

**STATEMENT OF LEGAL AND FACTUAL BASIS**

Alliant Ammunition & Powder Co., LLC  
Montgomery County, Virginia  
Permit No. VA-20656

Title V of 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, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Alliant Ammunition & Powder Co., LLC has applied for a Title V Operating Permit for its Montgomery County munitions manufacturing facility. The Department has reviewed the application and has prepared a draft Title V Operating Permit.

Engineer/Permit Contact: \_\_\_\_\_ Date: \_\_\_\_\_

## **FACILITY INFORMATION**

### Permittee

Alliant Ammunition & Powder Co., LLC  
P. O. Box 1  
Radford, VA 24143

US Army  
P. O. Box 2  
Radford, VA 24143

### Facility

Radford Army Ammunition Plant  
Off State Route 114, near Radford  
Montgomery County, Virginia

AIRS ID No. 51-121-0006

## **SOURCE DESCRIPTION**

SIC Codes: 2892, 2869 - The Radford Army Ammunition Plant (RFAAP) is a United States Department of Defense facility operated by Alliant Ammunition & Powder Co., LLC (Alliant). The facility, which has been in existence since the Second World War, manufactures specialty munitions, propellants and chemicals for the United States Army and other users. The facility currently consists of the following areas: coal- and fuel oil-fired boilers and other fuel burning equipment; a nitric acid production plant; nitrocellulose production; nitroglycerin production; single- and multi-base propellant production (including commercial multi-base production at the New River Energetics facility, which has a separate VDEQ registration number #21258 and AFS ID #51-121-0082); DNT and TNT production; chemical weighing and grinding areas; and miscellaneous operations, including a dedicated wastewater treatment facility, degreasers, gasoline storage tanks and maintenance equipment and operations.

The plant is by definition a Title V major source due to potential emissions of criteria pollutants PM-10, sulfur dioxide, nitrogen oxides, volatile organic compounds, lead and carbon monoxide in excess of 100 tpy; potential emissions of hydrogen chloride, hydrogen fluoride, ethylene glycol, toluene, methylene chloride, dibutyl phthalate and 2,4-dinitrotoluene in excess of 10 tpy; and potential emissions of total HAPs in excess of 25 tpy. It is located in an attainment area for criteria pollutants, and is a PSD major source.

The facility has been previously permitted under a number of minor NSR permits: Nitrocellulose A & B lines permit issued on 6/28/88; nitrocellulose C line permit issued on 9/10/03, which superseded 3/9/93 and 12/5/97 permits; wastewater equalization tank permit issued on 3/1/01, which superseded 4/09/93 permit; New River Energetics commercial multibase propellant permit issued on 1/27/97, which superseded 11/6/95 NRE permit; and NRE paint spray booth permit dated 8/23/01. In addition, a number of issued permits are no longer in effect: Package boiler permit dated 9/6/84 (boilers were removed in 1989); TNT red water/sellite recovery facility permit dated 6/7/85 (process no longer in operation); and automated multibase propellant permit dated 4/2/84, a PSD permit which superceded state permit dated 1/30/80 and federal permit dated 3/27/80 (process was never operated).

The boilers all predate NSPS Subpart Db and Dc applicability, and none of the tanks are subject to NSPS Subparts K or Ka. Four storage tanks at New River Energetics (NRE) are subject to Subpart Kb recordkeeping. The DNT process is subject to all three subparts of the Hazardous Organic NESHAP (HON) standards, and the two waste propellant incinerators are subject to the Hazardous Waste Combustion NESHAP standards. An alternative operating scenario has been requested to provide for the manufacture of TNT (not currently in production) or DNT in both production areas.

## **COMPLIANCE STATUS**

The facility (exclusive of NRE) is inspected twice a year, and NRE is inspected once a year. Both were inspected on August 27, 2003 and are 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
<b>Fuel Burning Equipment</b>							
PH1	PHS1	Power House Boiler 1: coal/#2 fuel oil-fired boiler	210 x 10 <sup>6</sup> BTU/hr	Electrostatic precipitator (ESP) controls boiler emissions	PHC1	Particulate	-
PH2	PHS1	Power House Boiler 2: coal/#2 fuel oil-fired boiler	210 x 10 <sup>6</sup> BTU/hr	Electrostatic precipitator (ESP) controls boiler emissions	PHC2	Particulate	-
PH3	PHS1	Power House Boiler 3: coal/#2 fuel oil-fired boiler	210 x 10 <sup>6</sup> BTU/hr	Electrostatic precipitator (ESP) controls boiler emissions	PHC3	Particulate	-
PH4	PHS1	Power House Boiler 4: coal/#2 fuel oil-fired boiler	210 x 10 <sup>6</sup> BTU/hr	Electrostatic precipitator (ESP) controls boiler emissions	PHC4	Particulate	-
PH5	PHS1	Power House Boiler 5: coal/#2 fuel oil-fired boiler	210 x 10 <sup>6</sup> BTU/hr	Electrostatic precipitator (ESP) controls boiler emissions	PHC5	Particulate	-
PH6	PHS6 A-B	Ash silo		Baghouse	PHC6	Particulate	
PH7		Ash truck loading		Ash conditioning	PHC7	Particulate	
WB1	WBS1	Waste Oil Boiler 1	0.35 x 10 <sup>6</sup> BTU/hr	-	-	-	-
WB2	WBS2	Waste Oil Boiler 2	0.35 x 10 <sup>6</sup> BTU/hr	-	-	-	-

