BEFORE THE ADMINISTRATOR
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

In the matter of a
Part 70 Air Quality Operating Permit
Issued by Georgia Environmental Protection Division to
Vogtle Electric Generating Plant
Waynesboro, Georgia
Permit No. 4911-033-0030-V-02-3
AIRS No. 04-13-033-00030

August 10, 2010

THE BLUE RIDGE ENVIRONMENTAL DEFENSE LEAGUE'S PETITION TO THE ENVIRONMENTAL PROTECTION AGENCY TO OBJECT TO THE TITLE V AIR QUALITY PERMIT ISSUED TO VOGTLE ELECTRIC GENERATING PLANT BY THE GEORGIA DEPARTMENT OF NATURAL RESOURCES

The Blue Ridge Environmental Defense League ("BREDL") hereby petitions the United States Environmental Protection Agency to object to the amendment of the Title V permit[1] ("Permit") issued by the Georgia Department of Natural Resources Environmental Protection Division ("EPD") to Vogtle Electric Generating Plant ("Vogtle"). The grounds for this petition are set forth in the following: (1) Letter of April 6, 2010 by the Blue Ridge Environmental Defense League to James A. Capp, Chief, Air Protection Branch, Environmental Protection Division, Georgia Department of Natural Resources ("Exhibit 1") and (2) Oral remarks presented on April 6, 2010 at the EPD public hearing in Waynesboro, Georgia. Pursuant to the Clean Air Act § 505(b)(2), this petition is based on objections to the Permit which were raised during the public comment period provided by EPD.

[1] Permit No. 4911-033-0030-V-02-3

Background

On May 27, 2009, Southern Nuclear Operating Company submitted Georgia Air Quality Application No. 18986 for a major modification[2] of the Vogtle Electric Generating Plant for the purpose of adding 4 cooling towers and 13 diesel engines. On April 6, 2010, the Georgia Environmental Protection Division–Air Protection Branch held a hearing in Waynesboro, Georgia, to receive comments regarding the draft permit from members of the interested public. Members of the Blue Ridge Environmental Defense League testified at the hearing and submitted written comments. See Exhibit 1. In a letter dated June 11, 2010, the Georgia Department of Natural Resources informed Southern Nuclear Operating Company that the EPA's 45-day review period had expired and that "…Permit Amendment No. 4911-033-0030-V-02-3…for the construction and operation of equipment to support new nuclear Units 3 and 4 including cooling towers…is now final."

Basis

Under the federal Clean Air Act as amended in 1990 and implementing regulations, 42 U.S.C. 7401 et seq., a Title V/Part 70 permit must include sufficient periodic monitoring to assure compliance with applicable requirements including New Source Performance Standards and Prevention of Significant Deterioration. Part 70 mandates that Title V permits "assure compliance with all applicable requirements." 40 CFR § 70.6(a)(1). Further, the Administrator of EPA must object to the issuance of a proposed permit which is not in compliance with applicable requirements. 40 CFR § 70.8(c)(1). The 1990 Amendments to the Clean Air Act compel certain stationary sources of air pollution to obtain permits from state and local

[2] A modified source is "any physical change in…a stationary source which increases the amount of any air pollutant emitted by such source or which results in the emission of any air pollutant not previously emitted." Clean Air Act Section 111(a)(4)

authorities that identify all emission limits for the source and also include "monitoring ... requirements to assure compliance with the permit terms and conditions." 42 U.S.C. § 7661c(c).

Issue 1: The EPD Permit lacks practical enforceability

The EPD Permit is vague, omits required testing, monitoring, record keeping and reporting, and does not fully meet the requirements of 40 C.F.R §70.6(a).

