannah River fish (JTI000027 (Duncan et al. 2003)) such as Atlantic sturgeon (NRC000025 (Atlantic Sturgeon Review Team 2007)). Dredging may also degrade chemical aspects of water quality and re-suspend contaminants, which contaminants may then in turn be bioaccumulated by mussels and other organisms (JTI000029 (Bellas et al. 2007)). Further, previous dredging has been identified as a major cause for freshwater mussel decline (JTI000017 (Ricciardi and Rasmussen 1999)). Dredging destroys benthic habitat needed by mussels, and mussels may be killed directly by

being suffocated or buried in dredging spoils. In addition, if dredging causes fish hosts of the mussels' glochidial life stage to vacate co-inhabited areas, mussel reproduction will be negatively impacted by the disruption in the commensalistic relationship. The FEIS mentions the potential for benthic organism (i.e. the freshwater mussel) relocation, yet surprisingly provides no detail concerning this proposal. Relocations of freshwater mussels have had variable success – with some relocation attempts resulting in 100% mortality.

Q.13: Does the FEIS contain sufficient information to adequately assess and analyze the impacts of the construction of the New Units and operation of the VEGP (including the New Units) on the freshwater mussels?

A.13: No. The FEIS does not contain sufficient information to adequately assess and analyze the impacts of the construction of the New Units and operation of the VEGP (including the New Units) on these freshwater mussels. With the large-scale dredging, a thorough freshwater mussel survey for the entire affected area should be completed. The last survey conducted by the U.S. Fish and Wildlife Service in 2006 (NRC000001 (FEIS, 2-76)) was incomplete, as it failed to survey a forty-four mile segment around VEGP. Further, because each mussel species has specific fish hosts and habitat requirements, a thorough discussion of each mussel species' life history is also required.

Q.14: Does the FEIS provide sufficient data and analysis regarding the federal navigation channel dredging impacts on the aquatic species located in the Middle, Lower, and estuarine Savannah River?

A.14: No. Although the proposed dredging required for construction of the New Units will likely have very large and severely negative impacts on the aquatic species located in the Middle, Lower, and estuarine Savannah River, these impacts are insufficiently assessed and analyzed.

For example, the FEIS lacks sufficient data and analysis of the impacts on the freshwater mussels, shortnose sturgeon, Atlantic sturgeon, striped bass, robust redhorse and other catostomids, catfish species, and numerous benthic organisms, which may be affected by the dredging.

In accordance with 28 U.S.C. § 1746, I state under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on January 9, 2009.

Executed in Accord with 10 C.F.R. 2.304(d)
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