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity *	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
<b>Process NA: Nitric Acid Plant</b>							
NAE01 A-B	NAS1 A-D	Two (2) ammonia oxidation (single stage) units with bubble cap tray absorption	Total plant: 50 tons/day nitric acid output each (100 tpd combined)	Extended absorption (tray-type absorber) with mist eliminator	NAC1 A-B	NO <sub>x</sub>	
<b>Process NC: Nitrocellulose Production</b>							
NCE01 A-B		Two (2) cotton bale breakers/building, 2 buildings	Total plant: 150.5 tons/day nitrocellulose output			PM	
NCE02 A-B		Two (2) dryers/building, 2 buildings	See above			PM	
NCE03 A-B	NCS3 B	Two (2) airveys/building, 2 buildings	See above	Cyclone/dust collector	NCC3B	PM	
NCE04 A-B		Wood pulp shredding – 2/building, 2 buildings	See above			PM	
NCE05 A-B	NCS5A, B1-2	Two (2) continuous nitrators – 2/building, 2 buildings	See above	Wet (horizontal piccolo) scrubber	NCC5B2	NO <sub>x</sub> , SO <sub>2</sub>	A & B lines: 6/28/88; C line: 9/10/03 (superseded 12/5/97 and 3/9/93 permits)
				Wet (tray) scrubber, followed by selective catalytic reduction (SCR) unit - US Army Corps of Engineers design	NCC5A, 5B1	NO <sub>x</sub> , SO <sub>2</sub>	
NCE06 A-B		Acid screen house – 2 buildings	See above	Same as NCE05A-B	Same as NCE05 A-B	Same as NCE05A-B	
NCE07 A-B		Boiling house (60 tubs) – 2 buildings	See above			NO <sub>x</sub> , SO <sub>2</sub>	

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity *	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
NCE08 A-B		Jordan beaters – 2 buildings	See above			NO <sub>x</sub> , SO <sub>2</sub>	
NCE09 A-B		Poacher house (36 tubs) – 2 buildings	See above				
NCE10 A-B		56 blender tubs – 2 buildings	See above				
NCE11 A-D		16 nitrocellulose wringers – 4 buildings	See above				
<b>Processes NG-1 and NG-2: Nitrate Esters</b>							
NGE01 A-B	NGS1 A-B	Nitrator	<u>Total plant:</u> 5000 lbs/hr nitrate esters output	Wet scrubber	NGC1 A-B	NO <sub>x</sub>	
NGE02 A-B	NGS1 A-B	Acid separator	See above	Wet scrubber	NGC1 A-B	NO <sub>x</sub>	
NGE03 A-B	NGS1 A-B	Soda water separator	See above	Wet scrubber	NGC1 A-B	NO <sub>x</sub>	
NGE04		Distribution/receiver house	See above				
NGE05		NG/solvent mixhouse	See above				
NGE06		Slurry mixhouse	See above				
<b>Process SB: Single-Base Propellant Production</b>							
SBE01 A-C	SBS1 A1-3, B1-3, C1-3	Dehy press building	<u>Total plant:</u> 155 tons/day single-base output	Activated carbon vapor recovery	SBC1 A-C	VOCs	
SBE02 A-D		Temporary storage house	See above				
SBE03 A-B	See SBE01	Mix house	See above	Activated carbon vapor recovery	SBC1 A-C	VOCs	
SBE04 A-D	See SBE01	Blocker house	See above	Activated carbon vapor recovery	SBC1 A-C	VOCs	

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity *	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
SBE05 A-C	See SBE01	Extruder press/cutting house	See above	Activated carbon vapor recovery	SBC1 A-C	VOCs	
SBE06 A-V	SBS6 A-V	Solvent recovery house	See above	Condensers	SBC6 A-V	VOCs	
SBE07 A-Z, AA		Water dry	See above			(trace VOCs)	
SBE08 A-J		Air dry	See above			(trace VOCs)	
SBE09 A-B	SBS9 A-B	Glazing	See above	Wet scrubber	SBC9 A	PM	
SBE10 A-B		Coating	See above				
SBE11 A-D	SBS11 A-C	Screen/blend/packout	See above	Wet scrubber	SBC11 A-C	PM	
SBE12	SBS12	Glaze/blend/screen/packout	See above	Wet scrubber	SBC12	PM	
SBE13		Screen/sort	See above				
SBE14 A-B	SBS14 A	Screen	See above	Wet scrubber	SBC14 A	PM	
SBE15	SBS15	Dumping	See above	Wet scrubber	SBC15	PM	
SBE16 A-C	SBS16 A-B	Pack out (propellant packaging)	See above	Wet scrubber	SBC16 A-B	PM	
<b>Process MB: Multi-Base Propellant Production</b>							
MBE01	MBS1	Nitrocellulose block breaker	Total plant: 40 tons/day multi-base output	Venturi scrubber	MBC1	PM	
MBE02 A-B	MBS2 A-B	Pre-mix mixer	See above				
MBE03 A-G	MBS3 A-G	Nitrocellulose/nitroglycerin charge mixer	See above				
MBE04 A-I	MBS4 A-I	Propellant block press	See above				