The Permit approved by EPD allows the addition of two natural draft cooling towers for the Circulating Water System and two mechanical draft cooling towers for the Service Water System. The Permit Appendix incorrectly lists the Cooling Towers as "Insignificant Activities Based on Emission Levels." However, radionuclides are known to be emitted from nuclear power plant cooling towers. These emissions can take a variety of chemical and physical forms. A 2004 EPA report on fugitive emissions of radionuclides describes how cooling towers may release radioactive pollution.[3]

> Wet-cooling towers are heat-exchangers used to dissipate large heat loads from industrial processes. Water is used as the medium to transfer heat away from the coils that contain the process fluids. Under normal conditions, the two fluids never mix. In the event of a leak, however, the cooling fluid may become contaminated by the process fluid. Within the tower, some of the cooling fluid is drawn up as droplets by convection currents and released as drift droplets. The fine droplets are then carried downwind, and the larger droplets settle out of the air and deposit near the tower. Some towers are equipped with drift or mist eliminators to minimize such emissions.

The report characterizes these radionuclide emissions and points to a case-by-case determination for certain facilities:

> The emission of radioactivity from wet-cooling towers is further complicated by the possible speciation of radioactivity in the circulating water. For example, some radionuclides, such as uranium, cesium, iodine, etc., may chemically bind with minerals or chemical inhibitors, and would thus not be available for release through evaporation.

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[3] *Methods for Estimating Fugitive Air Emissions of Radionuclides from Diffuse Sources at DOE Facilities: Final Report*, Paragraph 5.1.2 "Wet-Cooling Towers," Prepared by Eastern Research Group for US Environmental Protection Agency, Office of Radiation and Indoor Air, Radiation Protection Division, Contract No. 63-10F-0036K, September 3, 2004

> Conversely, tritium and noble gases (e.g., xenon, krypton, argon, radon, etc.), may be most efficiently dispersed by cooling towers, since by design cooling towers work as very effective aerators, allowing enhanced evaporation or vaporization of [tritiated water]. Given these various considerations, estimating release rates for radionuclides from wet-cooling towers, either by mechanically-induced draft or natural draft, may have to be addressed on a case-by-case basis.

The Permit lists *inter alia* the following emission units: Circulating Water System Cooling Towers, Unit CWT1 and Unit CWT2, and two new Service Water System Cooling Towers, Unit SWS1 and Unit SWS2. The Permit cites applicable federal standards for prevention of significant deterioration, 40 CFR § 52.21, and corresponding permit conditions which state:

> 3.3.13 The Permittee shall construct and operate the Service water System Cooling Towers (Source Codes: SWS1 and SWS2) with a Drift Loss Rate of 0.005% or less. [40 CFR 52.21]
> 3.3.14 The Permittee shall construct and operate the Circulating Water Cooling Towers (Source Codes: CWT1 and CWT2) with a Drift Loss Rate of 0.0005% or less. [40 CFR 52.21]

The Environmental Protection Agency is obligated under 40 CFR Part 70 to ensure that adequate periodic monitoring is incorporated into Part 70 permits. In order for the permit to be practically enforceable, the monitoring and recordkeeping requirements for each emission limit in the permit must be clearly spelled out in the permit to provide all parties with adequate information about what recordkeeping and monitoring which the permittee is required to perform in order to demonstrate compliance with the emission limits in the Title V permit; in other words, "enforceable by the Administrator and citizens under the Act." 40 CFR 70.6 (b)(1).

However, the Permit has no specific requirements for testing, monitoring, record keeping or reporting for sources SWS1, SWS2, CWT1 or CWT2. Further, the Permit attaches no general testing, monitoring, record keeping or reporting requirements to these emission units. Therefore, the Permit lacks practical enforceability.

Issue 2: Permit Fails to Properly Limit Hazardous Air Pollutants

The permit issued by EPD does not comply with applicable requirements of the Clean Air Act; specifically, National Emission Standards for Hazardous Air Pollutants ("NESHAP").

