

07 LC 25 4926ER

Senate Resolution 598

By: Senator Thomas of the 2nd

A RESOLUTION

Creating the Joint Nuclear Plant Vogtle Environmental Justice Issues Study Committee; and for other purposes.

WHEREAS, Plant Vogtle consists of two nuclear reactors that have been operating since 1987 and 1989 and is located along the Savannah River in Burke County near Waynesboro, Georgia, approximately 26 miles southeast of Augusta; and

WHEREAS, the community surrounding Plant Vogtle is home to an exceptionally high percentage of both African American and low-income households; and

WHEREAS, four counties within 40 miles of Plant Vogtle have areas that are persistently distressed and suffer from unemployment or poverty; and

WHEREAS, any effect on the community surrounding Plant Vogtle as a whole results in a disproportionately high impact on both minority and low-income households; and

WHEREAS, the federal government requires emergency evacuation procedures for all nuclear power reactors, and the Hurricane Katrina disaster revealed that low-income and minority populations are particularly vulnerable in emergency evacuation situations; and

WHEREAS, in the Environmental Impact Statement for the proposed Mixed Oxide Fuel

Fabrication Facility at the Savannah River Site, the U.S. Nuclear Regulatory Commission acknowledged that a significant accident would most likely disproportionately affect minority or low-income communities due to the demographics and prevailing wind in the area; Plant Vogtle is adjacent to the Savannah River Site and, therefore, a significant accident at the site could have a similar disparate impact on these low-income and minority communities; and

WHEREAS, radiological monitoring programs reveal that Savannah River fish, particularly resident game fish species, are contaminated with cesium 137. Large mouth bass are contaminated with cesium 137 and are a target species of subsistence fishermen on the Savannah River. Recreationally important fish species in the vicinity of Plant Vogtle routinely have been found to have detectable levels of cesium 137 in the edible flesh of collected samples; and

WHEREAS, African American and low-income individuals are at specific heightened risk from hazardous materials in the Savannah River, and although individuals from all socioeconomic backgrounds engage in fishing in the area, African Americans in particular commonly engage in subsistence fishing along the Savannah River and have a higher than average consumption of fish, frequently surpassing allowable contaminated fish consumption levels.

NOW, THEREFORE, BE IT RESOLVED BY THE GENERAL ASSEMBLY OF GEORGIA that there is created the Joint Nuclear Plant Vogtle Environmental Justice Issues Study Committee to study the negative impacts on the surrounding community of Plant Vogtle, with added focus on low-income and minority populations, and recommend how these impacts can be alleviated. The committee shall be composed of three members of the Senate to be appointed by the President of the Senate and seven members of the House of Representatives to be appointed by the Speaker of the House. At least half of such total appointed committee members shall be African American and at least half of such total appointed committee members shall be located in counties within 100 miles of Plant Vogtle. The President of the

Senate and Speaker of the House shall each designate a member of the committee as cochairperson of the committee. The cochairpersons shall call all meetings of the committee.

BE IT FURTHER RESOLVED that the committee shall undertake a study of the conditions, needs, and issues mentioned above or related thereto and recommend any action or legislation which the committee deems necessary or appropriate. The committee may conduct such meetings at such places and at such times as it may deem necessary or convenient to enable it to exercise fully and effectively its powers, perform its duties, and accomplish the objectives and purposes of this resolution. The members of the committee shall receive the allowances provided for in Code Section 28-1-8 of the Official Code of Georgia Annotated. The allowances authorized by this resolution shall not be received by any member of the committee for more than five days unless additional days are authorized. The funds necessary to carry out the provisions of this resolution shall come from the funds appropriated to the Senate and the House of Representatives. In the event the committee makes a report of its findings and recommendations, with suggestions for proposed legislation, if any, such report shall be made on or before the convening of the 2008 session of the General Assembly, at which time the committee shall stand abolished.

This information is provided in electronic format by the Georgia general Assembly as a public service. This information does not constitute an official record of the General Assembly and no warranty or guarantee of any kind is provided.