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity *	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
MBE05 A-H	MBS5 A-H	Propellant extrusion	See above				
MBE06 A-H	MBS6 A-H	Propellant cutters	See above				
MBE07 A-U	MBS7 A-U	Forced air dryers	See above				
MBE08	MBS8	Glazing	See above	Wet scrubber	MBC8	PM	
MBE09	MBS9	Screen/packing	See above	Wet scrubber	MBC9	PM	
MBE10	MBS10	Dumping	See above	Wet scrubber	MBC10	PM	
MBE11		Block breaker rest house					
<b>Process TN: TNT Production</b>							
TNE01 A-B	TNS1 A-B	Nitration/dynamic separation and acid washing	Total plant: 100 tons/day TNT output (2 lines @ 50 tons/line)	Absorption	TNC1 A-B	NO <sub>x</sub>	
TNE02 A-B	TNS2 A-B	Chemical washing	See above	Venturi scrubber	TNC2 A-B	NO <sub>x</sub>	
TNE03 A-B	TNS2 A-B	Hot water wash	See above	Venturi scrubber	TNC2 A-B	NO <sub>x</sub>	
TNE04	TNS4	Spent acid recovery (SAR)	See above	Absorption	TNC4	NO <sub>x</sub> , SO <sub>2</sub>	
TNE05 A-C	TNS5 A-C	TNT/water separation	See above	Wet scrubber	TNC5 A-C	VOCs	
TNE06 A-C	TNS5 A-C	Drying	See above	Wet scrubber	TNC5 A-C	VOCs	
TNE07 A-C	TNS7 A-C	TNT flaker drum	See above	Venturi scrubber	TNC7 A-C	PM	
TNE08 A-C	TNS7 A-C	TNT packout		Venturi scrubber	TNC7 A-C	PM	
TNE09		TNT wastewater pretreatment (dumping of bagged chemicals)		Cyclone separator	TNC9	PM	

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity *	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
<b>Process DN: DNT Production</b>							
DNE01 A1-2, B1-2	TNS1 A-B	Four (4) nitrator/dynamic separator stages and two (2) acid washers	Total plant: 150 tons/day DNT output (4 lines @ 37.5 tons/line)	Absorption	TNC1 A-B	NO <sub>x</sub>	
DNE02 A-B	TNS2 A-B	Chemical washing	See above	Venturi scrubber	TNC2 A-B	NO <sub>x</sub>	
DNE03 A-B	TNS2 A-B	Hot water wash (2)	See above	Venturi scrubber	TNC2 A-B	NO <sub>x</sub>	
DNE04	TNS4	Spent acid recovery (SAR)	See above	Absorption	TNC4	NO <sub>x</sub> , SO <sub>2</sub>	
DNE05		DNT/water separation	See above			DNT fumes	
<b>Process CW: Chemical Weighing and Grinding</b>							
CWE01	CWS1	Two (2) weigh stations (Chemical Grind House Bldg. 3524)	Total plant: 100 tons/month miscellaneous dry ingredients output	Baghouse	CWC01	PM, Pb	
CWE02	CWS1	Two (2) electronic mechanical grinders (Chemical Grind House Bldg. 3524)	See above	Baghouse	CWC02	PM	
CWE03	CWS3	Chlorate blending and grinding (Chlorate Grind House)	See above	Vent filter	CWC03	PM	
CWE04	CWS4	DNT grinder and batch drop (DNT Screen House)	See above	Vent filter	CWC04	PM (DNT)	
CWE05	CWS5	Two (2) weigh stations (Chemical Grind House Bldg. 3524-A)	See above	Wet collector	CWC02		
CWE06		Caustic cleaning				VOC	
<b>Process MISC-1: Degreasing Operations</b>							
MS1E1		Degreasing metal parts, etc.	450 gal total volume				

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity *	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
<b>Process MISC-2: Painting and Surface Coating</b>							
MS2E1		Misc. painting and surface coating	58 gal/hr input				
MS2E2	MS3S2	Paint spray booth					
<b>Process MISC-3: Abrasive Blasting</b>							
MS3E1	MS3S1	Misc. abrasive blasting	1000 lb/hr input	Baghouse	MS3C1		
<b>Process MISC-4: Rocket Manufacturing</b>							
PFE01 A-C		Extrusion press	<u>Total plant:</u> 180 tons/day propellant output				
PFE02 A-G		Annealing process	See above				
PFE03 A-C		Rod doweling process (Dowel Rod Bldg.)	See above				
PFE04		Propellant sawing (Sawing Bldg.)	See above				
PFE05		Inhibitor gluing	See above				
PFE06		Spiral wrap	See above				
PFE07		MARK90 pack out	See above				
PFE08		TOW launch pinning	See above				
PFE09	PFS9A	Ethyl cellulose processing	See above	Wet scrubber	PFC9A	PM	
	PFS9B			Dust collector (airvey)	PFC9B	PM	
	PFS9C			Dust collector (mixer)	PFC9C	PM	
<b>Process MISC-5 (WW): Water and Wastewater Treatment</b>							
WWFE01 A-B	WWFS1 A-B	Lime silo/two (2) slaker units – Building 409 (Filtered Water Plant)	50,000 lbs/hr	Cyclone scrubbers	WWFC1 A-B	PM	
WWFE01 C	WWFS1C	One alum silo/slaker unit – Building 409 (filtered water plant)	30,000 lbs/hr	Bag filter	WWFC1C	PM	
WWAE01 A-C	WWAS1 A-C	Lime silo/three (3) slaker units – Building 420-1 (A/B Waste Acid)	30,000 lbs/hr	Cyclone scrubbers	WWAC1	PM	

