

COMMONWEALTH OF VIRGINIA
Department of Environmental Quality
West Central Regional Office

STATEMENT OF LEGAL AND FACTUAL BASIS

Appalachian Power Company dba AEP
Glen Lyn Plant
Routes 649 and 460
Giles County, Virginia
Permit No. VA-20460

The 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Article 3, AEP has applied for an Acid Rain Operating Permit for its Glen Lyn electric generation facility. The Department has reviewed the application and has prepared an Acid Rain Operating Permit.

Engineer/Permit Contact: _____ Date: _____

FACILITY INFORMATION

Permittee

Appalachian Power Company dba AEP
1 Riverside Plaza
Columbus, OH 43215-2373

Facility

Appalachian Power Company –
Glen Lyn Plant
Routes 649 and 460
Giles County, VA

AIRS ID No. 51-071-0002

SOURCE DESCRIPTION

SIC Code 4911 – Electric generating facility.

The Glen Lyn plant has been in existence since 1919 and is one of several electric utilities operated by AEP in a multistate area. Currently, the facility has three radiant tube boilers: Boilers 51 and 52, constructed in 1944, which share a common stack and are considered one generating unit (Unit 5); and Unit 6, constructed in 1944, which has its own taller stack. All boilers are coal-fired, with #2 fuel oil used for start-up, shutdown and flame stabilization. The boilers also have the capability to burn used oil, ion exchange resins and metal cleaning fluid as supplemental fuels. Other emissions units include a coal storage area, with associated conveyors and weighing scales, and an ash handling system.

Coal is brought by railcar or truck to the plant, enters the plant by conveyor and is stored in two bunkers (one per unit). The coal passes through coal feeders to the pulverizers where it is crushed, then transported into the boiler by primary air. High-pressure, high-temperature steam is generated and passed through high and low pressure turbines, which are coupled to an electric generator to produce electricity. The steam is then condensed and recirculated through the boilers. Combustion gas from the coal is passed through high efficiency electrostatic precipitators (ESPs) before being exhausted through the stacks. Bottom ash is removed from the bottom of the boiler in a water-cooled hopper. The ash-water mixture is pumped to a settling pond. Flyash collected from the exhaust gas is removed from the precipitators and either sold to the concrete/cement industry, discharged into trucks for hauling to an off-site landfill, or pumped to the settling pond.

AEP – Glen Lyn is a federal major source of pollutants PM-10, sulfur dioxide, nitrogen oxides, carbon monoxide, hydrogen fluoride, hydrochloric acid and total HAPs (combined). The facility is located in an attainment area for criteria pollutants. The facility is also subject to the Title IV Acid Rain regulations (9 VAC 5 Chapter 80, Article 3) and is being issued a Phase II acid rain permit renewal effective January 1, 2003. The flyash handling portion of the facility was permitted under a minor NSR permit issued on October 11, 1979.

COMPLIANCE STATUS

The facility is inspected once a year. It was inspected on June 21, 2002 and is currently considered in compliance.

EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

The emissions units at this facility consist of the following:

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity*	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
Fuel Burning Equipment							
GL51	GL5	Combustion Engineering Model 30341	572 x 10 ⁶ BTU/hr input	American Standard, custom-built cold-side electrostatic precipitator	51ESP	Particulate	NA
GL52	GL5	Combustion Engineering Model 30341	572 x 10 ⁶ BTU/hr input	American Standard, custom-built cold-side electrostatic precipitator	52ESP	Particulate	NA
GL6	GL6	Babcock and Wilcox Radiant Tube Boiler Model RB-235	2040 x 10 ⁶ BTU/hr input	American Standard, custom-built cold-side electrostatic precipitator	6ESP	Particulate	NA
Process A – Coal Handling							
CH	NA	Conveyors, samplers, transfer stations, rail and truck facilities	600 tons coal/hr input	NA	NA	NA	NA

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity*	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
Process B – Ash Handling							
AH1A	NA	Ash silo	144,000 tons bottom ash and flyash/yr output	Allen-Sherman-Hoff B-60 cyclone	1A	Particulate	10/11/79
AH1A	NA	Ash silo	144,000 tons bottom ash and flyash/yr output	Flex Kleen 84CT54 baghouse filter	1B	Particulate	10/11/79
AH1A	NA	Ash silo	144,000 tons bottom ash and flyash/yr output	Nash Pump CL-2002 vacuum pump water trap silencer	1C	Particulate	10/11/79
AH1B	NA	Vacuum pumps, piping	144,000 tons bottom ash and flyash/yr output	NA	NA	NA	NA
AH2	NA	Pumps, piping, setting pond	80 tons bottom ash/day output	NA	NA	NA	NA

EMISSIONS INVENTORY

Emissions summarized in the following table are derived from the 2001 AIRS emission report, with the exception of lead (see footnote). A copy of the report is attached as Attachment A.