Blue Ridge Environmental Defense League

www.BREDL.org PO Box 88 Glendale Springs, North Carolina 28629 BREDL@skybest.com (336) 982-2691

October xx, 2007

~~DRAFT—DRAFT—DRAFT—DRAFT—DRAFT—DRAFT—DRAFT—DRAFT~~

Chief, Rulemaking, Directives, and Editing Branch

Division of Administrative Services

Office of Administration, Mailstop T-6D59

U.S. Nuclear Regulatory Commission

Washington, DC 20555-0001

**Re: Draft NUREG-1872, August 2007, Environmental Impact Statement
Plant Vogtle Early Site Permit, Docket No. 52-011
FR 52586, Vol. 72 No. 178, 14 September 2007**

The DEIS dismisses the mounting evidence of negative impacts on the health of people living around nuclear plants by citing a lone study done by the National Cancer Institute in 1990 entitled, "Cancer in Populations Living Near Nuclear Facilities." Attached to these remarks are a series of studies done since then which indicate that there are negative impacts on people living near nuclear power plants.

A study is entitled *Health Risks of Adding New Reactors to the Vogtle Nuclear Plant* by Joseph Mangano, MPH found: 1) routine releases of airborne radioactive pollution from plant Vogtle, 2) large increases in radioactivity downstream from the plant, and 3) a 58.5% increase in cancer deaths in the eleven county area after the reactors began operation. The study centered on Georgia and South Carolina counties within a 40 mile radius of Vogtle. Adding two new reactors could potentially double the total.

The assessment of radiological releases to the public is fatally flawed

According to Southern's calculations which form the basis for the Commission's EIS, radiation emissions are within legal limits. Section 5.9.3.1 of the DEIS states that "Gaseous and liquid effluents from the VEGP site are below the Appendix I design objectives (Southern 2007a): The cumulative effects of both the current operating units and the two new units are also within Appendix I design objectives."

Federal regulations governing NRC site permit applications submitted after January 10, 1997 (10 CFR 100.1) require that radiation dose be "acceptably low" at proposed nuclear power stations. Further, federal site permit regulations state that nuclear reactor design, construction and operation are the principal factors in the determination of public health and safety.

SNC proposes to install two Westinghouse AP-1000 pressurized water reactors at the Vogtle plant site. [<http://www.ap1000.westinghousenuclear.com/A4.asp>]. However, no AP-1000 has ever been built and Westinghouse makes a further claim, "no demonstration

*Printed on 100% post-consumer, recycled paper processed without chlorine
using 43% less energy, 49% less water and creating 36% fewer greenhouse gas emissions than non-recycled paper.*

DRAFT—DRAFT—DRAFT—DRAFT—DRAFT—DRAFT—DRAFT—DRAFT

plant is required.” This is a remarkable assertion for a company seeking to build its “first Generation III+ reactor” in Burke County, Georgia. The consequence of this is that one cannot verify the impacts of the new reactor. This is a failure of omission which prevents the NRC, the petitioners, and the general public from properly assessing the impact of new reactors at Vogtle and ascertaining the accuracy of SNC’s analyses.

SNC’s short term and long term diffusion estimates outlined in the ESP Application Sections 2.7.5 and 2.7.6 utilize gaussian dispersion, straight-line models for the estimation of airborne radionuclide pollution impacts. These models are not sufficient to predict actual impacts from an accident or other event causing the release of radioactive materials into the atmosphere. The computer models are not conservative because they assume unrealistic conditions. Newer, more sophisticated models have been developed since 1982 which would allow a better estimate and would comply with regulations. The NRC must independently evaluate the ESP application for atmospheric dispersion characteristics to prove that radioactive air emissions from routine operations and accidents will not pose a health threat to the surrounding community (10 CFR §100.21)

The site permit regulation which must be adhered to is predicated on the type of nuclear power unit, but since SNC has selected an experimental reactor, the power unit’s characteristics are unverified. SNC’s ESP application for Vogtle contains no safety assessment of the proposed new reactor; therefore, NRC cannot demonstrate a low probability of accidental releases of fission products in its draft EIS.

