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March 29, 2012

Eric Cornwell, Program Manager
Stationary Source Permitting Program, Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354

RE: Title V Permit Renewal, Vogtle Electric Generating Plant
Application Nos. TV-19932 and TV-20791
Draft Permit No. 4911-033-0030-V-03-0 (replaces permit 4911-033-0030-V-02-3)
AIRS No. 033-00030

Dear Mr. Cornwell:

On behalf of the Blue Ridge Environmental Defense League and our chapter the Concerned Citizens of Shell Bluff, I write to provide comments on the Environmental Protection Divisionôs draft permit. Also, we request that a public hearing be held in Burke County before a permitting decision is made to enable residents to provide comments to EPD.

As you know, there is an unresolved matter with regard to the Title V permit at this facility and the U.S. Environmental Protection Agency. Pursuant to the Clean Air Act § 505(b)(2), on August 10, 2010 the Blue Ridge Environmental Defense League petitioned US EPA based on objections to the Permit which were raised during the public comment period provided by Georgia EPD. To date we have received but perfunctory replies in this matter, despite statutory requirements for response and resolution. The relevant passage of the Clean Air Act reads;[1]

> If the Administrator does not object in writing to the issuance of a permit pursuant to paragraph (1), any person may petition the Administrator within 60 days after the expiration of the 45-day review period specified in paragraph (1) to take such action. A copy of such petition shall be provided to the permitting authority and the applicant by the petitioner. The petition shall be based only on objections to the permit that were raised with reasonable specificity during the public comment period provided by the permitting agency (unless the petitioner demonstrates in the petition to the Administrator that it was impracticable to raise such objections within such period or unless the grounds for such objection arose after such period). The petition shall identify all such objections. If the permit has been issued by the permitting agency, such petition shall not postpone the effectiveness of the permit. The Administrator shall grant or deny such petition within 60 days after the petition is filed. [emphasis added]

To date, over a year and a half later, EPA has failed to comply with the provisions of the statute in this matter. The most recent communication we received was dated December

[1] 42 U.S.C. 7401ï 7626, Clean Air Act § 505.

27, 2011 which stated that the agency is reviewing the issues raised in our petition and plans to respond.[2] I understand that some of the delay has been caused by the refusal of the U.S. Nuclear Regulatory Commission to meet with petitioners and EPA Region IV staff to discuss the issues we raised in the petition. You may be assured that the Blue Ridge Environmental Defense League has been and remains ready to meet with all parties in this matter.

I hereby request that EPD evaluate and reduce the impact Plant Vogtleôs expansion would have on the people living around Plant Vogtle, a community already noted to suffer from higher-than-average cancer rates. A Presidential Executive Order ñFederal Actions to Address Environmental Justice in Minority Populations and Low-Income Populationsò requires federal agencies to address disproportionate human health or environmental effects of its policies.[3] This includes requirements to assess those impacts and to seek greater public participation in environmental planning and policy making.

In 2009 a nuclear power siting study was published which suggests that there is a ñreactor-related environmental injusticeò at Plant Vogtle. The study found:

> The mining, fuel enrichment-fabrication, and waste-management stages of the US commercial nuclear fuel cycle have been documented as involving environmental injustices affecting, respectively, indigenous uranium miners, nuclear workers, and minorities and poor people living near radioactive-waste storage facilities. After surveying these three environmental-injustice problems, the article asks whether US nuclear-reactor siting also involves environmental injustice. For instance, because high percentages of minorities and poor people live near the proposed Vogtle reactors in Georgia, would siting new reactors at the Vogtle facility involve environmental injustice? If so, would this case be an isolated instance of environmental injustice, or is the apparent Georgia inequity generally representative of environmental injustice associated with nuclear-reactor siting throughout the US? Providing a preliminary answer to these questions, the article uses census data, paired t-tests, and z-tests to compare each stateôs percentages of minorities and poor people to the percentages living in zip codes and census tracts having commercial reactors. Although further studies are needed to fully evaluate apparent environmental injustices, preliminary results indicate that, while reactor-siting-related environmental injustice is not obvious at the census-tract level (perhaps because census tracts are designed to be demographically homogenous), zipcode-scale data suggest reactor-related environmental injustice may threaten poor people ($p < 0.001$), at least in the southeastern United States.[4]