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity *	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
WWAE02 A-B	WWAS2 A-B	Two (2) lime silo/slaker units – Building 420-2 (C line Waste Acid)	8000 lbs/hr	Cyclone scrubbers	WWAC2	PM	
WWBE01	WWBS1 A-B	Two (2) biological equalization tanks	2.6 mgd wastewater throughput	Fixed roof	WWBC1	VOCs	4/09/93
WWBE02	WWBS2	Lime silo/slaker	30,000 lb/hr	Bag filter	WWBC2	PM	
<b>Process MISC-6 (SR): Solvent Recovery</b>							
SRE01	See SBE01 C	Ether still house	20 tons/day solvent input	Activated carbon vapor recovery	SBC1C	VOCs	
SRE02	See SBE01 C	Alcohol rectification house	20 tons/day solvent input	Activated carbon vapor recovery	SBC1C	VOCs	
<b>Process MISC-7: On-Site Landfills</b>							
MS7E1 A-C		Three (3) on-site landfills	576,000 cu. meters volume				
<b>Process MISC-8 (OB): Open Burning</b>							
OBE01	OBS1	Air curtain destructor	1 x 10 <sup>6</sup> lb/month contaminated waste input				
OBE02		Contaminated scrap burn area	3.5 x 10 <sup>6</sup> lb/month contaminated material input				
OBE03		16 open burning pans (off-spec propellant reduction)	8000 lb/day off-spec propellant input				

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity *	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
<b>Process MISC-9 (RP): Rolled Powder</b>							
RPE-01	RPS1	Blender Building	Total plant: 180 tons/day rolled powder output	Wet scrubber	RPC1	VOC, PM	
RPE-02 A-D	RPS2 A-D	Carpet Roll Buildings	See above				
RPE-03 A-D	RPS3 A-D	Evenspeed pads	See above				
RPE-04 A-B	RPS4 A-B	Rolled powder slitters (2)	See above				
RPE-05	RPS5	Cold block press (Rocket Area)	See above				
RPE-06 A-B	RPS6 A-B	Pack Out (2-Rocket Area)	See above				
RPE-07		Breaker Roll operation	See above				
<b>Process MISC-10 (NS): Nitric and Sulfuric Acid Concentrators</b>							
NSE02 A	NSS2A	Nitric acid concentration	166 tons/day	NOx incinerator	NSC2A	NOx	
NSE02 B	NSS2B	Sulfuric acid concentration	430 tons/day, typ.				
NSE03 A	NSS3A	Nitric acid concentration	166 tons/day	NOx incinerator	NSC2A	NOx	
NSE03 B	NSS3B	Sulfuric acid concentration	430 tons/day, typ.				
<b>Process MISC-11: Decontamination Oven</b>							
DOE1	DOS1	Decontamination oven	Chamber capacity 1100 cubic feet				
<b>Process MISC-12: Vibratory Conveyors</b>							
MS12E1		28 vibratory conveyors					
<b>Process MISC-13: Miscellaneous Storage/Process Tanks</b>							
<i>See Appendix C of application, incl. supplemental submittal dated 9-11-03</i>							

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity *	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
<b>Process NRE: New River Energetics</b>							
NRE01		Nitrocellulose, premix and chemical storage	<u>Total plant:</u> 4000 tons/yr propellant output				Total plant: 1/27/97 (superseded 11/6/95 permit)
NRE02	NRS2 A-L	12 propellant mixers	See above				See above
NRE03	NRS3 A-E	Five (5) propellant blockers	See above				See above
NRE04	NRS4 A-H	Eight (8) extruder cutters	See above				See above
NRE05	NRS5 A-H	Eight (8) primary Sweco water separators	See above				See above
NRE06	NRS6 A-D	Four (4) propellant/water slurry transfer tanks	See above				See above
NRE07	NRS7 A-E	Five (5) secondary water separators	See above				See above
NRE08	NRS8 A-D	Four (4) slurry coating reactors	See above	Cold water condenser	NRC8 A-D	VOC	See above
NRE09	NRS9 A-C	Three (3) centrifuges	See above				See above
NRE10	NRS10 A-G	Continuous fluidized bed dryer	See above	Multiclone	NRC10 A-G	Particulate	See above
NRE11	NRS11 A-G	Continuous fluidized bed dryer	See above	Multiclone	NRC11 A-G	Particulate	See above
NRE12	NRS12 A-G	Continuous fluidized bed dryer	See above	Wet cyclone separator	NRC12 A-G	Particulate	See above
NRE13	NRS13 A-C	Three (3) shaker screens	See above	Wet cyclone separator	NRC13 A-C	Particulate	See above
NRE14	NRS14	Homogenizing ribbon blenders	See above	Wet cyclone separator	NRC14	Particulate	See above
NRE15	NRS15	Final ribbon blender	See above	Wet cyclone separator	NRC15	Particulate	See above
NRE16	NRS16	Propellant packing operation	See above	Wet cyclone separator	NRC16	Particulate	See above
NRE17	NRS17	Propellant packing operation	See above	Wet cyclone separator	NRC17	Particulate	See above
NRE18	NRS18	Propellant packing operation	See above			Particulate	See above
NRE19	NRS19	Propellant packing operation	See above				