2001 Pollutant Emissions (Plantwide Total)	
Pollutant	Tons Emitted
Criteria Pollutants	
PM10	150.08
VOC	17.26
NO _x	3529.35
SO ₂	9,163.18
CO	145.45
Lead*	0.24
Hazardous Air Pollutants (HAPs)	
Hydrogen Fluoride (HF)	65.89
Hydrochloric Acid (HCl)	210.10
THAP **	276.23

* Lead compound emissions are from the 1996 emissions inventory included in the operating permit application.

** The THAP value is the sum of the HF, HCl, and the lead compound emissions.

EMISSION UNIT APPLICABLE REQUIREMENTS – Fuel burning equipment (GL51, GL52 and GL6)
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Limitations

The following applicable limitations are state and federal requirements from the Phase II acid rain permit effective January 1, 2003, which is incorporated by reference into the operating permit. A copy of the acid rain permit is attached as Attachment B.

SO₂ allowance allocations for the years 2003, 2004, 2005, 2006 and 2007, as follows:
Unit 6 – 5,533; Unit 51 – 1,152; and Unit 52 – 1,113.

NO_x limits for calendar year 2003 through 2006 under their NO_x emission averaging plan, as follows: Unit 6 – 0.70 lbs/mmBTU; Unit 51 – 0.47 lbs/mmBTU; and Unit 52 – 0.47 lbs/mmBTU. Note that the system-wide averaging plan covers only the years 2003-2006, while this acid rain operating permit will expire in early 2008. NO_x limits for the year 2007 and thereafter will therefore default to the standard Title IV NO_x limits of 0.45 lbs/million BTU input (Units 51 and 52) and 0.46 lbs/million BTU input (Unit 6), unless the averaging plans for 2007 and thereafter are revised.

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

9 VAC 5-80-490, Acid Rain Operating Permits (specifying air pollution control equipment, approved fuels, and operation and maintenance of equipment)

9 VAC 5-40-900, Emission Standards for Fuel Burning Equipment (standard for particulate matter). Allowable emissions, in pounds of particulate per million BTU input, are calculated using the following formula:

$$\text{Maximum Allowable Emission Ratio (E)} = 1.0906H^{-0.2594}$$

where H is the total capacity in millions of BTU per hour. Therefore:

$$E = 1.0906 \times (3184)^{-0.2594} = 0.1346 \text{ lbs/mmBTU input}$$

Allowable particulate emissions are the product of the emission ratio E and the allowable heat input in mmBTU/hr. Therefore:

$$\text{Maximum Allowable Emissions} = 0.1346 \times 3184 = 428.52 \text{ lbs/hr}$$

9 VAC 5-40-930, Emission Standards for Fuel Burning Equipment (standard for sulfur dioxide). Allowable emissions, in pounds of sulfur dioxide per hour, are calculated using the following formula:

$$\text{Maximum Allowable Emissions (S)} = 2.64K$$

where K is the allowable heat input at total capacity in mmBTU/hr. Therefore:

$$S = 2.64 \times 3184 = 8405.76 \text{ lbs/hr}$$

9 VAC 5-40-80 and 5-40-940, Existing Source Standard for Visible Emissions

Monitoring

9 VAC 5-40-50 requires that records of all emissions data and operating parameters necessary to demonstrate compliance with the permit be maintained. (See Recordkeeping, below.)

Recordkeeping

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. These records include the monthly and annual throughput of coal and distillate oil, as well as the results of daily on-site coal analyses and distillate oil fuel supplier certifications or alternative statements.

Testing

The only source tests required by the permit are daily on-site coal analyses in lieu of fuel supplier certifications. A table of test methods has been included in the permit if additional testing is performed. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting

The permit requires the submittal of a coal analysis summary and fuel supplier certifications or alternative statements each calendar quarter, or a statement that no coal or oil was received during that quarter.