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

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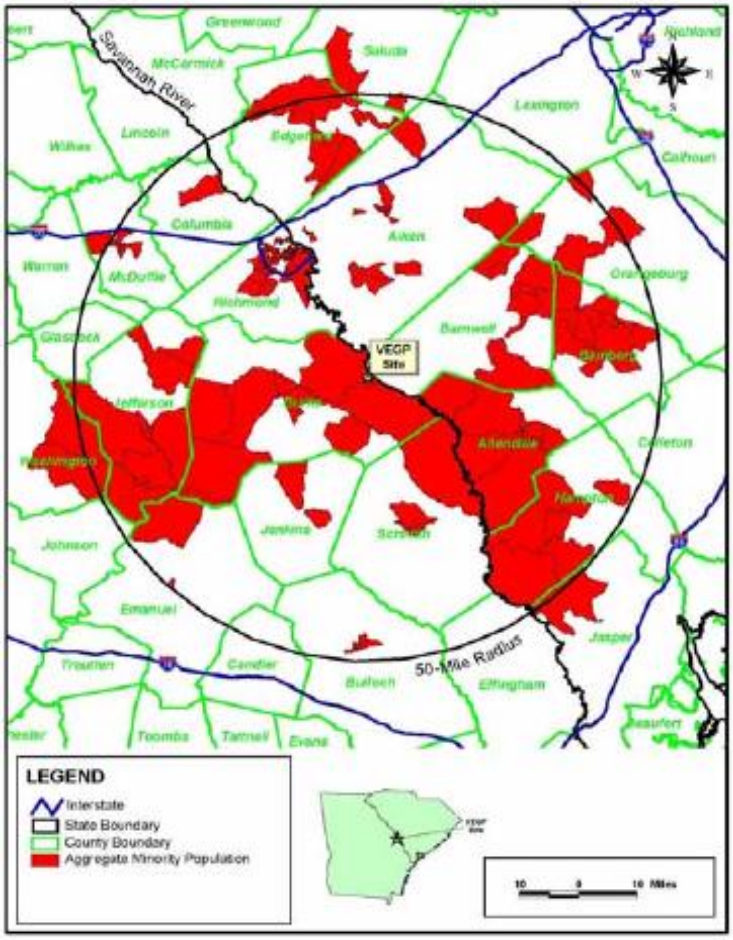
[2] Letter from Stephen D. Page, Director OAQP&S, US EPA to Louis Zeller, BREDL, December 27, 2011
[3] Executive Order 12898, February 11, 1994
[4] *Environmental Injustice in Siting Nuclear Plants,* Mary Alldred and Kristin Shrader-Frechette, ENVIRONMENTAL JUSTICE, Volume 2, Number 2, 2009 © Mary Ann Liebert, Inc. DOI: 10.1089/env.2008.0544

Figure A. Majority African-American Areas Near Plant Vogtle [5]



Georgia EPD is required to enforce the federal Clean Air Act as an agreement state of the US Environmental Protection Agency. Monitoring reports submitted to EPD must be made available to the public in an accessible place and in an understandable format. A properly written Title V permit would be an effective tool for residents of Burke County to ensure that Plant Vogtle is complying with air quality laws.

Permit Overview

The Georgia Environmental Protection Division announced its intent to modify a Part 70 Title V Air Quality Operating Permit issued to Vogtle Electric Generating Plant located at 7821 River Road, Waynesboro, Georgia. The purpose of Clean Air Act Title V permits is to incorporate all State and Federal air requirements applicable to sources of air pollution and provide practical methods for determining compliance with regulations. 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. 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.

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

In the draft permit now under review, Vogtle Electric Generating Plantôs operator seeks to add a NO_x limit of 40 tons per year to avoid PSD avoidance requirements in the extant permit for Vogtle Units 3 and 4.

Air pollution emission sources include:

- Four turbine generators
- Twenty diesel powered internal combustion engines
- Fuel oil tanks
- Four cooling towers

Specific Comments

Cooling Water Towers, Units CWT1 and CWT2

Plant Vogtle utilizes natural draft cooling towers for the Circulating Water System and mechanical draft cooling towers for the Service Water System. PM_{10} emissions from cooling towers are 12.2 tons from CWT1 and CWT2, and 0.5 tons from SWS1 and SWS2). Permit condition 5.2.4 requires monitoring of total dissolved solids (TDS) content of the cooling water in cooling towers. The Division used, as a reporting trigger, the level of TDS relied upon in the modeling to show compliance with the NAAQS. That level was 4,800 mg/L (1,200 x 4).

Permit section 3.3.8 states, ñThe Permittee shall construct and operate the Circulating Water Cooling Towers (Emission Units: CWT1 and CWT2) with a Drift Loss Rate of 0.0005% or less. [Avoidance of 40 CFR 52.21].ò EPDôs permit narrative states that its calculations show that if NO_x remains below 40 tons per year, PM10 emissions will remain below the PSD significant level threshold of 15 tons per year. Under the draft permit Requirement 5.2.1, Cooling Water Towers (CWT1 and CWT2) are to be tested for total dissolved solids four times a year until measurements fall below 1,200 mg/L. Permit Specific Monitoring Requirement 5.2.1 **would allow indefinite excess emissions because there is no limit to the number of times the cooling towers may exceed the stipulated maximum** of 1,200 mg/L. Since compliance with the 0.0005% BACT drift loss rate limit for PM/PM10 for these two units is determined by ñdesign specification,ò TDS testing would be the lone sentinel for determination of compliance for the cooling towers. Service water cooling towers are subject to a similar regime.