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity *	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
NRE20	NRS20 A-D	Ballistics laboratory	See above	HEPA filtration system	NRC20 A-D	Particulate	See above
NRE21	NRS21 A-B	Solvent recovery unit	14 gpm solvent laden water input	Cold water condenser	NRC21 A-B	VOC	See above
MCAPB1	MCAPBS1	Paint spray booth	8 Gallons/yr Yellow 33538 paint	Paper filters	MCAPB C1	Particulate	August 23, 2001
MCAPB2	MCAPBS2	Paint spray booth (spray cans)		Paper filters	MCAPB C2	Particulate	
<b>Process RCRA: RCRA Hazardous Waste Incinerators</b>							
RCRA01	RCRAS1	RCRA hazardous waste incinerator #1	750 lbs/hr waste burned; 43 x 10 <sup>6</sup> BTU/hr	Evaporative cooler, baghouse, and cooler/wet scrubber (fixed-throat venturi)	RCRAC1	PM, VOC	
RCRA02	RCRAS1	RCRA hazardous waste incinerator #2	750 lbs/hr waste burned; 43 x 10 <sup>6</sup> BTU/hr	Evaporative cooler, baghouse, and cooler/wet scrubber (fixed-throat venturi)	RCRAC2	PM, VOC	
RCRA03	RCRAS3 A-C	Incinerator Grinder Building	See above				

\*The size/rated capacity is provided for informational purposes only, and is not an applicable requirement.

NOTE: Many of the above-listed process units have no applicable permit date since they were constructed prior to March 1972.

**EMISSIONS INVENTORY**

Emissions summarized in the following table are derived from the 2002 emission inventory report. A copy of the report is attached as Attachment A.

2002 Pollutant Emissions (Plantwide Total)	
Pollutant	Tons Emitted
<b>Criteria Pollutants</b>	
PM10	83.75
VOC*	2,168.33
NO <sub>x</sub>	1,237.66
SO <sub>2</sub>	3,225.16
CO	58.02
Lead	- 0 -
<b>Hazardous Air Pollutants (HAPs)</b>	
Methylene Chloride	3.00
Hydrogen Fluoride (HF)	8.26
Hydrochloric Acid (HCl)	66.08

\* Includes 27.27 tons emitted by NRE.

## **EMISSION UNIT APPLICABLE REQUIREMENTS - Boilers PH1 through PH5; Boilers WB1 and WB2**

### **Limitations**

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

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:

$$E = 1.0906 \times (5 \times 210)^{-0.2594} = 0.1794 \text{ lbs/mmBTU input}$$

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

$$\text{Maximum Allowable Emissions (Boilers PH1 through PH5)} = 0.1794 \times 210 = 37.6 \text{ lbs/hr (each boiler)}$$

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:

$$S \text{ (for Boilers PH1 through PH5)} = 2.64 \times 210 = 554.4 \text{ lbs/hr (each boiler)}$$

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

### **Monitoring**

9 VAC 5-40-20 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 emission data and operating parameters necessary to demonstrate compliance with the permit. These records include the monthly and annual throughput of coal and oil; coal sulfur, ash and heat content; sulfur content of the oil burned in the boilers; and records of ESP operating conditions and electrical power levels for each ESP, or equivalent records.

### **Testing**

The permit requires performance tests (stack tests) to be conducted once per permit term for particulate emissions and for sulfur dioxide emissions from the Power House, which consists of Boilers PH1 through PH5 with a single, common stack. At the option of the permittee, these stack tests may be delayed, even indefinitely, until the coal throughput in BTUs for any of the boilers exceeds 50% of its annual capacity factor, calculated monthly as the sum of each consecutive twelve (12) month period. The Department and EPA have authority to require additional testing not included in this permit if necessary to determine compliance with an emission limit or standard, and the permit specifies DEQ approval of the test method if compliance testing is performed.

### **Reporting**

NA

### **Streamlined Requirements**

NA

## **EMISSION UNIT APPLICABLE REQUIREMENTS – NA: Nitric Acid Plant**

### **Limitations**

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

9 VAC 5-40-3140, Existing Source Standard for Nitrogen Oxides (Nitric Acid Production Units)

### **Recordkeeping**

The permit includes requirements for maintaining records of production rate and hours of operation for the nitric acid production unit.