The ESP process itself encourages judgment which is inherently flawed. The Supreme Court addressed a similar two-step regulatory process in 1961 regarding the Atomic Energy Commission’s permit for the Fermi reactor. Though the court approved the process, Justices William O. Douglas and Hugo Black dissented in writing: “When millions have been invested, the momentum is on the side of the applicant, not on the side of the public.” Douglas and Black further criticized the Commission’s approval of the reactor permit before resolution of safety issues as “a lighthearted approach to the most awesome, the most deadly, the most dangerous process ever created.” [Power Reactor Development Company v. International Union of Electrical, Radio and Machine Workers, AFL-CIO et al, 367 US 396 (1961)] The Supreme Court Justices’ dissent was prescient: Five years later an accident at the Fermi reactor caused an emergency shut-down, and by 1972 the reactor was shut down for good. The term “China Syndrome” was coined to describe what engineers feared following the partial melt-down at Fermi.

A confounding factor in the assessment of Vogtle’s impact is the proximity of the nuclear power station to the Department of Energy’s Savannah River Site. Vogtle and SRS emissions intermingle, making independent assessment challenging. The principal contractor at the Savannah River Site publishes annual reports which contain the following data.

Tritium Transport in Streams

Year	SRS emissions	Vogtle emissions	Total curies
------	---------------	------------------	--------------

DRAFT—DRAFT—DRAFT—DRAFT—DRAFT—DRAFT—DRAFT—DRAFT

2003	4010	1900	5910
2004	2430	1200	3630
2005	2620	1860	4480

[Westinghouse Savannah River Company Environmental Reports: 2003, 2004, 2005, WSRC-TR-2004-00015, WSRC-TR-2005-00005, WSRC-TR-2006-00007]

The discharge of Tritium (Hydrogen-3, or H-3) in the form of radioactive water pollutes the Savannah River all the way to the ocean. Downstream drinking water wells are contaminated. Does the pollution come from SRS or Vogtle? The answer is "yes." The next section details the radiation dose.

Radiation Dose to the Public

The Georgia Department of Natural Resources Environmental Protection Division publishes reports on its radiation monitoring program. The program tests samples of air, surface water, groundwater, rain, sediments, fish, soil, vegetation, milk and agricultural crops near facilities which are known to emit ionizing radiation and compares these data to background levels. Below are the EPD test results for Vogtle from 1995 to 2002 which indicate the nuclear power plant is the source of a variety of radionuclides which contaminate sediment, river water, fish and drinking water. The conclusions in column four are taken verbatim from the EPD report. Despite apparent attempts to minimize the impact of their own findings, the state's test results reveal striking elevations of harmful radionuclides in several media expressed in multiples above background level radiation (Bkg). The test results range from 2 times to 50 times above background level (2X to 50X Bkg). Elevated radiation levels are also expressed in picocuries per liter or picocuries per kilogram (pCi/L or pCi/Kg, respectively), depending on the sample type.

Georgia Environmental Radiation Surveillance Reports 1995 – 2002

Year	Sample type	Radionuclides	Conclusions
1995-1996	sediment	Co-60, Co-58	Traces of Co-60 in sediment were measured at several SRS outfalls and at Plant Vogtle, which indicate that the Co-60 originated from several facilities. Traces of Co-58 in sediment were also measured near the Vogtle outfall. No measurable impact to drinking water or fish was detected.
1997-1999	River water downstream	H-3	Elevated tritium (5X to 11X Bkg) was detected in river water downstream at US301 bridge. H-3 concentrations ranged from 1000 pCi/L (average) to 2100 pCi/L (maximum). Based on periodic effluent reports, ~90% of the H-3 is believed to be from SRS, with ~10% from Vogtle. Although elevated, all results were equivalent to less than 11% of the Drinking Water Standard. Therefore, the H-3 did not pose a significant risk.
1997-1999	Drinking water	H-3	Elevated tritium (5X to 8X Bkg) was detected in downstream drinking water near Savannah, with concentrations ranging from 900 pCi/L (average) to 1700 pCi/L (maximum). Based on periodic effluent reports, ~90% of the H-3 is believed to be from SRS, with ~10% from Vogtle. Although elevated, all results were