Streamlined Requirements

NA

EMISSION UNIT APPLICABLE REQUIREMENTS – Coal handling system (CH)

Limitations

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

9 VAC 5-40-260, Emission Standards for General Process Operations (standard for particulate matter). Allowable emissions, in pounds of particulate per hour, are calculated using the following formula:

$$\text{Maximum Allowable Emissions (E)} = 55.0 P^{0.11} - 40$$

where P is the process weight rate in tons/hr. Therefore:

$$E = 55.0 600^{0.11} - 40 = 71.2 \text{ lbs/hr}$$

9 VAC 5-40-80, Existing Source Standard for Visible Emissions

Monitoring

NA

Recordkeeping

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. These records include the annual throughput of coal.

Testing

The permit does not require source tests. A table of test methods has been included in the permit if testing is performed. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting

NA

Streamlined Requirements

NA

EMISSION UNIT APPLICABLE REQUIREMENTS – Ash handling system (AH)

Limitations

The following applicable limitations are state BACT requirements from the minor NSR permit issued on October 11, 1979. A copy of the permit is attached as Attachment C.

Condition 2, limiting the yearly throughput of flyash to 144,000 tons.

Condition 3, limiting the particulate emissions from the flyash handling system stack to 9.13 pounds per hour and 40.0 tons per year.

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

9 VAC 5-80-490, Acid Rain Operating Permits (specifying air pollution control equipment)

9 VAC 5-40-80, Existing Source Standard for Visible Emissions

Monitoring

The monitoring and recordkeeping requirements in Conditions 5 and 6 of the NSR permit have been modified to meet Part 70 requirements. The permittee will maintain a device to continuously measure the differential pressure drop across the fabric filter such that it is in proper working order at all times, and shall conduct an annual internal inspection on the cyclone to insure structural integrity.

Recordkeeping

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. These records include the annual throughput of ash and flyash.

Testing

The permit does not require source tests. A table of test methods has been included in the permit if testing is performed. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting

NA

Streamlined Requirements

NA

GENERAL CONDITIONS

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-490, that apply to all acid rain operating permit sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions, including those caused by upsets, within one business day.

STATE ONLY APPLICABLE REQUIREMENTS

NA

FUTURE APPLICABLE REQUIREMENTS

NA

INAPPLICABLE REQUIREMENTS

40 CFR 60, Subpart D and 40 CFR 60, Subpart Da have been specifically identified as being not applicable to this permitted facility, as construction of the boilers took place prior to the applicability dates of these standards of performance (August 17, 1971 and September 18, 1978, respectively).

COMPLIANCE PLAN

NA

INSIGNIFICANT EMISSION UNITS

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting shall be required for these emission units in accordance with 9 VAC 5-80-490.

Insignificant emission units include the following:

Emission Unit No.	Emission Unit Description	Citation	Pollutant(s) Emitted (9 VAC 5-80-720 B)	Rated Capacity (9 VAC 5-80-720 C)
Tank365	365,000 gallon fuel oil tank	9 VAC 5-80-720B	VOC	
Gas	Underground storage tank for gasoline	9 VAC 5-80-720B	VOC	
TP	Thaw Pit burners	9 VAC 5-80-720B	SO ₂ , NO _x , particulate, VOC	
GLP2500	Two - 2500 gallon tanks	9 VAC 5-80-720B	VOC	
GLP10,000	10,000 gallon fuel oil tank	9 VAC 5-80-720B	VOC	
GLP500	500,000 gallon fuel oil tank	9 VAC 5-80-720B	VOC	
Parts washers	Safety-Kleen Parts Washers	9 VAC 5-80-720B	VOC	

¹The citation criteria for insignificant activities are as follows:

- 9 VAC 5-80-720 A - Listed Insignificant Activity, Not Included in Permit Application
- 9 VAC 5-80-720 B - Insignificant due to emission levels
- 9 VAC 5-80-720 C - Insignificant due to size or production rate

CONFIDENTIAL INFORMATION

The permittee did not submit a request for confidentiality. All portions of the permit application are suitable for public review.

PUBLIC PARTICIPATION

A public notice appeared in the Roanoke Times and World-News on November 29, 2002 announcing a 30-day public comment period for this permit. The public comment period extended until December 30, 2002, and EPA's comment period extended until January 13, 2003 (concurrent review of the permit as both draft and proposed). No comments were received during either of these comment periods. Notice was also provided to West Virginia as an affected state.