Pursuant to the 1990 Clean Air Act Amendments, new sources of hazardous air pollutants, including radionuclides, are to be strictly regulated:

> The maximum degree of reduction in emissions that is deemed achievable for new sources in a category or subcategory shall not be less stringent than the emission control that is achieved in practice by the best controlled similar source, as determined by the Administrator.

Clean Air Act § 112(d)(3). This is the Maximum Achievable Control Technology (MACT) standard. These provisions comprise a minimum standard, a "MACT floor" below which neither the EPA nor a permitting authority may allow a new facility to operate. MACT standards differ from BACT, best available control technology, in important ways:

> Emissions standards promulgated under this subsection and applicable to new or existing sources of hazardous air pollutants shall require the maximum degree of reduction in emissions of the hazardous air pollutants subject to this section (including a prohibition on such emissions, where achievable) that the Administrator, taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements, determines is achievable for new or existing sources [emphasis added]

Clean Air Act § 112(d)(2). Air pollution sources subject to Part 70 operating permit rule requirements are determined by the Clean Air Act.[4] Section 112(b) of the Act includes radioactive materials (CAS No. 1165) as hazardous air pollutants and imposes health-based emission standards. EPA classifies all radionuclides as known human cancer causing agents (Group A carcinogens).[5] Radioactive emissions of particular concern include strontium-90 and cesium-137, both having thirty-year-plus half-lives, and iodine-131, having a short half-life of

[4] Clean Air Act §502(a) and 40 CFR 70.3
[5] Radionuclide Carcinogenicity Slope Factors: HEAST, USEPA, http://www.epa.gov/rpdweb00/heast/index.html

eight days but known to cause thyroid cancer. In addition to being highly radioactive, cesium-137 is mistaken for potassium by living organisms. This means that it is passed on up the food chain and bioaccumulated by that process. Strontium-90 mimics the properties of calcium and is deposited in bones where it may either cause cancer or damage bone marrow cells. Tritium, radioactive hydrogen, has a half-life of 12.3 years and combined with oxygen becomes water. Tritium is hazardous if inhaled and can be absorbed through pores in the skin, leading to cell damage and an increased risk of cancer. The Permit application states that the Circulating Water Cooling Towers may emit up to 63 tons of particulates per year.

Title III of the Act directs regulatory agencies to assess residual risk after the implementation of the initial standards and impose tighter standards to protect public health. For example, EPA's Maximum Contaminant Level (MCL) from man-made radionuclides in drinking water is 4 millirem per year. The concentration of tritium which is assumed to yield 4 millirem per year is 20,000 picocuries per liter (pCi/l).[6]

However, no MACT has been issued for radionuclides. Further, although emission rates from the cooling towers and other sources are quantified, the millirem standard for maximum allowable dosage to the public is an ambient standard, not an emission limit. Without ambient measurements, EPD cannot assure that emissions of radionuclides are below 10 millirem per year to any member of the public as required by law. At present, EPA cannot assure that Plant Vogtle will meet NESHAP radionuclide emissions limits.

Although Clean Air Act regulations related to nuclear power plants are delegated to the Nuclear Regulatory Commission, NRC-licensed facilities must nevertheless meet requirements of the Clean Air Act which limit radionuclide emissions to the atmosphere. Federal regulations limit maximum individual exposure to 10 millirem per year from airborne emissions that result

[6] EPA Facts About Tritium, July 2002, http://www.epa.gov/superfund/health/contaminants/radiation/pdfs/tritium.pdf

in exposure through any environmental pathway. 10 CFR § 50 Appx. I. This translates into a risk of 5.6 excess fatal cancers/10,000 people. BEIR V, Table 4-2, pp. 172-173.

The Environmental Protection Agency designated radionuclides (radioactive atoms which emit ionizing radiation) as a hazardous air pollutant pursuant to Section 112 of the Act, 42 U.S.C. 7412. See 44 F.R. 76738 (December 27, 1979). Such a standard must be established at a level that the Administrator determines "provides an ample margin of safety to protect the public health from such hazardous air pollutant." 42 U.S.C. 7412(b) (1)(B).