### **Testing**

The permit does not require source tests. 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, and the permit specifies DEQ approval of the test method if compliance testing is performed.

### **Reporting**

NA

### **Streamlined Requirements**

NA

**EMISSION UNIT APPLICABLE REQUIREMENTS – DN: DNT Production and TN:  
TNT Production**

**Limitations**

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable to the manufacture of DNT only:

9 VAC 5-60-100, National Emission Standards for Hazardous Air Pollutants for Source Categories (referencing requirements of 40 CFR 63, Subparts F, G and H)

**Monitoring**

The permit includes a requirement to comply with monitoring requirements in accordance with 40 CFR 63, Subparts F, G and H.

**Recordkeeping**

The permit includes a requirement to maintain records in accordance with 40 CFR 63, Subparts F, G and H.

**Testing**

The permit includes a requirement to conduct compliance testing in accordance with 40 CFR 63, Subparts F, G and H.. The Department and EPA have authority to require additional testing not included in this permit if necessary to determine compliance with an emission limit or standard, and the permit specifies DEQ approval of the test method if compliance testing is performed.

**Reporting**

The permit includes a requirement to comply with reporting requirements in accordance with 40 CFR 63, Subparts F, G and H.

**Streamlined Requirements**

NA

## **EMISSION UNIT APPLICABLE REQUIREMENTS – MISC-5 (WW): Water and Wastewater Treatment**

### **Limitations**

The following applicable limitations are State BACT requirements from the minor NSR permit for the two biological wastewater treatment plant equalization tanks issued on March 1, 2001. A copy of the permit is attached as Attachment B.

Condition 1, specifying that volatile organic compound emissions from the two biological wastewater treatment plant equalization tanks shall be controlled by fixed roofs vented to the atmosphere.

Condition 2, limiting the annual throughput of volatile organic compounds in the influent wastewater stream to 66,469 pounds per day, calculated as a 30-day rolling average; 1,011 tons per month; and 12,130 tons per year, calculated monthly as the sum of each consecutive twelve (12) month period.

Condition 3, limiting emissions from the operation of the two equalization tanks to 301 lbs/day, 9,166 lbs/month and 55 tons/yr.

### **Monitoring**

9 VAC 5-40-20 and 9 VAC 5-50-20 require 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 emission data and operating parameters necessary to demonstrate compliance with the permit. These records include the daily throughput of volatile organic compounds (as ether and ethanol) in the wastewater stream influent for the two biological equalization tanks; daily ether and ethanol concentration data from analysis of either a 24-hour composite sample or grab sample from the wastewater treatment influent; monthly volatile organic compound emissions, expressed as pounds per month; and annual volatile organic compound emissions, expressed as tons per year, calculated (by a method approved by the Board) monthly as the sum of each consecutive twelve (12) month period.

**Testing**

The permittee is required to conduct daily sampling by collection of a 24-hour composite sample or grab sample from the wastewater treatment influent, and to conduct analyses for the daily concentrations of ether and ethanol in the wastewater stream which contribute the majority of volatile organic compound emissions from the operation of the Biological Equalization Tanks. The compounds are to be analyzed by gas chromatography or other method as approved by the Board in order to demonstrate compliance with the emission limits listed above. 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 – NC: Nitrocellulose Production**

**Limitations**

The following applicable limitations are State BACT requirements from the minor NSR permit for the nitrocellulose A & B lines issued on June 28, 1988, and the minor NSR permit for the nitrocellulose C line issued on September 10, 2003 (which superseded the permits dated March 9, 1993 and December 5, 1997). Copies of the permits are attached as Attachment B.

**NOTE:** Nitrocellulose A line is no longer in operation, although there are auxiliary buildings that could be used, such as the wringer house and the process waste stream pits. Therefore, conditions from the June 28, 1998 permit for A & B lines are considered to apply to B line only at this time.

Condition 1, limiting the height of Stack NCS1 for the nitrocellulose B-line (acid storage tank and continuous nitrators) to 60 feet.

Condition 2, specifying that NO<sub>x</sub> emissions from the nitrocellulose C-line shall be controlled by a tray scrubber/absorber and selective catalytic reduction (SCR).

Condition 3, specifying that, in the event of SCR malfunction, the nitrocellulose nitration (production) lines shall be shut down immediately. Residual NO<sub>x</sub> emissions from the storage tanks shall be controlled by a horizontal piccolo scrubber.

Condition 4, specifying that the temperature of the fired heater acid gas outlet preceding the SCR catalyst column shall be maintained between 500 deg F and 650 deg F during operation.

Condition 5, limiting the annual throughput of nitrocellulose through the C-line nitrators to 25,400 tons, calculated monthly as the sum of each consecutive twelve (12) month period.

Conditions 6 and 7, limiting visible emissions from the SCR exhaust and from the piccolo scrubber exhaust to 10 percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed 30 percent opacity.