~~DRAFT—DRAFT—DRAFT—DRAFT—DRAFT—DRAFT—DRAFT—DRAFT—DRAFT~~

			equivalent to less than 9% of the Drinking Waster Standard and, therefore, the H-3 did not pose a significant risk.
1997-1999	Sediment	Co-60 Cs-137	Traces of Co-60 (approximately 20X Bkg) in sediment were measured at the Vogtle outfall (and at several SRS outfalls as well), indicating that the Co-60 originated from SRS and Vogtle. Concentrations ranged from 100 to 300 pCi/Kg. Co-60 was also detected up to 100 miles downstream (from SRS and Vogtle). No measurable impact to drinking water or fish was detected. A trace of Cs-137 (approximately 2X Bkg) was detected at the Vogtle outfall. Concentrations ranged from 160 to 360 pCi/Kg. Relative to SRS's Cs-137 concentrations (20X to 50X Bkg), Vogtle's Cs-137 had no significant impact, and it could even be partially attributable to Cs-137 discharged by SRS upstream of Vogtle.
1997-1999	River water outfall	H-3	Elevated tritium (7X to 17X Bkg) in river water was detected below the Vogtle outfall. H-3 concentrations ranged from 1400 (average) to 3500 pCi/L. This is equivalent to 7%-18% of the reporting level, based on use as a drinking water supply (unlikely). A portion of the H-3 detected at Vogtle may have come from SRS, since 2 SRS outfalls are located upstream of Vogtle.
1997-1999	Drinking water	H-3	Elevated tritium (5X to 8X Bkg) was detected in downstream drinking water near Savannah, with concentrations ranging from 900 pCi/L (average) to 1700 pCi/L (maximum). Based on periodic effluent reports, ~90% of the H-3 is believed to be from SRS, with ~10% from Vogtle. Although elevated, all results were equivalent to less than 9% of the Drinking Waster Standard and, therefore, the H-3 did not pose a significant risk.
1997-1999	Fish	Cs-137 (from SRS)	Elevated concentrations of Cs-137 in fish filets (15X to 45X Bkg) were detected downstream of Vogtle. Most of the Cs-137 in fish near Vogtle is attributed to SRS operations, as Four Mile Creek (a contaminated SRS outfall) is located just downstream of Vogtle. Concentrations ranged from 230 (average) to 870 pCi/Kg, with the maximum equivalent to 9% of the reporting level of 10 mRem/Tr CEDE. The average risk of cancer from eating Cs-137 in fish downstream of Vogtle was 1-in-1,000,000 for 30-year exposure.
1997-1999	fish	H-3	Elevated concentrations of H-3 in fish filets (7X to 17X Bkg) were detected downstream of Vogtle. A significant portion of the H-3 may come from SRS (upstream and from FMC). Concentrations ranged from 1000 (average) to 2500 pCi/Kg, with the maximum equivalent to 0.04% of the reporting level of 10 mRem/Yr CEDE. The average risk of cancer from eating H-3 in fish adjacent to SRS was 1-in-100,000,000 for 30 year exposure.
2000-2002	River Water Outfall	Tritium (H-3)	Elevated tritium (up to 50X Bkg) in river water was detected below the Vogtle outfall. H-3 concentrations averaged 2,200 pCi/l (11% of MCL), with the highest concentration (11,000 pCi/l) associated with a chemistry problem in one of the reactors. This required a temporary shutdown and system cleanup near the end of 2002.
2000-2002	River Water Downstream of SRS and VEGP at US301	Tritium (H-3)	Elevated tritium (up to 16X Bkg) was detected in river water downstream of SRS and VEGP at the US-301 Bridge. H-3 concentrations averaged 1000 pCi/l (5% MCL), with a maximum of 3,300 pCi/l (16% MCL). Approximately 90% of the H-3 is from SRS, with around 10% from Vogtle, based on available effluent reports. H-