EPA's delegation of authority does not end the agency's authority or responsibilities. In *US v. Chevron*, EPA reserved to itself the power to continue enforcement of the Clean Air Act where it saw fit, despite the absence of or different action on the part of a state agency. Clean Air Act, §§ 101 et seq., 111(c)(2), 112(d)(2), as amended, 42 U.S.C.A. §§ 7401 et seq., 7411(c)(2), 7412(d)(2). U.S. v. Chevron, U.S.A. Inc., 757 F.Supp. 512, E.D.Pa.,1990. Notwithstanding the actions of the NRC or the EPD regarding radioactive emissions from cooling towers, the EPA retains the ability and the duty to ensure the Act is enforced.

For example, Method 114 is a test method for radionuclide emissions from stationary sources. As an alternative to atmospheric dispersion models, federal regulations permit the use of environmental measurements at critical receptor locations to demonstrate compliance with applicable standards. 40 CFR § 61.93(b)(5).

Issue 3: Permit Fails to Protect Public Health

The Permit's failure to properly limit radionuclides puts residents at risk of higher levels of morbidity and mortality from low level radiation.

During oral remarks to the April 6, 2010 public hearing in Waynesboro, Rev. Claude Howard told the hearing officer that he opposed the expansion of Plant Vogtle and that cancer

has risen since Vogtle went into operation. Rev. Howard lives 6 miles from Vogtle. Janet Marsh requested that a cumulative impact assessment of Burke County be done because of the high rate of cancer incidence and mortality. Exhibit 1 lists the known annual radioactive air emissions from Vogtle.

In the technical literature there are methodologies and models for calculating nuclear reactor cooling water systems' radionuclide emissions to the atmosphere. The following is an excerpt from a study done by Westinghouse Savannah River Company:[7]

> During and following a process water leak, the radionuclide transport model determines the time-dependent release rates of radionuclide from the cooling water system to the environment via evaporation to the atmosphere and blow-down to the Savannah River.

The Westinghouse study was one of a series in a Liquid Pathway Activity System which also considered radionuclides in process water and river water.

The Indian Point nuclear generating units provide a second example of potential radioactive releases from civilian Westinghouse pressurized water reactors. In February 2000, a steam generator tube in Unit 2 ruptured, causing a leak of 90 gallons per minute to the secondary side. The leak tripped the unit, causing reactor shut down. However, the leak continued despite shut-down, causing the reactor operator to vent radioactive water to the atmosphere. Prior to the rupture, the permitted leakage rate of radioactive water was 3 gallons per day, over one thousand gallons per year.[8] Two phenomena are at work here: Accidental releases and routine releases.

Service Water Systems and their associated cooling towers, such as EPD Permit Units SWS1 and SWS2 at Vogtle, can and do release radionuclides to the environment. The problems

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[7] *A Model for Radionuclide Transport in the Cooling Water System*, S.D. Kahook, Savannah River Technology Center, WSRC-TR-92-261, August 1992

[8] "The Steam Generator Tube Rupture at Indian Point," The Nuclear Tourist, http://nucleartourist.com/events/sg_tube.htm

engendered by the loss of essential service water (ESW) are detailed in NRC guidance documents: [9]

> At each plant, the ESW system supplies cooling water to transfer heat from various safety-related and non-safety-related systems and equipment to the ultimate heat sink. The ESW system is needed in every phase of plant operations and, under accident conditions, supplies adequate cooling water to systems and components that are important to safe plant shutdown or to mitigate the consequences of the accident. Under normal operating conditions, the ESW system provides component and room cooling (mainly via the component cooling water system). During shutdowns, it also ensures that the residual heat is removed from the reactor core. The ESW system may also supply makeup water to fire protection systems, cooling towers, and water treatment systems at a plant.