Condition 8, limiting emissions from the operation of the nitrocellulose C-line as follows:

Sulfur Dioxide	92 ppmv	4.0 lbs/hr	17.5 tons/yr
Nitrogen Oxides (as NO and NO <sub>2</sub> , combined)	125 ppmv, as an hourly avg.	2.8 lbs/hr	12.3 tons/yr

### **Monitoring**

Monitoring requirements in the permit include a continuous emission monitor at the SCR exhaust to measure and record the concentration of NO<sub>x</sub>; a temperature sensor and automatic thermostat at the fired heater acid gas outlet to maintain the temperature within the range specified in the permit; devices to continuously measure the tray scrubber liquid flow rate and the differential pressure drop across the scrubber; and a device to continuously measure the scrubber liquid flow rate across the piccolo scrubber.

### **Recordkeeping**

The permit includes requirements for maintaining records of all emission data and operating parameters necessary to demonstrate compliance with the permit. These records include the annual throughput of nitrocellulose through the C-line nitrators, calculated monthly as the sum of each consecutive twelve (12) month period; the fired heater acid gas outlet temperature; and cylinder gas audits conducted on the NO<sub>x</sub> continuous emissions monitor for the SCR exhaust.

### **Testing**

The permit does not require source tests. 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, and the permit specifies DEQ approval of the test method if compliance testing is performed.

### **Reporting**

NA

### **Streamlined Requirements**

NA

**EMISSION UNIT APPLICABLE REQUIREMENTS – NRE: New River Energetics**

**Limitations**

The following applicable limitations are State BACT requirements from the minor NSR permit for the New River Energetics facility issued on January 27, 1997 (which superseded the permit dated November 6, 1995) and for the paint spray booth issued on August 23, 2001. Copies of the permits are attached as Attachment B.

Condition 1, authorizing the permittee to store ethanol or ethanol/water mixtures in the storage tanks.

Condition 2, specifying that particulate emissions from each shaker screener shall be controlled by a cyclone scrubber, and that an electronic interlock system shall prevent operation of each shaker screener unless water is being supplied to the corresponding cyclone scrubber.

Condition 3, specifying that volatile organic compound emissions from slurry transport of extruded propellant and solvent laden water from the process shall be minimized by use of solvent recovery and biological treatment in a wastewater treatment plant.

Condition 4, specifying that particulate emissions from spray booth MCAPB1 shall be controlled by paper filters with an estimated control efficiency of 70%

Condition 5, limiting the annual production of dry multibase propellant to 8 million pounds per year, calculated monthly as the sum of each consecutive twelve (12) month period.

Condition 6, limiting the annual throughput of Yellow 33538 paint through spray booth MCAPB1 to 8 gallons, calculated monthly as the sum of each consecutive twelve (12) month period.

Conditions 7 and 8, limiting visible emissions from the shaker screeners, homogenizer/blender, final blending, packing and from the spray booth MCAPB1 exhaust to 5 percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed 30 percent opacity.

Condition 9, limiting emissions from the operation of the multibase propellant line as follows:

Total Suspended Particulate	2.1 lbs/hr	7.4 tons/yr
--------------------------------	------------	-------------

PM-10	2.1 lbs/hr	7.4 tons/yr
Volatile Organic Compounds (includes ethanol but not acetone)	17.0 lbs/hr	59.4 tons/yr

### **Monitoring**

9 VAC 5-50-20 requires that records of all emissions data and operating parameters necessary to demonstrate compliance with the permit be maintained. (See Recordkeeping, below.)

VOC emissions shall be calculated by mass balance, as follows:

VOC emissions = (VOC entering with premix) plus (VOC added during processing other than VOC from solvent recovery system for this line) plus (VOC emissions to air from wastewater) minus (VOC to wastewater) minus (recovered VOC sold to RFAAP)

### **Recordkeeping**

The permit includes requirements for maintaining records of all emission data and operating parameters necessary to demonstrate compliance with the permit. These records include the annual production of dry multibase propellant, annual throughput of Yellow 33538 paint, and annual VOC, lead chromate and lead compound emissions, calculated monthly as the sum of each consecutive twelve (12) month period.

In addition, in accordance with 40 CFR 60, Subpart Kb, Section 60.116b(b), the permittee shall maintain readily accessible records showing the dimensions of the storage vessels and an analysis showing the capacity of the storage vessels.

### **Testing**

The permit does not require source tests. 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, and the permit specifies DEQ approval of the test method if compliance testing is performed.

### **Reporting**

NA

### **Streamlined Requirements**

NA

## **EMISSION UNIT APPLICABLE REQUIREMENTS - RCRA Hazardous Waste Incinerators**

### **Limitations**

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

9 VAC 5-60-100, National Emission Standards for Hazardous Air Pollutants for Source Categories (referencing requirements of 40 CFR 63, Subpart EEE)

### **Monitoring**

The permit includes a requirement to comply with monitoring requirements in accordance with 40 CFR 63, Subpart EEE, including the operating requirements and operating parameter limits specified in the September 29, 2003 (or most current) Documentation of Compliance prepared pursuant to Section 63.1211; and the Notification of Compliance which will be prepared pursuant to Section 63.1210 following the comprehensive performance test and which will supersede the Documentation of Compliance.