DRAFT—DRAFT—DRAFT—DRAFT—DRAFT—DRAFT—DRAFT—DRAFT

			3 did not pose a significant risk based on measured concentrations.
2000-2002	Drinking Water	Tritium (H-3)	Elevated concentrations of tritium (up to 11X Bkg) were detected in downstream drinking water from the Savannah I&D Water Plant. Concentrations averaged 800 pCi/l (4% MCL), with a maximum of 2,300 pCi/l (11% MCL). As noted above, most (~ 90%) of this H-3 is from SRS. H-3 did not pose a significant risk based on measured concentrations.
2000-2002	Sediment	Cs-137	Elevated Cs-137 (approximately 2X Bkg) was detected at Vogtle one time, but the average concentration was statistically indistinguishable from the control concentration.
2000-2002	Sediment	Co-60	Elevated concentrations of Co-60 in sediment were measured at SRS - Steel Creek (up to 14X Bkg) and below Plant Vogtle (up to 15X Bkg), suggesting that Co-60 originated from both SRS and Vogtle. Co-60 was also detected up to 100 miles downstream (up to 22X Bkg). Co-60 was not detected in drinking water or fish samples, indicating negligible impact to human populations.
2000-2002	Fish	H-3 and Cs-137	Elevated concentrations of Cs-137 and H-3 were also detected in fish samples near Plant Vogtle, which is located adjacent to SRS and Four-Mile Creek. The majority of Cs-137 activity detected in Vogtle fish is likely to be SRS-related, based on the upstream control samples. Vogtle-related activity was equivalent to less than 3% of the aquatic-pathway reporting level. The 30-year radiological cancer morbidity risk for fish consumed from this area was estimated to be between 1 and 2 out of 1,000,000.

[Environmental Radiation Surveillance Reports, 1995-1996, 1997-1999 and 2000-2002, published by the Georgia Department of Natural Resources Environmental Protection Division]

Negative Health Impacts in Burke County

Recent studies of morbidity and mortality statistics compiled by the U.S. Centers for Disease Control and Prevention compare death rates before and after Plant Vogtle's two reactors went online. Vogtle Unit 1 began commercial operation in May 1987; Unit 2 in May 1989. Each pressurized water reactor has a maximum generating capacity of 1215 megawatts electric power (MWe).

One study compared cancer deaths from 1982-1990 with those occurring from 1991 to 2002. During that period, the death rate per 100,000 population from all cancers in Burke County rose 24.2 percent, while the death rate fell 1.4 percent for all of Georgia. [Study ties fatalities to nuclear power site, The Augusta Chronicle, July 30, 2005]

A second study examined deaths among infants younger than 1 year old in Burke County. The findings, which compared the 1985-87 period with 1988-90—before and after criticality, indicate a 70.1 percent increase in Burke County infant deaths. The death rate per 100,000 population went from 13.71 to 23.31, reflecting an increase from 16 to 28 deaths. During the same period, the statewide rate across Georgia went from 12.63 deaths per 100,000 population to 12.41 for a decrease of 1.7 percent. [Study ties fatalities to nuclear power site, The Augusta Chronicle, July 30, 2005]

These studies focused on cancer and infant death rates. Death rate may be a more sensitive indicator of negative health impacts because of the long latency period associated with most cancers. Radiation affects the human immune system leading to

DRAFT—DRAFT—DRAFT—DRAFT—DRAFT—DRAFT—DRAFT—DRAFT

increased infant mortality from otherwise survivable infections. It also affects reproductive cells leading to more stillbirths.