For pressurized water reactors, the radioactive dose estimates and the risk to the public were estimated by the NRC to be 12,000 person-rem per reactor. NUREG-0933.

Incredibly, the NRC's resolution of this issue was to select the cheapest solution, abandoning hardware changes which would actually reduce or eliminate the loss of ESW and opting for technical specifications and procedures at 1/1000th of the cost.[8]

Finally, EPD's Vogtle Permit does not meet Clean Air Act standards because without maximum achievable control technology, routine emissions from the plant would be excessive especially when considered in addition to the existing site-wide radioactive emission levels. In fact, the Act calls upon the Administrator to impose standards which require the maximum degree of reduction in emissions, including a prohibition on such emissions where achievable.

Issue 4: Environmental Justice

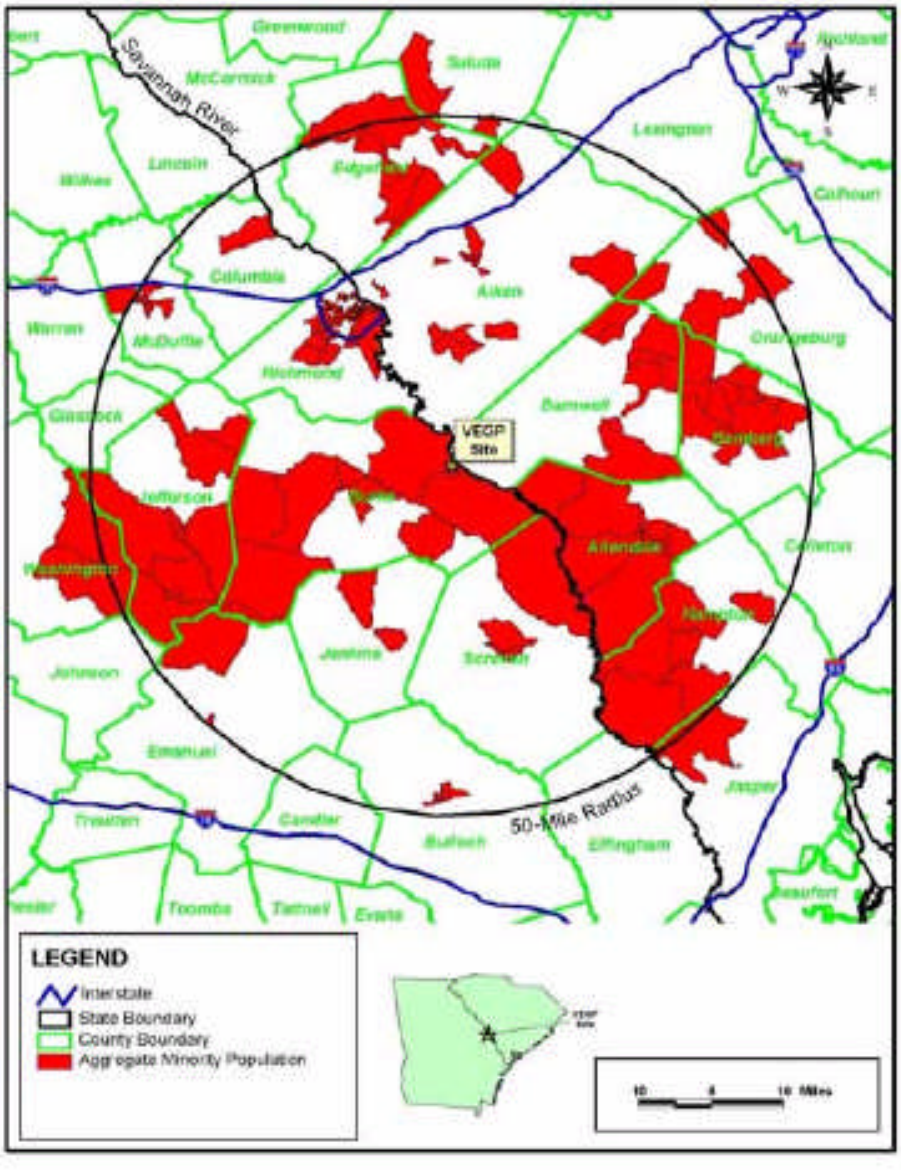
A demographic analysis should be completed prior to issuance of the Permit