### **Recordkeeping**

The permit includes a requirement to maintain records in accordance with 40 CFR 63, Subpart EEE.

### **Testing**

The permit includes a requirement to conduct compliance testing in accordance with 40 CFR 63, Subpart EEE.

### **Reporting**

The permit includes a requirement to comply with reporting requirements in accordance with 40 CFR 63, Subpart EEE.

### **Streamlined Requirements**

NA

## **FACILITY WIDE CONDITIONS**

### **Limitations**

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

9 VAC 5-40-22 and 9 VAC 5-40-260, Existing Source Standard for Particulate Matter (Process Weight-Rate Table 4-4A) and Interpretation of Emission Standards Based on Process Weight-Rate Tables

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

9 VAC 5-40-280, Existing Source Standard for Sulfur Dioxide (Noncombustion Process Operations)

### **Monitoring**

The permit includes the standard requirement to observe visually, at least once each calendar week in which the emissions unit operates, emissions units with visible emissions requirements in the sections titled “Fuel Burning Equipment Requirements” and “Process Equipment Requirements” in the permit, as well as other emissions units to be arranged with the Director, West Central Regional Office. However, the visual observation frequency may be reduced to once per month for a particular stack if visible emissions observations conducted for that stack during twelve (12) consecutive weeks show no visible emissions. Emissions units found to have visible emissions shall be evaluated by conducting a 40 CFR 60 Appendix A Method 9 visible emissions evaluation (VEE), unless corrective action is taken that achieves no visible emissions.

### **Recordkeeping**

The permit includes requirements for maintaining records of all emission data and operating parameters necessary to demonstrate compliance with the permit.

### **Testing**

The permit does not require source tests. 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, and the permit specifies DEQ approval of the test method if compliance testing is performed.

**Reporting**

NA

**Streamlined Requirements**

NA

## **GENERAL CONDITIONS**

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110 that apply to all Federal 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 causing excess emissions for more than one hour, including those caused by upsets, within four daytime business hours.

## **STATE ONLY APPLICABLE REQUIREMENTS**

NA

## **FUTURE APPLICABLE REQUIREMENTS**

The air curtain destructor will be subject to either the federal (NSPS Subpart DDDD) or state requirements for Commercial and Industrial Solid Waste Incinerators, depending upon the dates of (1) promulgation of the federal plan and (2) EPA approval of Virginia's plan. In addition, RFAAP shall comply with all applicable current and future MACT, NESHAPS, NSPS and state regulations for fossil fuel fired boilers, internal combustion engines, miscellaneous organic chemical manufacturing, organic liquid distribution, military MACTs and any other applicable regulations once promulgated.

## **INAPPLICABLE REQUIREMENTS**

NA

## **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 5-80-110.

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)
-	Trial runs done for research and development purposes	9 VAC 5-80-720A		
-	Diesel fueling station	9 VAC 5-80-720A		
-	Air-conditioning and ventilation units used for human comfort	9 VAC 5-80-720A		
-	Office equipment, including printers and copiers	9 VAC 5-80-720A		
-	Janitorial services	9 VAC 5-80-720A		
-	Internal combustion engines used for landscaping	9 VAC 5-80-720A		
-	Emergency electrical generators	9 VAC 5-80-720A		
-	Equipment used for quality control/assurance	9 VAC 5-80-720A		
-	Bench-scale laboratory equipment	9 VAC 5-80-720A		
-	Ozone generators	9 VAC 5-80-720A		
-	Fire suppression systems	9 VAC 5-80-720A		
-	Steam vents and safety relief valves	9 VAC 5-80-720A		
-	Laundry activities	9 VAC 5-80-720A		
-	Acid storage tanks and any storage tanks which will not emit any VOC or HAP (see also Appendix C of application)	9 VAC 5-80-720A		
-	Plant maintenance and upkeep	9 VAC 5-80-720A		

Emission Unit No.	Emission Unit Description	Citation	Pollutant(s) Emitted (9 VAC 5-80-720 B)	Rated Capacity (9 VAC 5-80-720 C)
-	Process water filtration systems	9 VAC 5-80-720A		
-	Boiler water treatment operations	9 VAC 5-80-720A		
-	5 firing ranges (3 indoor, 2 outdoor)	9 VAC 5-80-720B	Particulate	
-	Power House salt silo (used for softening boiler feed water)	9 VAC 5-80-720B	Particulate	
G5001-G6304	26 emergency generators (diesel and gasoline powered)	9 VAC 5-80-720C		All gasoline generators < 911 hp; all diesel generators < 6667 hp; all generators operate < 500 hrs/yr

<sup>1</sup>The 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 has submitted a request for confidentiality. Duplicate versions of the Title V application have been provided (confidential and non-confidential), and all portions of non-confidential version are suitable for public view.

**PUBLIC PARTICIPATION**

A public notice appeared in the Roanoke Times and World-News on September 14, 2003 announcing a 30-day public comment period for this permit. EPA provided comments resulting in revisions to the boiler performance testing and RCRA incinerator portions of the permit. In addition, revisions were made to the equipment list at the facility's request; however, these did not result in any changes to emission standards or limitations. Notice was also provided to West Virginia and North Carolina as affected states.