It is important to state that the forgoing analysis lacks actual human radiation exposure data for Burke County residents which would link known morbidity and mortality rates to known Vogtle emissions. The EPD's surveillance is unusual; most federal and state agencies determine regulatory compliance via indirect means: source terms, risk factors and computer predictions. Nevertheless, what is undeniable is that the rise in negative health impacts is found in proximity to and contemporaneously with Vogtle plant operations. In other words, if these negative health effects in Burke County are not caused by the radioactive emissions from Vogtle, then what is causing them?

National Primary Drinking Water Regulations protect public health by limiting the levels of contaminants in public water supply systems; they are legally enforceable (40 CFR §141.15). The EPA's Primary standard for radionuclides covers alpha and beta particles and Radium and Uranium as follows:

National Primary Drinking Water Regulations for Radionuclides

Contaminant	MCLG ¹ (mg/L) ²	MCL or TT ¹ (mg/L) ²	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Alpha particles	none ² ----- zero	15 picocuries per Liter (pCi/L)	Increased risk of cancer	Erosion of natural deposits of certain minerals that are radioactive and may emit a form of radiation known as alpha radiation
Beta particles and photon emitters	none ² ----- zero	4 millirems per year	Increased risk of cancer	Decay of natural and man-made deposits of certain minerals that are radioactive and may emit forms of radiation known as photons and beta radiation
Radium 226 and Radium 228 (combined)	none ² ----- zero	5 pCi/L	Increased risk of cancer	Erosion of natural deposits
Uranium	Zero	30 ug/L as of 12/08/03	Increased risk of cancer, kidney toxicity	Erosion of natural deposits

¹ Maximum Contaminant Level (MCL) - The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technology and taking cost into consideration. MCLs are enforceable standards. Maximum Contaminant Level Goal (MCLG) - The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety and are non-enforceable public health goals. Maximum

~~DRAFT—DRAFT—DRAFT—DRAFT—DRAFT—DRAFT—DRAFT—DRAFT—DRAFT~~

Residual Disinfectant Level (MRDL) - The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants. Maximum Residual Disinfectant Level Goal (MRDLG) - The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants. Treatment Technique - A required process intended to reduce the level of a contaminant in drinking water.

² Units are in milligrams per liter (mg/L) unless otherwise noted. Milligrams per liter are equivalent to parts per million.

⁷ MCLGs were not established before the 1986 Amendments to the Safe Drinking Water Act. Therefore, there is no MCLG for this contaminant.

[<http://www.epa.gov/safewater/contaminants/index.html#rads>, downloaded 6 December 2006]

Credible experts say that the existing national standards for radionuclides in drinking water are not protective of public health. As can be seen from the EPD tests, if the Colorado state standard for tritium of 500 pCi/L had been applied in Georgia or South Carolina, the test result of 3500 pCi/L at the Vogtle outfall would have been over the limit by 600%.

Nuclear power plants discharge a significant amount of tritium as part of their routine operations; sometimes more is discharged as a result of mishaps and incidents. The current drinking water standard for tritium of 20,000 picocuries per liter does not take non-cancer effects of tritium, such as miscarriages, into account. Given the particular properties and non-cancer risks of tritium (when it is organically bound or in the form of tritiated water), I am of the opinion that the Nuclear Regulatory Commission has not been vigilant enough in trying to make reactor operators reduce their tritium discharges. It is noteworthy in this context that the surface water standard for tritium in the State of Colorado is 500 picocuries per liter, which is 40 times more stringent than the EPA drinking water standard. [Arjun Makhijani, Ph.D., *Statement on Tritium*, Institute for Energy and Environmental Research, 6 February 2006]

The Nuclear Regulatory Commission has the jurisdiction to require SNC to lower the dose of radioactive emissions at Vogtle (10 CFR § 20.1301) and meet a higher, truly protective emission standard.

Respectfully submitted,

Louis Zeller