Ancillary and Standby Generators

Permit section 3.2 Equipment Emission Caps and Operating Limits states: ñThe Permittee shall ensure emissions of NOx from Unit 3 and 4 Standby Generators (Emission Units: VD05 through VD08), Unit 3 and 4 RWS Standby Generator (Emission Unit: ODG1), Unit 3 and 4 TSC Standby Generator (Emission Unit: ODG2), Unit 3 and 4 Ancillary Generators (Emission Units: AUX1 through AUX4), Unit 3 and 4 Fire Pumps (Emission Units: FPD3 through FPD5), combined are less than 40 tons per 12-consecutive months.ò The permit brackets the following: [Avoidance of 40 CFR 52.21],

for the prevention of significant deterioration of air quality. However, **it is unclear in the permit how these PSD emission limits will be met and how the EPD will determine compliance**.

Permit section 3.3.6, under federal standards, states, ñUnit 3 and 4 Standby Generators (Emission Units: VD05 through VD08), Unit 3 and 4 RWS Standby Generator (Emission Unit: ODG1), Unit 3 and 4 TSC Standby Generator (Emission Unit: ODG2), Unit 3 and 4 Ancillary Generators (Emission Units: AUX1 through AUX4), Unit 3 and 4 Fire Pumps (Emission Units: FPD3 through FPD5) and Unit 1 and 2 Fire Pump (Emission Unit: FPD1) shall each be operated and maintained according to the manufacturerôs written instructions or procedures developed by the Permittee that are approved by the generator manufacturer. The Permittee may only change those settings that are permitted by the manufacturer. [40 CFR 60.4211(a)]ò As far as it goes, compliance based on manufacturerôs written instructions and procedures developed by the Permittee that are approved by the manufacturer are no compliance at all.

General Comments

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 ñassure compliance with all applicable requirements.ò 40 CFR § 70.6(a)(1). The 1990 Amendments to the Clean Air Act compel certain stationary sources of air pollution to obtain permits from state and local authorities that identify all emission limits for the source and also include ñmonitoring ... requirements to assure compliance with the permit terms and conditions.ò [6]

<u>The EPD Permit lacks practical enforceability</u>

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 Appendix incorrectly lists the Cooling Towers as ñInsignificant Activities Based on Emission Levels.ò 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:[7]

> 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

[6] 42 U.S.C. § 7661c(c)

[7] *Methods for Estimating Fugitive Air Emissions of Radionuclides from Diffuse Sources at DOE Facilities: Final Report*, Paragraph 5.1.2 ñWet-Cooling Towers,ò 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

> 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. 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.

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, ñenforceable by the Administrator and citizens under the Act.ò[8]

However, the draft permit has insufficient requirements for testing, monitoring, record keeping and reporting for sources SWS1, SWS2, CWT1 or CWT2. Therefore, the Permit lacks practical enforceability.

Permit Fails to Properly Limit Hazardous Air Pollutants

The EPDôs draft permit 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

[8] 40 CFR 70.6 (b)(1)

> emission control that is achieved in practice by the best controlled similar source, as determined by the Administrator.[9]

Air pollution sources subject to Part 70 operating permit rule requirements are determined by the Clean Air Act.[10] 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).[11] 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 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.

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, EPAôs 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).[12] 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.

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 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.[13]

Permit Fails to Protect Public Health

The EPDôs draft permitôs failure to properly limit radionuclides puts residents at risk of higher levels of morbidity and mortality from low level radiation.

[9] Clean Air Act § 112(d)(3)
[10] Clean Air Act §502(a) and 40 CFR 70.3
[11] Radionuclide Carcinogenicity Slope Factors: HEAST, USEPA, http://www.epa.gov/rpdweb00/heast/index.html
[12] EPA Facts About Tritium, July 2002, http://www.epa.gov/superfund/health/contaminants/radiation/pdfs/tritium.pdf
[13] BEIR V, Table 4-2, pp. 172-173.

There are methods for calculating nuclear reactor cooling water systemsô radionuclide emissions to the atmosphere. The following is an excerpt from a study done by Westinghouse Savannah River Company:[14]

> 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.

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 engendered by the loss of essential service water (ESW) are detailed in NRC guidance documents: [15]

> 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.[16]

Conclusion

The Georgia EPDôs draft permit fails to properly limit air pollution and protect public health and should not be approved in its present form.

Respectfully submitted,

Louis A. Zeller, Executive Director

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

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

[16] NUREG-0933