According to the US Census Bureau, 12.6% of Georgia households are below the Federal poverty threshold; however, within a 50-mile radius of Vogtle 13.6% of the families (and 17.1%

[9] Resolution of Generic Safety Issues: Issue 153: Loss of Essential Service Water in LWRs (Rev. 2) (NUREG-0933, Main Report with Supplements 1–32)

of the individuals) live below the threshold. Figure A shows the census block groups with high density minority populations living around Vogtle.

Figure A. Majority African-American Areas Near Plant Vogtle [10]



Presently, Vogtle consumes 43.2 million gallons of water per day. Adding cooling towers for two more reactors would raise that to 86.4 million gallons per day. A spokesman for

[10] "Minority block groups in 2000 within a 50-mi radius of VEGP," NUREG-1437, Supplement 34, December 2008, Figure 4-1, page 4-35

Southern Nuclear Operating Company said Plant Vogtle would be the only nuclear power plant in the U.S. with four reactors.[11]

The additional cooling towers would increase radioactive air pollution. A cooling tower is designed to release excess heat from a nuclear reactor. Hot water is pumped to the top of the tower, air comes in, and heat is removed. Some of the water evaporates and passes out the top of the tower as a fine mist. As stated above, Service Water Systems and their associated cooling towers release radionuclides to the environment. Footnote 9.

People living around Vogtle suffer from higher-than-average cancer rates. One study conducted by the University of South Carolina[12] revealed that within a fifty mile radius of the plant black women had an elevated rate of cervical cancer and black men had a higher rate of esophageal cancer. Yet the Georgia EPD's Permit and Preliminary Determination fail to address the impact of increased levels of hazardous and radioactive pollution in an area where people already suffer from high rates of cancer. Executive Order 12898[13] requires federal agencies to address disproportionate human health and environmental effects. This includes requirements to assess those impacts and to seek greater public participation in environmental planning. The US Environmental Protection Agency should require Georgia EPD to do such an assessment.

Georgia recently announced the acquisition of American Recovery and Reinvestment Act funds. The state website states:[14]

> Georgia has been awarded $380 million in ARRA funds to improve energy efficiency, decrease fossil fuel emissions, and create jobs.…Georgia will also use increased ARRA funding to promote economic activity while creating sustainable and eco-friendly

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[11] "Nuclear Power in Georgia: A Closer Look at Plant Vogtle," *Consumer Energy Report*, June 9, 2010, http://www.consumerenergyreport.com/2010/06/09/nuclear-power-in-georgia-a-closer-look-at-plant-vogtle/

[12] 1997 Feb 3, Cancer Weekly, via NewsRx.com and NewsRx.net

[13] "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," February 11, 1994

[14] "Stimulus Accountability: State of Georgia," http://www.georgia.gov/00/channel_press/0,2684,134245182_151219453,00.html

communities throughout the state. The Georgia Forestry Commission, the Georgia Environmental Facilities Authority, and the Georgia Department of Natural Resources will administer stimulus funds to related to energy and environment.

Two decades after Vogtle commenced operations, why are so many nearby families living below the poverty level? Where is the economic development promised by Georgia Power in the 1980's? Why are so many residents in the Shell Bluff community suffering from cancer, birth defects and other health problems? These and other questions must be answered to the satisfaction of all the residents of Burke County before another pollution permit is approved by EPA. Finally, there is no reason why stimulus funds cannot be dedicated to economic and environmental justice in Burke County.

Respectfully submitted,

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Attachment: Exhibit 1